



# Computing Progression Framework

## Numbering system

Subject.Year.Strand.Statement

Text shown in **bold** is a key term, and is defined in the Glossary.

DOMAIN: COMPUTER SCIENCE						
KEY STAGE 1						
Year 1						
Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant <i>Switched on Computing</i> unit(s)	<i>Switched on Computing</i> badge
Problem solving	C.1.1.1. Understand what algorithms are.	<p>The child can understand that goals can be achieved by following a <b>sequence</b> of steps.</p> <p>The child can understand that simple, real-world problems, such as making a pizza or a smoothie, can be solved by following a <b>sequence</b> of steps in order.</p> <p><i>(E.g. In 1.1, recognise that the Bee Bot can get to its destination through following a sequence of steps.</i></p> <p><i>In 1.2, understand that the steps of a recipe should be followed in cookery.</i></p> <p><i>In 1.4, think about the steps they follow to group or sort things.)</i></p>	<p>The child can understand <b>algorithms</b> as <b>sequences</b> of instructions in everyday contexts.</p> <p>The child can take real-world problems and then plan a <b>sequence</b> of steps to solve these. The problems could be moving a Bee Bot from one point to another, or making some simple food items like a sandwich, smoothie or pizza.</p> <p><i>(E.g. In 1.1, recognise a set of directions as an algorithm.</i></p> <p><i>In 1.2, recognise the steps of a recipe as an algorithm.</i></p> <p><i>In 1.4, realise that there are algorithms for grouping or sorting things.)</i></p>	<p>The child can appreciate the need for precise and unambiguous instructions in <b>algorithms</b>.</p> <p>The child can use increasingly precise and unambiguous instructions in creating <b>sequences</b> of instructions. These should typically be for real-world problems such as recipes or moving a Bee Bot.</p> <p><i>(E.g. In 1.1, know that instructions for a Bee Bot need to be precise.</i></p> <p><i>In 1.2, know that the steps of a recipe need to be precise and unambiguous.</i></p> <p><i>In 1.4, recognise that to group or sort things, a computer or robot would need very precise instructions.)</i></p>	1.1, 1.2, 1.4	Problem solver 1
	C.1.1.2 Understand how algorithms are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.	<p>The child can program floor turtles using individual instructions according to a plan.</p> <p>The child can program a Bee Bot, or similar floor robot, one instruction at a time, pressing the movement buttons, then Go, then clearing at each step.</p> <p><i>(E.g. In 1.1, give the Bee Bot single instructions.)</i></p>	<p>The child can program floor turtles using <b>sequences</b> of instructions to implement an <b>algorithm</b>.</p> <p>The child can create a Bee Bot (or similar) <b>program</b> using a number of steps in order before pressing the Go button. The length of the child's <b>programs</b> might increase over the year.</p> <p><i>(E.g. In 1.1, create a Bee Bot program, implementing the complete algorithm for their solution.)</i></p>	<p>The child can appreciate that programming a <b>digital device</b> involves <b>commands</b> in a formal language.</p> <p>The child can show some understanding of Bee Bot instructions being taken from a very specific, clearly defined language, in which each <b>command</b> produces a certain, predictable <b>output</b>. There should be some sense of the child developing an understanding of a programming language as a way in which people can give <b>commands</b> to <b>digital devices</b>.</p> <p><i>(E.g. In 1.1, recognise that the Bee Bot only accepts a small number of different commands.)</i></p>	1.1	Problem solver 1



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<b>Programming</b>	C.1.2.1.Create and debug simple programs.	<p>The child can give instructions, one at a time, to a floor turtle.</p> <p>The child can create a <b>program</b> for a Bee Bot by entering instructions one at a time, literally stepping through their code as they do. This level of interaction allows the child to correct bugs in their <b>programs</b> as they arise.</p> <p><i>(E.g. In 1.1, give the Bee Bot instructions one at a time.)</i></p>	<p>The child can give a <b>sequence</b> of instructions to a floor turtle.</p> <p>The child can create a Bee Bot <b>program</b> using a <b>sequence</b> of instructions before running it using the Go button. The length of the child's <b>programs</b> might be expected to increase over the course of the year.</p> <p><i>(E.g. In 1.1, give the Bee Bot a complete program.)</i></p>	<p>The child can give a <b>sequence</b> of instructions to a floor turtle, correcting mistakes.</p> <p>The child can run programs on a Bee Bot as a quite lengthy <b>sequence</b> of instructions. The child can work out where bugs are in their <b>program</b>, reset the Bee Bot and enter corrected code. Typically, the child will need to have some way to record their programs before entering them, such as a whiteboard, Bee Bot instruction cards or the Blue Bot app.</p> <p><i>(E.g. In 1.1, give the Bee Bot a complete program, and then debug this to correct any errors.)</i></p>	1.1	Programmer 1
<b>Logical thinking</b>	C.1.3.1. Use logical reasoning to predict the behaviour of simple programs.	<p>The child can make predictions about what a <b>program</b> will do.</p> <p>The child can make a prediction of what they think a <b>program</b> will do next. This could be a <b>program</b> (perhaps for a Bee Bot) that they or their peers have written, or it could be a familiar piece of <b>software</b> (including computer games). The child could use an audio recorder or video camera to capture their predictions.</p> <p><i>(E.g. In 1.1, predict what another child's Bee Bot program will do when run.)</i></p>	<p>The child can give explanations for what they think a <b>program</b> will do.</p> <p>The child can explain to the teacher, and to peers, what they think a <b>program</b> will do. This could be a <b>program</b> they or their peers have written, or it could be a familiar piece of <b>software</b> (including computer games). The child could use an audio recorder or video camera to capture their explanations.</p> <p><i>(E.g. In 1.1, explain what their own or another child's program will do before it is run.)</i></p>	<p>The child can give logical explanations for what they think a <b>program</b> will do.</p> <p>The child should be able to give carefully reasoned explanations of what a <b>program</b> will do under given circumstances, including some attempt at explaining why it does what it does. The <b>program</b> could be one they themselves have written or it could be a computer game or a familiar piece of <b>software</b>. The child could use an audio recorder or video camera to record their explanation.</p> <p><i>(E.g. In 1.1, give a logical explanation for what a Bee Bot program will do and defend that explanation when questioned.)</i></p>	1.1	Logical thinker 1



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Year 1						
Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant <i>Switched on Computing</i> unit(s)	<i>Switched on Computing</i> badge
E-safety	C.1.1.1. Use technology safely and respectfully.	<p>The child can acknowledge the need to stay safe when using technology.</p> <p>The child can understand that they need to be kept safe when using technology. E.g. They should be required to use filtered SafeSearch when looking for images on the <b>web</b>.</p> <p><i>(E.g. In 1.3, 1.4 and 1.6, they can keep safe when searching for images.)</i></p>	<p>The child can keep themselves safe while using digital technology.</p> <p>The child can understand that they need to keep safe when using digital technology. E.g. They should know to use filtered SafeSearch when looking for images on the <b>web</b> and that they should close the lid of a laptop (or similar action) if they find inappropriate images.</p> <p><i>(E.g. In 1.3, 1.4 and 1.6, close the laptop lid (or similar) and tell a teacher if they find inappropriate images.)</i></p>	<p>The child can keep safe and show respect to others while using digital technology.</p> <p>The child can understand that they need to keep safe when using digital technology. E.g. They should know to use filtered SafeSearch when looking for images on the <b>web</b> and close the lid of a laptop (or similar action) if they find inappropriate images. They should know to respect others' rights, including privacy and intellectual property when using computers, so should not look at someone else's work or copy it without permission.</p> <p><i>(E.g. In 1.3, 1.4 and 1.6, close the laptop lid (or similar action) and tell a teacher if they find inappropriate images, and only copy images where they have permission to do so.)</i></p>	1.3, 1.4, 1.6	E-safety 1
	C.1.1.2. Keeping personal information private.	<p>The child can understand that some information should be kept private.</p> <p>The child should understand that some information is personal and should only be shared by those who they or their parents trust. E.g. The child should recognise that audio or video recordings they make in school are personal.</p> <p><i>(E.g. In 1.2 and 1.5, know that some video and audio should be kept private.)</i></p>	<p>The child can understand that information on the internet can be seen by others.</p> <p>The child should be aware that information stored on the <b>web</b> or transmitted via the internet is available to other people. E.g. They should know that the images they find online can be found by others too, and that the queries they type in can be seen by those who run the search engine they use and the school's <b>network</b>.</p> <p><i>(E.g. In 1.3, 1.4 and 1.6, realise that the images they search for can be seen by others.)</i></p>	<p>The child can start to understand what information about themselves should be kept private.</p> <p>The child should understand that personal information should be kept private: it should not be posted online to a public audience and should only be shared privately with those who the child (or their parents) would trust. E.g. The child should recognise that audio or video recordings they make in school should not normally be posted online.</p> <p><i>(E.g. In 1.2 and 1.5, understand that their video and audio recordings should not normally be posted online.)</i></p>	1.2, 1.3, 1.4, 1.5, 1.6	E-safety 1



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<b>E-safety</b>	C.1.1.3. Identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	<p>The child can understand what to do if they see disturbing content online at school .</p> <p>The child should know to close the laptop lid or turn the tablet over if they find content, such as inappropriate images, which might disturb them or other children. They should know to tell their teacher if this happens in school.</p> <p><i>(E.g. In 1.3, 1.4 and 1.6, know to close the laptop lid or turn the tablet over and tell a teacher if they find inappropriate images.)</i></p>	<p>The child can understand what to do if they see disturbing content online at home or at school.</p> <p>The child should know to close the laptop lid or turn the tablet over if they find content, such as inappropriate images, which might disturb them or other children. They should know to tell their teacher or their parents if this happens.</p> <p><i>(E.g. In 1.3, 1.4 and 1.6, know to close the laptop lid or turn the tablet over and tell a teacher or their parents if they find inappropriate images.)</i></p>	<p>The child can understand what to do if they have concerns about content or contact online.</p> <p>The child should know to close the laptop lid or turn the tablet over if they find content, such as inappropriate images, which might disturb them or other children; if someone they don't trust contacts them online; if someone makes inappropriate contact online. They should know to tell their teacher or their parents if this happens, and be aware that they could talk to another trusted adult or to Childline about this.</p> <p><i>(E.g. In 1.3, 1.4 and 1.6, know to close the laptop lid or turn the tablet over and tell a teacher, their parents, another trusted adult or ChildLine if they find inappropriate images.)</i></p>	1.3, 1.4, 1.6	E-safety 1
<b>Using IT beyond school</b>	C.1.2.1. Recognise common uses of information technology beyond school.	<p>The child can name some uses of IT beyond school.</p> <p>The child can mention some of the ways in which IT is used beyond school. Examples could be watching videos, creating paintings, typing stories, listening to music or audio books, sending messages.</p> <p><i>(Examples could include video in 1.2, painting and e-books in 1.3, audio in 1.5 and e-cards in 1.6.)</i></p>	<p>The child can show an awareness of how IT is used for communication beyond school.</p> <p>The child can mention some of the ways in which IT is used to communicate beyond school. E.g. They might know that some people use social media such as Facebook, email, video calls or online greetings to say happy birthday to their friends.</p> <p><i>(E.g. In 1.6, be aware that many people send greetings online rather than using cards now.)</i></p>	<p>The child can show an awareness of how IT is used for a range of purposes beyond school.</p> <p>The child can name a number of purposes for which IT is used beyond school. E.g. They might know that modern TVs use digital technology, that books are often available in a digital format, that music is often recorded using computers and that people often communicate using computers these days.</p> <p><i>(E.g. In 1.2, know that TV uses digital technology. In 1.3, be aware of e-books. In 1.5, be aware that audio is recorded digitally. In 1.6, be aware that some people send e-cards rather than paper cards now.)</i></p>	1.2, 1.3, 1.5, 1.6	Beyond School



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DOMAIN: INFORMATION TECHNOLOGY						
KEY STAGE 1						
Year 1						
Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant <i>Switched on Computing</i> unit(s)	Switched on Computing badge
Creating content	C.1.1.1. Use technology purposefully to organise, store and retrieve digital content.	<p>The child can store content on <b>digital devices</b>.</p> <p>The child can use a range of digital technologies to store digital content. These might include laptop computers, tablets, smartphones, digital cameras, video cameras and audio recorders. Projects might include videoing one another cooking, creating content for an e-book or an audio book, creating a greetings card.</p> <p><i>(E.g. In 1.2, film a child cooking. In 1.3, save their work. In 1.4, import images and save their work. In 1.5, record audio. In 1.6, import images and save their work.)</i></p>	<p>The child can use digital technology to store and retrieve content.</p> <p>The child can use a range of digital technologies to store and access digital content. These might include laptop computers, tablets, smartphones, digital cameras, video cameras and audio recorders. Projects might include videoing one another cooking, developing an e-book or an audio book, creating a greetings card.</p> <p><i>(E.g. In 1.2, film and upload a child cooking. In 1.3, open the e-book, import illustrations, add them to the e-book and save their work. In 1.4, retrieve previous work, import further illustrations and save their work. In 1.5, open the template, record audio, import it to the computer and save their work. In 1.6, open the card template, find images online and save their work.)</i></p>	<p>The child can use digital technology to organise, store and retrieve content</p> <p>The child can use a range of digital technologies to store, access and organise digital content. Typically, they can use a laptop computer, tablet or smartphone to help organise content, such as by moving this between one document and another or by moving content within the file system or on a document. Projects might include videoing one another cooking, developing an e-book or an audio book, creating a greetings card.</p> <p><i>(E.g. In 1.2, film and upload a child cooking. In 1.3, import illustrations, add them to the e-book and save their work. In 1.4, import illustrations, use PowerPoint to organise these according to the tasks, and save their work. In 1.5, record audio and import it to the computer, add audio to the correct pages in their presentation and save their work. In 1.6, find images online, add them appropriately to their e-card and save their work.)</i></p>	1.2, 1.3, 1.4, 1.5, 1.6	Content creator 1
	C.1.1.2. Use technology purposefully to create and manipulate digital content.	<p>The child can create content on a <b>digital device</b>.</p> <p>The child can create their own original digital content using handheld devices. These would typically be digital cameras, video cameras and audio recorders, but the equivalent apps on a smartphone or tablet might be used. Projects might include videoing one another cooking or making recordings for an audio book.</p> <p><i>(E.g. In 1.2, film digital video. In 1.5, record original digital audio.)</i></p>	<p>The child can create original content using digital technology.</p> <p>The child can create their own original digital content using a range of technologies. These might include laptop computers, tablets, smartphones, digital cameras, video cameras and audio recorders. Projects might include videoing one another cooking, developing an e-book or an audio book, creating a greetings card. Look for some indication of the child's creativity in this work.</p> <p><i>(E.g. In 1.2, film digital video. In 1.3, create an original painting. In 1.5, create original digital audio. In 1.6, type their own text.)</i></p>	<p>The child can create and edit original content using digital technology.</p> <p>The child can create and edit their own original digital content using a range of technologies. Content-creation technology might include laptop computers, tablets, smartphones, digital cameras, video cameras and audio recorders, although editing is likely to take place on laptops or tablets. Projects might include videoing one another cooking, developing an e-book or an audio book, creating a greetings card. Look for some indication of the child's creativity in this work as well as evidence that they have edited content.</p> <p><i>(E.g. In 1.2, film digital video and edit this on the computer. In 1.3, create and edit an original painting. In 1.5, create original digital audio, using editing tools, if available. In 1.6, type and edit their own text.)</i></p>	1.2, 1.3, 1.5, 1.6	Content creator 1



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DOMAIN: COMPUTER SCIENCE						
KEY STAGE 1						
Year 2						
Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant <i>Switched on Computing</i> unit(s)	<i>Switched on Computing</i> badge
Problem solving	C.2.1.1. Understand what algorithms are.	<p>The child can understand <b>algorithms</b> as <b>sequences</b> of instructions in everyday contexts.</p> <p>The child can recognise common <b>sequences</b> of instructions as examples of <b>algorithms</b>. These might include simple recipes, but might also be procedures followed in class, instructions for moving around the school or simple arithmetic operations.</p> <p><i>(E.g. In 2.1, recognise directions as an algorithm. In 2.3, think of the steps to taking and editing photographs as an algorithm.)</i></p>	<p>The child can understand <b>algorithms</b> as <b>sequences</b> of instructions or sets of rules in everyday contexts.</p> <p>The child can recognise that common <b>sequences</b> of instructions or sets of rules can be thought of as <b>algorithms</b>. Examples could include recipes, but might also be procedures or rules in class, spelling rules, simple arithmetic operations or number patterns.</p> <p><i>(E.g. In 2.1, recognise sets of directions as algorithms. In 2.2, recognise that the rules of a game are an algorithm. In 2.3, think of the steps to taking and editing photographs as an algorithm.)</i></p>	<p>The child can appreciate that some <b>algorithms</b> are more efficient than others.</p> <p>The child can think about everyday <b>algorithms</b>, such as classroom rules or procedures, or arithmetic operations, and look for easier or faster ways to get things done. The child can create <b>programs</b> for computers and look for other ways to do the same thing, deciding which way would be better.</p> <p><i>(E.g. In 2.1, look for more efficient ways to solve the problem. In 2.2, consider how other rules would make these games better or worse. In 2.4, think of other ways the project could be carried out more efficiently.)</i></p>	2.1, 2.2, 2.3	Problem solver 1
	C.2.1.2. The child can understand how algorithms are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions.	<p>The child can <b>program</b> floor turtles using <b>sequences</b> of instructions to implement an <b>algorithm</b>.</p> <p>The child can create Bee Bot <b>programs</b> using <b>sequences</b> of instructions, perhaps planning these first using whiteboards or Bee Bot instruction cards. The child's programs should become longer as the year progresses.</p> <p><i>(E.g. In 2.1, create a program for their Bee Bots to solve the problems set.)</i></p>	<p>The child can program on screen using <b>sequences</b> of instructions to implement an <b>algorithm</b>.</p> <p>The child can create <b>programs</b> as <b>sequences</b> of instructions when programming on screen. Their <b>program</b> could be written using simple programming apps (such as Blue Bot or Lightbot), ScratchJr or Scratch, perhaps using pre-prepared <b>blocks</b> and <b>sprites</b> in this case.</p> <p><i>(E.g. In 2.1, program the Bee Bot and the Space Simulator to solve the problems set. In 2.2, recognise how the Scratch games implement sets of rules.)</i></p>	<p>The child can understand that the same <b>algorithm</b> can be implemented in multiple programming languages.</p> <p>The child can recognise that an <b>algorithm</b> can be implemented in more than one programming language, e.g. taking an <b>algorithm</b> written for the Bee Bot and running it on the Blue Bot app, in ScratchJr and in Scratch. The child should be able to explain some of the differences between these languages.</p> <p><i>(E.g. In 2.1, recognise that the same algorithm can be implemented using the 'human robot', the Bee Bot and the Space Simulator. In 2.2, realise that these games could be implemented using other computer systems.)</i></p>	2.1, 2.2	Problem solver 1
Programming	C.2.2.1. Create and debug simple programs.	<p>The child can create a <b>program</b> for a floor turtle.</p> <p>The child can write a <b>program</b> to control a floor turtle using a <b>sequence</b> of instructions to move it from one place to another or to trace out a simple shape or route. Expect the child's <b>programs</b> to increase in length and complexity as the year progresses.</p> <p><i>(E.g. In 2.1, create a program for the Bee Bot.)</i></p>	<p>The child can create a simple <b>program</b> on screen, correcting any errors.</p> <p>The child can create a simple <b>program</b> on screen (e.g. using the Blue Bot app, ScratchJr or with prepared <b>sprites</b> and <b>blocks</b> in Scratch) with a particular goal or purpose in mind (e.g. drawing a shape or moving a <b>sprite</b> from one place to another).</p> <p>The child can <b>debug</b> any errors in their own code.</p> <p><i>(E.g. In 2.1, create their own program for the space simulator, correcting any errors.)</i></p>	<p>The child can create more complex <b>programs</b> on screen, correcting any errors.</p> <p>The child can create more complex <b>programs</b> on screen (e.g. using ScratchJr or Scratch) with a particular goal or purpose in mind (e.g. drawing compound shapes, making a simple <b>scripted</b> animation or modifying someone else's <b>program</b>).</p> <p><i>(E.g. In 2.1, correctly complete the more complex programming challenges, such as programming the planets to move. In 2.2, remix the games provided to improve on these.)</i></p>	2.1, 2.2	Programmer 1



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Logical thinking	C.2.3.1. Use logical reasoning to predict the behaviour of simple programs.	<p>The child can give explanations for what they think a <b>program</b> will do.</p> <p>The child should explain to the teacher, or to their peers, what they think a <b>program</b> will do. This could be a <b>program</b> they or their peers have written, or it could be a familiar piece of <b>software</b> (including computer games). The child could use an audio recorder or video camera to capture their explanations.</p> <p><i>(E.g. In 2.1, predict what their own or their peers' programs will do. In 2.2, predict what happens in the games.)</i></p>	<p>The child can give logical explanations for what they think a <b>program</b> will do.</p> <p>The child can give logical explanations of what a <b>program</b> will do under given circumstances, including some attempt at explaining why it does what it does. The <b>program</b> could be one they themselves have written or it could be a computer game or a familiar piece of <b>software</b>. The child could use an audio recorder or a video camera to record their explanations.</p> <p><i>(E.g. In 2.1, give logical explanations for what their own or their peers' programs will do. In 2.2, give logical explanations for what happens in the games.)</i></p>	<p>The child can work out some of the underlying <b>algorithm</b> by experimenting with a <b>program</b> while it runs.</p> <p>The child can take a simple game or piece of application <b>software</b> and <b>reverse engineer</b> at least some of the steps or rules that were present in the underlying <b>algorithm</b>. <i>E.g. When text is selected and the B button is clicked, the text should show as bold; when lives reach zero and health drops to zero, show game over and stop the game.</i></p> <p><i>(E.g. In 2.2, experiment with the games provided and attempt to recreate the underlying algorithm, typically as a set of rules)</i></p>	2.1, 2.2	Logical thinker 1



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### DOMAIN: DIGITAL LITERACY

#### KEY STAGE 1

#### Year 2

Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant Switched on Computing unit(s)	Switched on Computing badge
E-safety	C.2.1.1. Use technology safely and respectfully.	<p>The child can keep safe while using digital technology.</p> <p>The child should know that they need to keep themselves safe when using digital technology. E.g. They should know that not all games are suitable for children, that they should close the lid of a laptop (or similar action) if they find inappropriate images and that files attached to some emails can cause harm.</p> <p><i>(E.g. In 2.2, know that some games are not appropriate for children. In 2.4, know what to do if they encounter inappropriate content. In 2.5, know that emails and attachments cannot always be trusted.)</i></p>	<p>The child can keep safe and show respect to others while using digital technology.</p> <p>The child should know that they need to keep themselves safe when using digital technology. E.g. They should know to use filtered SafeSearch when looking for images on the <b>web</b> and that they should close the lid of a laptop (or similar action) if they find inappropriate images. They should know to respect others' rights, including privacy and intellectual property when using computers, so should not look at someone else's work or copy it without permission and acknowledgement. They should observe age restrictions on computer games.</p> <p><i>(E.g. In 2.2, observe age restrictions when playing games out of school. In 2.3, ask before taking photos of others. In 2.4, know what to do if they encounter inappropriate content; acknowledge the source of information they use. In 2.5, check that it is safe to open files attached to emails and to respond to emails. In 2.6, know not to post images with metadata to the open web.)</i></p>	<p>The child can stay safe and act respectfully and responsibly when using digital technology.</p> <p>The child should know that they need to keep themselves safe when using digital technology. E.g. They should know to use filtered SafeSearch when looking for images on the <b>web</b> and that they should close the screen (or similar action) if they find inappropriate images. They should know to respect others' rights, including privacy and intellectual property when using computers, so should not look at someone else's work or copy it without permission and acknowledgement. They should know that emails can have files attached that could harm their computer. They should know that digital photos sometimes contain hidden (meta)data that can reveal where the photo was taken. They should observe age restrictions on computer games.</p> <p><i>(E.g. In 2.2, observe age restrictions when playing games out of school and think about how long they should spend playing games. In 2.3, ask before taking photos of others and not upload these. In 2.4, know what to do if they encounter inappropriate content; acknowledge the source of information they use; only use liberally licensed media. In 2.5, check that it is safe to open files attached to emails and to respond to emails; respond appropriately. In 2.6, know not to post images with metadata to the open web.)</i></p>	2.2, 2.3, 2.4, 2.5, 2.6	E-safety 1
	C.2.1.2. Keeping personal information private.	<p>The child can understand that information on the internet can be seen by others.</p> <p>The child should be aware that information stored on the <b>web</b>, or transmitted via the internet, is available to other people. E.g. They should know that photos they take and upload can be seen by anyone who has the right username and password, by those who operate the computers on which they're stored, those running the school <b>network</b> and possibly others too.</p> <p><i>(E.g. In 2.2 and 2.6, know that photos they take and upload could be seen by others.)</i></p>	<p>The child can understand that they should not share personal information online.</p> <p>The child should understand that personal information should be kept private: it should not be posted online to a public audience and should only be shared privately with those who they (or their parents) would trust. E.g. The child should recognise that photos they take in school should not normally be posted to the open <b>web</b>. They should know that photos taken with smartphones often contain hidden information about where the photo was taken.</p> <p><i>(E.g. In 2.2 and 2.6, know that photos of themselves or other people should not normally be uploaded to the open web. In 2.6, know that photos can contain metadata revealing where they were taken.)</i></p>	<p>The child can show some understanding of broader issues around online privacy.</p> <p>The child should show some awareness of other issues around privacy. The child might discuss how digital photos can contain hidden information about where they were taken (metadata) or be searched for faces. They can show they are aware that information on computers is likely to remain available for a very long time and cannot easily be removed. They might discuss how their use of the <b>web</b>, searches and email can be monitored by those who provide the services and those who run computer <b>networks</b>, including at school.</p> <p><i>(E.g. In 2.2 and 2.6, consider metadata, facial recognition and the permanence of online information. In 2.4 and 2.5, recognise that using the web, searches and email generate metadata that records how these services have been used.)</i></p>	2.2, 2.4, 2.5, 2.6	E-safety 1
	C.2.1.3. Identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	<p>The child can understand what to do if they see disturbing content online at home or at school.</p> <p>The child should know to close the laptop lid or turn the tablet over if they find content, such as inappropriate images, which might disturb them or other children. They should know to tell their teacher or their parents if this happens.</p> <p><i>(E.g. In 2.4 and 2.5, know to close the laptop lid or turn the tablet over and tell a teacher or their parents if they find inappropriate content.)</i></p>	<p>The child can understand what to do if they have concerns about content or contact online.</p> <p>The child should know to close the laptop lid or turn the tablet over if they find content, such as inappropriate images, which might disturb them or other children; if someone they don't trust contacts them online; if someone makes inappropriate contact online. They should know to tell their teacher or their parents if this happens, and be aware that they could talk to another trusted adult or to ChildLine about this.</p> <p><i>(E.g. In 2.4 and 2.5, know to close the laptop lid or turn the tablet over and tell a teacher, their parents, another trusted adult or ChildLine if they find inappropriate content.)</i></p>	<p>The child can have a range of strategies for dealing with concerns over content or contact online.</p> <p>The child should know to close the laptop lid or turn the tablet over if they find content, such as inappropriate images, which might disturb them or other children; if someone they don't trust contacts them online; if someone makes inappropriate contact online. They should know to tell their teacher or their parents if this happens, and be aware that they could talk to another trusted adult or to ChildLine about this. They should be aware that they can report inappropriate contact or content to those running websites, but that it would normally be best to ask a parent or teacher to help them in doing so.</p> <p><i>(E.g. In 2.1 and 2.2, know that concerns about content or comments on the Scratch website can be reported to community moderators. In 2.5, know that concerns about emails can be reported to the email service provider; be aware that email accounts can sometimes be hacked.)</i></p>	2.1, 2.2, 2.4, 2.5	E-safety 1



# Computing Progression Framework

## Numbering system

Subject.Year.Strand.Statement

Text shown in **bold** is a key term, and is defined in the Glossary.

**DOMAIN: DIGITAL LITERACY**

**KEY STAGE 1**

**Year 2**

Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant Switched on Computing unit(s)	Switched on Computing badge
Using IT beyond school	C.2.2.1. Recognise common uses of information technology beyond school.	<p>The child can show an awareness of how IT is used for communication beyond school.</p> <p>The child can mention some of the ways in which IT is used to communicate beyond school. E.g. The child might know that adults can share work and discuss ideas in online communities; that photos can be shared easily using digital technology; that the <b>web</b> is made up of information shared by people and organisations; that people use email for a range of purposes and in a variety of contexts.</p> <p><i>(E.g. In 2.1 and 2.2, recognise that people can share work and discuss ideas using online communities. In 2.3, recognise that people share photographs using digital technology. In 2.4, recognise that people publish useful information on the web. In 2.5, recognise that email is used in many contexts.)</i></p>	<p>The child can show an awareness of how IT is used for a range of purposes beyond school.</p> <p>The child can name a number of purposes for which IT is used beyond school. The child might know that adults can share work and discuss ideas in online communities; that photos can be taken, edited and shared easily using digital technology; that the <b>web</b> is made up of information shared by people and organisations; that people use email for a range of purposes and in a variety of contexts; that scientists use computers when collecting and analysing <b>data</b>.</p> <p><i>(E.g. In 2.1 and 2.2, recognise that people can share work and discuss ideas using online communities. In 2.3, recognise that people take, edit and share photographs using digital technology. In 2.4, recognise that people publish useful information on the web. In 2.5, recognise that email is used in many contexts. In 2.6, recognise that scientists use a range of digital technologies when collecting and analysing data.)</i></p>	<p>The child can consider when digital technology leads to improvements or has the potential to make things worse.</p> <p>The child can take a critical stance towards technologies, considering ways in which it has improved things and balancing these with possible disadvantages. They might compare board games and computer games; digital photography with traditional film; using the library with accessing the <b>web</b>; sending a letter with sending an email.</p> <p><i>(E.g. In 2.2, compare board games and computer games. In 2.3, compare film and digital photography. In 2.4, compare using a library with the web. In 2.5, compare the post and email.)</i></p>	2.1, 2.2, 2.3, 2.4, 2.5, 2.6	



# Computing Progression Framework

## Numbering system

Subject.Year.Strand.Statement

Text shown in **bold** is a key term, and is defined in the Glossary.

DOMAIN: INFORMATION TECHNOLOGY						
KEY STAGE 1						
Year 2						
Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant Switched on Computing unit(s)	Switched on Computing badge
Creating content	C.2.1.1. Use technology purposefully to organise, store and retrieve digital content.	<p>The child can store and retrieve content on <b>digital devices</b>.</p> <p>With a given purpose, the child can use a range of digital technologies to retrieve and store digital content. Technologies will typically include laptop computers, tablets and smartphones with access to the internet, but the child might also be expected to use digital cameras, video cameras and audio recorders (or the equivalent apps on a tablet or smartphone). Projects might include digital photography, searching for images online and creating image-based presentation slides.</p> <p><i>(E.g. In 2.3 and 2.6, take and upload digital photographs. In 2.4, save and open presentation files. In 2.5, open files attached to emails.)</i></p>	<p>The child can store, organise and retrieve content on <b>digital devices</b> for a given purpose.</p> <p>With a given purpose, the child can use a range of digital technologies to retrieve, organise and store digital content. Technologies will typically include laptop computers, tablets and smartphones with access to the internet, but the child might also be expected to use digital cameras, video cameras and audio recorders (or the equivalent apps on a tablet or smartphone). Projects might include digital photography, searching for images online and creating image-based presentation slides.</p> <p><i>(E.g. In 2.3, review, reject and rate the photographs they have taken. In 2.4, find useful information on websites. In 2.5, save and retrieve their presentations; add images or other media as appropriate. In 2.6, use questions to sort and classify objects; take, upload and organise photographs; add information to a map.)</i></p>	<p>The child can show some understanding that different types of information are all stored in a digital format on computers.</p> <p>The child can give some explanation of how information is stored on computers and other <b>digital devices</b>, recognising that information must always be stored as <b>sequences</b> of numbers, irrespective of the original form of that information.</p> <p><i>(E.g. In 2.3, recognise that digital photographs are made of pixels. In 2.5, recognise that a database contains structured information, and that recorded audio can be attached to emails as digital information. In 2.6, recognise that digital photographs are made of pixels and sometimes contain data to show where they were taken.)</i></p>	2.3, 2.4, 2.5, 2.6	Content creator 1
	C.2.1.2. Use technology purposefully to create and manipulate digital content.	<p>The child can create original content for a given purpose using digital technology.</p> <p>For a given purpose, the child can create their own original digital content using a range of technologies. Content-creation technology might include laptop computers, tablets, smartphones with <b>network</b> connections, digital cameras, video cameras and audio recorders. Projects might include digital photography, creating image-based presentation slides, composing an email and creating simple charts. Look for some indication of the child's creativity in this work.</p> <p><i>(E.g. In 2.3, take original digital photographs. In 2.4, create their own presentation. In 2.5, write an email. In 2.6, take photographs and create charts.)</i></p>	<p>The child can create and edit original content for a given purpose using digital technology.</p> <p>The child can create and edit their own original digital content using a range of technologies. Content-creation technology might include laptop computers, tablets, smartphones with <b>network</b> connections, digital cameras, video cameras and audio recorders, although editing is likely to take place on laptops or tablets. Projects might include digital photography, creating image-based presentation slides, composing an email and creating simple charts. Look for some indication of the child's creativity in this work and evidence that they have edited content.</p> <p><i>(E.g. In 2.3, take and edit original digital photographs. In 2.4, create and edit their own presentation. In 2.5, write and edit an email. In 2.6, take and edit photographs and create and edit charts.)</i></p>	<p>The child can create and edit original content for a given purpose using digital technology and paying attention to the intended audience.</p> <p>The child can create and edit their own original digital content using a range of technologies. Content-creation technology might include laptop computers, tablets, smartphones with <b>network</b> connections, digital cameras, video cameras and audio recorders, although editing is likely to take place on laptops or tablets. Projects might include digital photography, creating image-based presentation slides, composing an email and creating simple charts. Look for some indication of the child's creativity in this work and evidence that they have edited content.</p> <p><i>(E.g. In 2.3, take and edit original digital photographs, thinking about their artistic merits. In 2.4, create, edit and deliver their own presentation, thinking about how to explain their research clearly to their audience. In 2.5, write and edit an email using language appropriate for this purpose. In 2.6, take and edit photographs and create and edit charts, thinking about how to present information most effectively.)</i></p>	2.3, 2.4, 2.5, 2.6	Content creator 1

# Computing Progression Framework

## Numbering system

Subject.Year.Strand.Statement

Text shown in **bold** is a key term, and is defined in the Glossary.

DOMAIN: COMPUTER SCIENCE						
LOWER KEY STAGE 2						
Year 3						
Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant <i>Switched on Computing</i> unit(s)	<i>Switched on Computing</i> badge
Problem solving	C.3.1.1. Design, write and debug programs that accomplish specific goals.	<p>The child can design and implement some aspects of a <b>program</b> using a <b>block language</b>, which can run automatically without user interaction.</p> <p>A typical <b>program</b> might be an animation to tell a joke or part of a story, or perhaps be linked to a curriculum topic studied by the children. The <b>program</b> could use movement and on-screen dialogue. Do not expect children at this level to control interaction between two <b>sprites</b>.</p> <p><i>(E.g. In 3.1 make progress towards creating an animation in Scratch.)</i></p>	<p>The child can design and write a <b>program</b> using a <b>block language</b>, without user interaction.</p> <p>A typical program might be a <b>scripted</b> animation for a joke, part of a story, or linked to another area of the curriculum. <b>Programs</b> could use pre-built <b>sprites</b> or ones designed by the child. Expect <b>programs</b> to include movement and dialogue; they may also include sound effects and some use of costumes to allow for animated movement. There may be more than one <b>sprite</b> in the animation.</p> <p><i>(E.g. In 3.1, create an animation in Scratch.)</i></p>	<p>The child can design, write and <b>debug a program</b> using a <b>block language</b>, without user interaction.</p> <p>At this level, expect the child to have successfully <b>debugged</b> their animation <b>programs</b>, which would typically include movement, on-screen dialogue, sound, costume changes and multiple <b>sprites</b>. Animations could be linked to curriculum topics, or simply tell jokes or a story. The child should be able to explain what bugs they found and how they fixed these.</p> <p><i>(E.g. In 3.1, create an animation in Scratch, independently debugging any errors they encounter. In 3.2, debug the Scratch programs given.)</i></p>	3.1, 3.2	Problem solver 2
	C.3.1.2. Controlling or simulating physical systems.	<p>The child can understand that physical systems can be simulated on screen.</p> <p>The child can identify where a physical system has been simulated on screen, e.g. a ball bouncing on a bat or a car moving around a track. <b>Simulations</b> may be linked to topics in other curriculum areas, including science. Computer games often include <b>simulations</b> of physical systems; the child should be able to identify when this is the case.</p> <p><i>(E.g. In 3.2, use the tennis and racing car simulator programs.)</i></p>	<p>The child can explore <b>simulations</b> of physical systems on screen.</p> <p>The child can experiment with some on-screen <b>simulations</b> of physical systems, perhaps linked to topics from other curriculum areas, e.g. a ball bouncing on a bat or a car moving around a track. Many computer games include elements of computer <b>simulations</b>. The child can discuss what they have learned from using the <b>simulation</b>.</p> <p><i>(E.g. In 3.2, explore the tennis and racing car simulator programs.)</i></p>	<p>The child can develop their own <b>simulations</b> of a simple physical system on screen.</p> <p>The child can develop <b>simulations</b> of simple physical systems, e.g. a simple tennis game or a racing car moving around a track. Do not expect the child to have a full understanding of underlying physics. The child can discuss the limitations of their <b>simulation</b>.</p> <p><i>(E.g. In 3.1, create an animation of a physical system. In 3.2, fix the tennis and racing car programs.)</i></p>	3.1, 3.2	Problem solver 2



# Computing Progression Framework

## Numbering system

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DOMAIN: COMPUTER SCIENCE						
LOWER KEY STAGE 2						
Year 3						
Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant <i>Switched on Computing</i> unit(s)	<i>Switched on Computing</i> badge
Problem solving	C.3.1.3. Solve problems by decomposing them into smaller parts	<p>The child can identify parts of a project.</p> <p>When working on a project, such as an animation, a video or a survey, the child can identify the different stages of the project and/or the resources they will need for their project. In video work, parts of a project might include identifying a subject; storyboarding the video; sourcing media; recording video; filming; editing; exporting.</p> <p><i>(E.g. In 3.1, consider the different elements of an animation project. In 3.3, consider the different parts of a video project. In 3.6, consider the different parts of an online survey-based project.)</i></p>	<p>The child can plan a project.</p> <p>Working with the teacher and, perhaps, other children, the child can develop an outline plan for a project in computing, involving multiple steps and resources, e.g. creating an animation, filming a video or conducting a survey. In video work, the plan might include identifying a subject; storyboarding the video; sourcing media; recording video; filming; editing; exporting.</p> <p><i>(E.g. In 3.1, plan an animation project. In 3.3, plan their video project. In 3.6, plan their online survey-based project.)</i></p>	<p>The child can work with others to complete a project.</p> <p>In working on a project, such as an animation, a video or a survey, the child can contribute effectively to a team to accomplish the main project outcomes. In video work, the child could work with others to identify a subject; storyboard the video; source media; record video; film, edit and export.</p> <p><i>(E.g. In 3.1, work with others to complete their animation project. In 3.3, work with others to complete their video project. In 3.6, work with others to complete their online survey-based project.)</i></p>	3.1, 3.3, 3.6	Problem solver 2
		<p>The child can understand that <b>programs</b> include <b>sequences</b> of instructions.</p> <p>The child can understand that <b>programs</b> are made up of <b>sequences</b> of instructions (ideally in code they have created themselves, but possibly that of their peers or <b>programs</b> they have been provided with). A typical program could be a <b>scripted</b> animation using movement and on-screen text. The child can look at a <b>program</b> on screen and list some of the instructions it includes.</p> <p><i>(E.g. In 3.1 and 3.2, notice that programs are made of sequences of instructions.)</i></p>	<p>The child can use <b>sequence</b> in <b>programs</b>.</p> <p>In on-screen programming, the child's <b>program</b> should include a <b>sequence</b> of <b>commands</b> or <b>blocks</b> in an appropriate order. A typical program could be a simple <b>scripted</b> animation, e.g. telling a joke, a story or explaining an idea taken from elsewhere on the curriculum. The child's <b>program</b> might include multiple <b>sprites</b>; instructions could include movement, on-screen text, sound and/or costume changes.</p> <p><i>(E.g. In 3.1, use sequences of instructions in their Scratch animation program.)</i></p>	<p>The child can use <b>sequence</b> and <b>repetition</b> in <b>programs</b>.</p> <p>In on-screen programming, the child can include <b>sequences</b> of <b>commands</b> or <b>blocks</b>. The child can include some repeating <b>loops</b>, typically using a 'forever' or 'while true' construction, or <b>repetition</b> for a fixed number of times. <b>Programs</b> could include simple animations (e.g. telling a joke, a story or explaining an idea taken from elsewhere on the curriculum) but could also include music as a <b>sequence</b> of steps to play notes or drawing as a <b>sequence</b> of steps to draw a shape.</p> <p><i>(E.g. In 3.1, use sequence and repetition in their animation program. In 3.2, debug programs using sequence and repetition.)</i></p>	3.1, 3.2	Programmer 2
Programming	C.3.2.1. Use sequence, selection and repetition in programs; work with variables.	<p>The child can understand that computers accept <b>input</b> and produce <b>output</b>.</p> <p>The child can identify the most common forms of <b>input</b> (e.g. keyboard and mouse/trackpad or touch screen) and <b>output</b> (screen and speakers) for a computer. The child can distinguish between <b>input</b> and <b>output</b>.</p> <p><i>(E.g. In 3.2, notice that many of these programs accept input as well as producing output. In 3.3 and 3.6, recognise input and output.)</i></p>	<p>The child can write a <b>program</b> to produce <b>output</b> on screen.</p> <p>The child can create a <b>program</b> that produces <b>output</b> on screen, such as moving <b>sprites</b> or displayed text, e.g. a simple animation program.</p> <p><i>(E.g. In 3.1, create a simple animation program in Scratch.)</i></p>	<p>The child can write a <b>program</b> to produce <b>output</b> on screen and through speakers/headphones.</p> <p>The child can write a program that produces <b>output</b> on screen (e.g. displayed text and moving <b>sprites</b> in a simple animation) as well as some sound (e.g. recorded audio, computer-generated music or sound effects for an animation <b>program</b>).</p> <p><i>(E.g. In 3.1, create an animation program in Scratch that includes some sound effects or recorded voices.)</i></p>	3.1, 3.2, 3.3, 3.6	Programmer 2
		<p>The child can understand that computers accept <b>input</b> and produce <b>output</b>.</p> <p>The child can identify the most common forms of <b>input</b> (e.g. keyboard and mouse/trackpad or touch screen) and <b>output</b> (screen and speakers) for a computer. The child can distinguish between <b>input</b> and <b>output</b>.</p> <p><i>(E.g. In 3.2, notice that many of these programs accept input as well as producing output. In 3.3 and 3.6, recognise input and output.)</i></p>	<p>The child can write a <b>program</b> to produce <b>output</b> on screen.</p> <p>The child can create a <b>program</b> that produces <b>output</b> on screen, such as moving <b>sprites</b> or displayed text, e.g. a simple animation program.</p> <p><i>(E.g. In 3.1, create a simple animation program in Scratch.)</i></p>	<p>The child can write a <b>program</b> to produce <b>output</b> on screen and through speakers/headphones.</p> <p>The child can write a program that produces <b>output</b> on screen (e.g. displayed text and moving <b>sprites</b> in a simple animation) as well as some sound (e.g. recorded audio, computer-generated music or sound effects for an animation <b>program</b>).</p> <p><i>(E.g. In 3.1, create an animation program in Scratch that includes some sound effects or recorded voices.)</i></p>	3.1, 3.2, 3.3, 3.6	Programmer 2



# Computing Progression Framework

## Numbering system

Subject.Year.Strand.Statement

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DOMAIN: COMPUTER SCIENCE						
LOWER KEY STAGE 2						
Year 3						
Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant <i>Switched on Computing</i> unit(s)	<i>Switched on Computing</i> badge
Logical thinking	C.3.3.1. Use logical reasoning to explain how some simple algorithms work.	<p>The child can predict what an <b>algorithm</b> will do.</p> <p>The child can explain what will happen when their <b>algorithm</b> is implemented as a <b>program</b> on a computer or when its instructions or rules are followed.</p> <p><i>(E.g. In 3.1, use their storyboard to predict what happens next.)</i></p>	<p>The child can explain a simple, sequence-based <b>algorithm</b> in their own words.</p> <p>The child can give an explanation for a simple <b>algorithm</b> based on a <b>sequence</b> of instructions. The <b>algorithm</b> could be one of their own, or a simple one with which they have been provided. The <b>algorithms</b> could be recorded graphically, e.g. as a storyboard.</p> <p><i>(E.g. In 3.1, explain the idea for their animation in their own words. In 3.3, explain the idea for their video in their own words.)</i></p>	<p>The child can explain an <b>algorithm</b> using <b>sequence</b> and <b>repetition</b> in their own words.</p> <p>The child can give an explanation for a simple <b>algorithm</b> based on a <b>sequence</b> of instructions with some <b>repetition</b> (either 'forever' or for a fixed number of times). The <b>algorithm</b> could be one of their own, or a simple one with which they have been provided. The <b>algorithms</b> could be recorded graphically, such as a storyboard, or in other forms, such as staff notation.</p> <p><i>(E.g. In 3.1, explain the idea for their animation in their own words, discussing how they have used repetition in this.)</i></p>	3.1, 3.3	Logical thinker 2
	C.3.3.2. Use logical reasoning to detect and correct errors in algorithms and programs.	<p>The child can spot errors in <b>programs</b>.</p> <p>When running a <b>program</b>, the child can identify that there is an error and can describe what went wrong. The <b>programs</b> can be the child's own or ones provided for them.</p> <p><i>(E.g. In 3.1, spot bugs in their animation. In 3.2, spot bugs in the programs provided.)</i></p>	<p>The child can use logical reasoning to detect errors in programs.</p> <p>The child can give well-thought-through reasons for errors they find in <b>programs</b>. Typically, the child can find errors by reasoning logically about the <b>program</b> code, but they might also be able to use logical reasoning to identify errors in <b>programs</b> when they are executed. The <b>programs</b> do not have to be written originally by the child.</p> <p><i>(E.g. In 3.1, use logical reasoning to spot bugs in their animation. In 3.2, use logical reasoning to spot the bugs in the programs provided.)</i></p>	<p>The child can use logical reasoning to detect and correct errors in programs.</p> <p>The child can give well-thought-through reasons for errors they find in <b>programs</b> and explain how they have fixed these. The child can find and correct errors by reasoning logically about the <b>program</b> code, but they might also be able to use logical reasoning to identify errors in <b>programs</b> when executed and confirm that they have fixed these by testing the new version of their <b>program</b>. The <b>programs</b> do not have to be written originally by the child.</p> <p><i>(E.g. In 3.1, spot and correct errors in their animation using logical reasoning. In 3.2, use logical reasoning to detect and correct errors in the provided programs.)</i></p>	3.1, 3.2	Logical thinker 2

# Computing Progression Framework

## Numbering system

Subject.Year.Strand.Statement

Text shown in **bold** is a key term, and is defined in the Glossary.

DOMAIN: COMPUTER SCIENCE						
LOWER KEY STAGE 2						
Year 3						
Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant <i>Switched on Computing</i> unit(s)	<i>Switched on Computing</i> badge
Logical thinking	C.3.3.3. Understand computer networks including the internet.	<p>The child can understand that computer <b>networks</b> transmit information.</p> <p>The child can understand that information of many different sorts can be transmitted through computer <b>networks</b> including the internet. The child will understand that this is (generally) fast and reliable.</p> <p><i>(E.g. In 3.4, recognise that information is communicated through the internet. In 3.5, understand that email and videoconferencing also take place via the internet.)</i></p>	<p>The child can understand that computer <b>networks</b> transmit information in a digital (binary) format.</p> <p>The child can explain that any information has to be converted to numbers before it can travel through computer <b>networks</b>. The child should understand that this conversion happens according to an agreed system or code.</p> <p><i>(E.g. In 3.4, recognise that information is communicated through the internet in a binary code. In 3.5, understand that email and videoconferencing also take place through transmitting binary information.)</i></p>	<p>The child can understand some ways in which information can be converted into a binary code.</p> <p>The child can explain that any information has to be converted to numbers before it can travel through computer <b>networks</b>; these numbers are represented as binary (on/off or high/low) signals. The child should understand that this conversion happens according to an agreed system or code, and that a number of different systems are, or have been, used, e.g. Morse and <b>unicode</b> for text, bitmaps for images, <b>pulse code modulation (PCM)</b> encoding of audio.</p> <p><i>(E.g. In 3.4 and 3.5, think of ways in which information can be converted to a binary code.)</i></p>	3.4, 3.5	Communicator
	C.3.4.1. Understand how networks can provide multiple services, such as the world wide web.	<p>C.3.4.2. The child can understand that email works through the internet.</p> <p>The child can explain that email is sent and received via <b>servers</b> connected to the internet.</p> <p><i>(E.g. In 3.5, understand that emails are routed via the internet.)</i></p>	<p>C.3.4.3. The child can understand that email and videoconferencing are made possible through the internet.</p> <p>The child should know that email messages are sent and received through <b>servers</b> connected to the internet. The child should know that Skype and other videoconferencing systems also work through the internet, but these services may be direct, peer-to-peer connections rather than via <b>servers</b>.</p> <p><i>(E.g. In 3.5, understand that emails and videoconferencing are routed via the internet.)</i></p>	<p>C.3.4.4. The child can understand that the internet can provide a number of services in addition to the <b>web</b>.</p> <p>The child should demonstrate an understanding that the internet plays host to a range of different services including, e.g. the <b>web</b>, email, videoconferencing, online gaming, file sharing and instant messaging.</p> <p><i>(E.g. In 3.4 and 3.5, understand that services such as ping, traceroute, nslookup, email and videoconferencing all function via the internet.)</i></p>	3.4, 3.5	Communicator



# Computing Progression Framework

## Numbering system

Subject.Year.Strand.Statement

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### DOMAIN: DIGITAL LITERACY

#### LOWER KEY STAGE 2

Year 3

Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant <i>Switched on Computing</i> unit(s)	<i>Switched on Computing</i> badge
E-safety	C.3.1.1. Use technology safely, respectfully and responsibly.	<p>The child can use digital technology safely.</p> <p>The child should know that they need to keep themselves safe when using digital technology. E.g. They should take care when using the <b>Command</b> prompt and should treat attachments and links in emails with caution.</p> <p><i>(E.g. In 3.4, use the Command prompt with care. In 3.5, take care with links and attachments in email; respond appropriately to others.)</i></p>	<p>The child can use digital technology safely and show respect for others when working online.</p> <p>The child should know that they need to keep themselves safe when using digital technology. E.g. They should show respect for others when filming and should not normally post videos online. They should take care when using the <b>Command</b> prompt and should treat links and attachments in emails with caution. If responding to online surveys, they should do so anonymously, thinking carefully about information they give out.</p> <p><i>(E.g. In 3.3, take care to film appropriately and not publish video of other children. In 3.4, use the Command prompt with care. In 3.5, take care with links and attachments in email. In 3.6, ensure questions are answered anonymously.)</i></p>	<p>The child can demonstrate that they can act responsibly when using computers.</p> <p>The child can demonstrate that they act responsibly when using computers. E.g. They should contribute positively to online communities, if allowed to do so, observing the terms and conditions. They should take care when filming others and should not post videos of others online. They should treat links and attachments in emails with caution. If responding to online surveys, they should do so anonymously, thinking carefully about information they give out.</p> <p><i>(E.g. In 3.1 and 3.2, contribute positively to the Scratch community, if allowed to do so. In 3.3, take care to film appropriately and not publish video of other children. In 3.4, use the Command prompt with care. In 3.5, take care with links and attachments in email. In 3.6, ensure questions are answered anonymously.)</i></p>	3.1, 3.2, 3.3, 3.4, 3.5, 3.6	E-safety 2
	C.3.1.2. Recognise acceptable/unacceptable behaviour.	<p>The child can give examples of things that they should or should not do when using digital technology.</p> <p>The child can give some examples of things they should or should not do when using digital technology in a range of contexts. Contexts could include the Scratch website, or other online communities; using the <b>Command</b> prompt; using email; filming or sharing video; using online survey tools.</p> <p><i>(E.g. In 3.3, give examples of good or bad practice when shooting or publishing video. In 3.4, give examples of good or bad practice when using the Command prompt. In 3.5, give examples of good or bad practice when using email. In 3.6, give examples of good or bad practice when creating or completing online surveys.)</i></p>	<p>The child can recognise unacceptable behaviour when using digital technology.</p> <p>The child can identify what would be unacceptable or inappropriate behaviour when using digital technology in a range of contexts. E.g. They should know what would be unacceptable when using online communities, such as the Scratch website, or when shooting or publishing video. They should know what would be unacceptable use of the <b>Command</b> prompt, email or online survey tools.</p> <p><i>(E.g. In 3.1 and 3.2, recognise unacceptable behaviour when using the Scratch community. In 3.3, recognise unacceptable behaviour when shooting or publishing video. In 3.4, recognise unacceptable behaviour when using the Command prompt. In 3.5, recognise unacceptable behaviour when using email. In 3.6, recognise unacceptable behaviour when creating or completing online surveys.)</i></p>	<p>The child can understand the difference between acceptable and unacceptable behaviour when using digital technology.</p> <p>The child can discuss the difference between acceptable and unacceptable behaviour when using digital technology in a range of contexts. Contexts could include the Scratch website, or other online communities; using the <b>Command</b> prompt; using email; filming or sharing video; using online survey tools.</p> <p><i>(E.g. In 3.1 and 3.2, understand the difference between acceptable and unacceptable behaviour when using the Scratch community. In 3.3, understand the difference between acceptable and unacceptable behaviour when shooting or publishing video. In 3.4, understand the difference between acceptable and unacceptable behaviour when using the Command prompt. In 3.5, understand the difference between acceptable and unacceptable behaviour when using email. In 3.6, understand the difference between acceptable and unacceptable behaviour when creating or completing online surveys.)</i></p>	3.1, 3.2, 3.3, 3.4, 3.5, 3.6	E-safety 2
	C.3.1.3. Know a range of ways to report concerns and inappropriate behaviour.	<p>Know who to talk to about inappropriate behaviour in school.</p> <p>Pupils should know to report inappropriate behaviour when using technology in school to their teacher, the <b>network</b> manager or another trusted adult.</p> <p><i>(E.g. Know to tell a teacher about inappropriate behaviour in units 3.3, 3.4, 3.5 and 3.6.)</i></p>	<p>Know who to talk to about concerns and inappropriate behaviour in school.</p> <p>Pupils should know to report inappropriate behaviour when using technology in school to their teacher, the <b>network</b> manager or another trusted adult, and that they can discuss any concerns they have with their teacher or other trusted adults in school.</p> <p><i>(E.g. Know to tell a teacher about any concerns or inappropriate behaviour in any units.)</i></p>	<p>Know who to talk to about concerns and inappropriate behaviour at home or in school.</p> <p>Pupils should know to report inappropriate behaviour when using technology in school to their teacher, the <b>network</b> manager or another trusted adult, and that they can discuss any concerns they have with their teacher or other trusted adults in school. They should also know that any concerns over inappropriate behaviour with digital technology at home can be discussed with their parents, with you or with another trusted adult. Pupils might also know that they can report inappropriate behaviour to those running websites, to ChildLine, to CEOP or to the police.</p> <p><i>(E.g. Know to tell a teacher about any concerns or inappropriate behaviour in any units. Know that concerns in relation to the Scratch community can be reported to the community moderators (units 3.1 and 3.2). Know that they should talk to their parents about concerns and inappropriate behaviour outside school.)</i></p>	3.1, 3.2, 3.3, 3.4, 3.5, 3.6	E-safety 2



## Computing Progression Framework

### Numbering system

Subject.Year.Strand.Statement

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#### DOMAIN: DIGITAL LITERACY

#### LOWER KEY STAGE 2

Year 3

Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant <i>Switched on Computing</i> unit(s)	<i>Switched on Computing</i> badge
E-safety	C.3.1.4. Be discerning in evaluating digital content.	<p>The child can make choices about which web page they consider most useful.</p> <p>When given a list of web pages, the child can decide which they think will be most useful for their purpose or to answer a question they have.</p>	<p>The child can decide whether a web page is relevant for a given purpose or question.</p> <p>The child can form a judgement about whether a web page is appropriate for finding out the answer to a question they have or for a given purpose.</p>	<p>The child can decide whether digital content is relevant for a given purpose or question.</p> <p>The child can form a judgement about whether a web page or other digital content is appropriate for finding out the answer to a question they have or for a given purpose.</p> <p><i>(E.g. In 3.1, 3.3 and 3.6, carefully consider whether their work is well suited to its intended purpose.)</i></p>	Across the curriculum and 3.1, 3.3, 3.6	Searcher
	C.3.1.5. Understand the opportunities networks offer for communication and collaboration.	<p>The child can use email to communicate with a classmate.</p> <p>The child can email to communicate effectively with a classmate. This will typically be part of a whole-class activity.</p> <p><i>(E.g. In 3.5, use email to communicate.)</i></p>	<p>The child can use email and videoconferencing in class.</p> <p>When working as part of the class, the child can use email effectively and participate in a whole-class videoconference.</p> <p><i>(E.g. In 3.5, use both email and videoconferencing to communicate.)</i></p>	<p>The child can use email and videoconferencing effectively for a given purpose.</p> <p>When working as part of the class and with a given purpose, the child can use email effectively and actively participate in a whole-class videoconference.</p> <p><i>(E.g. In 3.5, use email and videoconferencing effectively for the given purpose.)</i></p>	3.5	Communicator



# Computing Progression Framework

**Numbering system**  
 Subject.Year.Strand.Statement

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## DOMAIN: INFORMATION TECHNOLOGY

### LOWER KEY STAGE 2

Year 3

Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant <i>Switched on Computing</i> unit(s)	<i>Switched on Computing</i> badge
Creating content	C.3.1.1. Select, use and combine a variety of software (including internet services) on a range of digital devices.	<p>The child can use some simple <b>programs</b> on a computer.</p> <p>The child can use a range of <b>software</b> on laptop or tablet computers, with support when necessary. <b>Software</b> might include video editing, email clients, videoconferencing (with the teacher or another adult), survey design <b>software</b> and spreadsheets.</p> <p><i>(E.g. Use Movie Maker in 3.3, use the Command prompt in 3.4, use Outlook or webmail and Skype in 3.5, use Google Forms and Google Sheets in 3.6.)</i></p>	<p>The child can use a range of <b>programs</b> on a computer.</p> <p>The child can use a range of <b>software</b> on laptop or tablet computers with some degree of independence. <b>Software</b> might include video editing, diagnostic tools, email clients, videoconferencing (with the teacher or another adult), survey design <b>software</b>, spreadsheets and presentation <b>software</b>.</p> <p><i>(E.g. Use Movie Maker in 3.3, use the Command prompt and network program in 3.4, use Outlook or webmail and Skype in 3.5, use Google Forms, Google Sheets and Google Slides in 3.6.)</i></p>	<p>The child can use and combine a range of <b>programs</b> on a computer.</p> <p>The child can use multiple <b>programs</b> on laptop or tablet computers to achieve particular goals. E.g. They might create a presentation and then email this to a classmate; create a survey using a survey design application, analyse the results in a spreadsheet and then make a presentation about their findings.</p> <p><i>(E.g. In 3.5, combine email and presentation software. In 3.6, combine Google Forms, Google Sheets and Google Slides.)</i></p>	3.3, 3.4, 3.5, 3.6	Content creator 2
	C.3.1.2. Design and create a range of programs, systems and content that accomplish given goals.	<p>The child can create content on a computer.</p> <p>The child can use <b>software</b> on a laptop or tablet to create digital content, with support if necessary. E.g. They could shoot a video, create a presentation on a given topic or create an online survey.</p> <p><i>(E.g. In 3.3, shoot video. In 3.5, compose emails and create a presentation. In 3.6, write survey questions and create a presentation.)</i></p>	<p>The child can design and create content on a computer.</p> <p>The child can plan and execute a project in which they use <b>software</b> on a laptop or tablet to create digital content with some degree of independence. E.g. They could plan and shoot a video, plan and create a presentation on a given topic or plan and then create an online survey.</p> <p><i>(E.g. In 3.3, plan and shoot video. In 3.5, plan and create a presentation. In 3.6, plan and then write survey questions, and plan and create a presentation.)</i></p>	<p>The child can design and create content on a computer in response to a given goal.</p> <p>With a given goal, the child can plan and execute a project in which they use <b>software</b> on a laptop or tablet to create digital content with some degree of independence. E.g. They could plan and shoot a video, plan and create a presentation on a given topic or plan and then create an online survey. They should evaluate how effectively they have met the requirements of the original goal.</p> <p><i>(E.g. In 3.3, plan and shoot video for a given goal. In 3.5, plan and create a presentation for a given goal. In 3.6, plan and then write survey questions, and plan and create a presentation for a given research topic.)</i></p>	3.3, 3.5, 3.6	Content creator 2
	C.3.1.3. Collecting, analysing, evaluating and presenting data and information.	<p>The child can collect information.</p> <p>The child can use computers to collect or access information. E.g. They could shoot a video, read an email or conduct an online survey. They should be able to do this with appropriate support, if necessary.</p> <p><i>(E.g. In 3.3, shoot video. In 3.5, read emails. In 3.6, read answers to survey questions.)</i></p>	<p>The child can collect and present information.</p> <p>The child can use computers to collect information and present this to an audience. E.g. They could shoot and then show a video, read and respond to an email or conduct an online survey and present the results. They should be able to do this with a degree of independence.</p> <p><i>(E.g. In 3.3, shoot and then show video. In 3.5, read and respond to email. In 3.6, collect and present survey results.)</i></p>	<p>The child can collect, evaluate and present information.</p> <p>The child can use computers to collect and evaluate information and present this to an audience. E.g. They could shoot, review and then show a video; read, consider and respond to an email or conduct an online survey, evaluate and summarise the results and present these. They should be able to do this independently for the most part.</p> <p><i>(E.g. In 3.3, shoot, review and then show video. In 3.6, collect, review and present survey results.)</i></p>	3.3, 3.5, 3.6	Content creator 2



# Computing Progression Framework

## Numbering system

Subject.Year.Strand.Statement

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### DOMAIN: INFORMATION TECHNOLOGY

### LOWER KEY STAGE 2

Year 3

Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant <i>Switched on Computing</i> unit(s)	<i>Switched on Computing</i> badge
Searching	C.3.2.1. Use search technologies effectively.	The child can search for information on a web page.  The child can use skimming and scanning strategies, and their web browser's <b>Find command</b> , to find specific information on a web page.	The child can search for information within a single site.  The child can use browser-specific tools (e.g. the <b>Find command</b> ) and site-specific tools (such as the search tools for Wikipedia or YouTube) to locate particular information on a web page or within a website.	The child can use a standard search engine to find information.  The child can use a common search engine (such as Google with <b>safe search mode</b> locked in place) effectively to search for particular information on the <b>web</b> .	To be covered across the curriculum.	Searcher
	C.3.2.2. Appreciate how search results are selected and ranked.	The child can understand that search engines make it easier to find content online.  The child can use at least one search engine to find appropriate online content. The child should consider how much harder it would be to find online content without a search engine.	The child can understand that search engines select pages according to keywords found in the content.  When using search engines, the child should demonstrate their understanding that the pages shown include the keywords they have specified. The child can use this knowledge by thinking of good keywords appropriate for what they are searching.	The child can understand that search engines rank pages according to relevance.  The child can demonstrate their understanding that search engine results are ranked according to relevance, and that normally the top results on the first page are likely to be those most relevant to their query. If the child is unable to find good results on the first page, expect them to reconsider their keywords rather than looking at further pages of results.	Covered across the curriculum.	Searcher



## Computing Progression Framework

### Numbering system

Subject.Year.Strand.Statement

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DOMAIN: COMPUTER SCIENCE						
LOWER KEY STAGE 2						
Year 4						
Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant Switched on Computing unit(s)	Switched on Computing badge
Problem solving	C.4.1.1. Design, write and debug programs that accomplish specific goals.	<p>The child can design and implement some elements of a <b>program</b> using a <b>block language</b> to a given brief, including simple interaction.</p> <p>The child can plan and partially implement a <b>program</b> in Scratch (or similar) in which the user has to provide some <b>input</b>, perhaps as an answer to a question on screen, or by using key presses or the mouse.</p> <p><i>(E.g. In 4.1, make progress towards developing a simple educational game, e.g. a maths quiz, in Scratch. In 4.2, develop some elements of their interactive toy prototype in Scratch.)</i></p>	<p>The child can design and write a <b>program</b> using a <b>block language</b> to a given brief, including simple interaction.</p> <p>The child can write a <b>program</b> in Scratch (or similar) in which the user has to provide some <b>input</b>, perhaps as an answer to a question on screen, or by using key presses or the mouse. The <b>program</b> could be a simple game or a set of questions and typed responses.</p> <p><i>(E.g. In 4.1, plan and develop a simple educational game, e.g. a maths quiz, in Scratch. In 4.2, plan and develop a prototype for an interactive toy in Scratch.)</i></p>	<p>The child can design, write and <b>debug</b> a <b>program</b> using a <b>block language</b> to a given brief, including simple interaction.</p> <p>The child can write a <b>program</b> in Scratch (or similar) in which the user has to provide some <b>input</b>, perhaps as an answer to a question on screen, or by using key presses or the mouse. The child can <b>debug</b> their code thoroughly, explain what bugs they found and what they needed to do to correct these.</p> <p><i>(E.g. In 4.1, plan and develop a simple educational game in Scratch, e.g. a maths quiz, correcting any bugs themselves. In 4.2, plan and develop a prototype for an interactive toy in Scratch, correcting any bugs themselves.)</i></p>	4.1, 4.2	Problem solver 2
	C.4.1.2. Controlling or simulating physical systems.	<p>The child can implement some elements of a <b>simulation</b> on screen.</p> <p>The <b>simulation</b> could be of a physical system (such as an interactive toy or a set of traffic lights), perhaps as a simple animation or as an on-screen prototype for a product made in design and technology.</p> <p><i>(E.g. In 4.2, create some elements of an on-screen prototype for an interactive toy.)</i></p>	<p>The child can develop their own <b>simulation</b> of a simple physical system on screen.</p> <p>The child can create a Scratch (or similar) <b>program</b> to simulate a simple physical system. This could be in the form of a simple animation or an on-screen prototype for a product made in design and technology.</p> <p><i>(E.g. In 4.2, develop a prototype for an interactive toy.)</i></p>	<p>The child can develop their own <b>simulation</b> of a physical system on screen including interactivity.</p> <p>The child can create a Scratch (or similar) <b>program</b> to simulate a simple physical system including some elements of interaction with the user. This could be in the form of a simple computer game or an interactive on-screen prototype for a product made in design and technology. Interaction is likely to be via the mouse pointer.</p> <p><i>(E.g. In 4.2, develop a working prototype for an interactive toy that responds to user input.)</i></p>	4.1, 4.2	Problem solver 2
	C.4.1.3. Solve problems by decomposing them into smaller parts.	<p>The child can identify different ways to tackle a project.</p> <p>Given a particular project, the child can scope a number of alternative approaches to tackling it.</p> <p><i>(E.g. In 4.1 and 4.2, think of different ways to tackle these programming projects. In 4.5, think of different ways to work together on a wiki.)</i></p>	<p>The child can work with others to plan a project.</p> <p>Given a particular project, the child can work as part of a team to plan how to accomplish their goal, breaking the project down into a set of tasks. Examples of projects could include creating an educational game, developing a wiki or monitoring the weather.</p> <p><i>(E.g. In 4.1 and 4.2, work with a partner to plan how to tackle these programming projects. In 4.5 and 4.6, contribute to a discussion about how the class could create a wiki or monitor and forecast the weather.)</i></p>	<p>The child can work collaboratively to complete a project according to an agreed plan.</p> <p>Given a particular project, the child can work as part of a team to plan how to accomplish their goal, breaking the project down into a set of tasks. They should use this plan to accomplish their project as a team. Examples of projects could include creating an educational game, developing a wiki or monitoring the weather.</p> <p><i>(E.g. In 4.1 and 4.2, work with a partner to plan and carry out these programming projects. In 4.5 and 4.6, contribute effectively to class projects on developing a wiki and monitoring and forecasting the weather.)</i></p>	4.1, 4.2, 4.5, 4.6	Problem solver 2
Programming	C.4.2.1. Use sequence, selection and repetition in programs; work with variables.	<p>The child can use <b>sequence</b> in <b>programs</b>.</p> <p>In on-screen programming, the child's program should include a <b>sequence</b> of <b>commands</b> or <b>blocks</b> in an appropriate order. A typical program could be a simple <b>scripted</b> animation, a turtle graphic or a musical composition.</p> <p><i>(E.g. In 4.1, write a maths test program using sequences of instructions. In 4.2, create a prototype for an interactive toy using sequences of instructions. In 4.3, create compositions as sequences of notes.)</i></p>	<p>The child can use <b>sequence</b> and <b>repetition</b> in <b>programs</b>.</p> <p>The child's program, typically written in Scratch, or similar, should include <b>sequences</b> of <b>commands</b> or <b>blocks</b> and some <b>repetition</b>. <b>Repetition</b> would typically be for a fixed number of times, but might also include exit conditions (e.g. repeat...until...). <b>Programs</b> might include turtle graphics, simple music or a simple game.</p> <p><i>(E.g. In 4.1, write a maths test program using sequences of instructions and repetition. In 4.2, create a prototype for an interactive toy using sequences of instructions and repetition. In 4.3, create compositions as sequences of notes with some repeating elements, e.g. a bass line.)</i></p>	<p>The child can use <b>sequence</b>, <b>selection</b> and <b>repetition</b> in <b>programs</b>.</p> <p>The child's program, typically written in Scratch, or similar, should include <b>sequences</b> of <b>commands</b> or <b>blocks</b>, some <b>repetition</b> and <b>selection</b>. <b>Repetition</b> might include exit conditions (e.g. repeat...until...). <b>Selection</b> would normally be of an if...then type. At this level, expect the child to be able to combine <b>repetition</b> with <b>selection</b>. <b>Programs</b> might include a simple game and an on-screen <b>simulation</b> or prototype.</p> <p><i>(E.g. In 4.1, use sequence, selection and repetition in their maths test game. In 4.2, use sequence, selection and repetition in their toy prototype.)</i></p>	4.1, 4.2, 4.3	Programmer 2



## Computing Progression Framework

### Numbering system

Subject.Year.Strand.Statement

Text shown in **bold** is a key term, and is defined in the Glossary.

DOMAIN: COMPUTER SCIENCE						
LOWER KEY STAGE 2						
Year 4						
Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant Switched on Computing unit(s)	Switched on Computing badge
Programming	C.4.2.2. Work with various forms of input and output.	The child can write a <b>program</b> to produce <b>output</b> on screen.  The child can write a <b>program</b> in which <b>sprites</b> move on screen and/or text is displayed on screen.  <i>(E.g. In 4.1, questions should be displayed on screen. In 4.2, toy should be shown on screen.)</i>	The child can write a <b>program</b> that accepts keyboard <b>input</b> and produces on-screen <b>output</b> .  In Scratch (or similar), the child can write a <b>program</b> that displays a question, accepts typed <b>input</b> and responds in an appropriate way to what is typed. This might be used as the basis for a dialogue <b>program</b> or a simple maths game.  <i>(E.g. In 4.1, display questions on screen and accept typed input. In 4.2, show toy on screen and have it respond to key presses.)</i>	The child can write a <b>program</b> that accepts keyboard or other <b>input</b> and produces <b>output</b> on screen and through speakers.  In Scratch (or similar), the child could write a <b>program</b> that displays a question on screen or reads a question aloud, accepts a typed answer and then shows appropriate <b>output</b> on screen and plays an appropriate effect through the speakers. Alternatively, or additionally, the child could create a simple computer game, using the keyboard or mouse for <b>input</b> and the screen and speakers for <b>output</b> .  <i>(E.g. In 4.1, display questions on screen and provide some stimulus or feedback through speakers (e.g. sound effects or voice-over); accept input via typed responses or through clicking on multiple-choice elements on screen. In 4.2, show toy on screen and include some sound effects; respond to key presses or mouse clicks on screen.)</i>	4.1, 4.2	Programmer 2
Logical thinking	C.4.3.1. Use logical reasoning to explain how some simple algorithms work.	The child can explain a simple, sequence-based <b>algorithm</b> in their own words.  Given an <b>algorithm</b> using a <b>sequence</b> of steps, the child can give a coherent, logically reasoned explanation of what it does and how it works. The <b>algorithm</b> could be linked to an animation or music.  <i>(E.g. In 4.1, explain the algorithm for their question and answer game. In 4.2, explain the algorithms used in their toy. In 4.3, discuss their compositions.)</i>	The child can explain an <b>algorithm</b> using <b>sequence</b> and <b>repetition</b> in their own words.  Given an <b>algorithm</b> using both <b>sequence</b> and <b>repetition</b> , the child can give a coherent, logically reasoned explanation of what it does and how it works. <b>Repetition</b> is likely to be 'forever' or for a set number of times, although end conditions (e.g. repeat...until...) could be used.  <i>(E.g. In 4.1, explain the algorithm for their question and answer game, including repeating elements. In 4.2, explain the algorithms used in their toy, including repeating elements. In 4.3, discuss their compositions, including repeating patterns of notes.)</i>	The child can explain an <b>algorithm</b> using <b>sequence</b> , <b>repetition</b> and <b>selection</b> in their own words.  Given an <b>algorithm</b> using <b>sequence</b> , <b>repetition</b> and <b>selection</b> , the child can give a coherent, logically reasoned explanation of what it does and how it works. <b>Repetition</b> is likely to be using end conditions (e.g. repeat...until...), and <b>selection</b> is likely to be simply if...then. The <b>algorithm</b> for a simple, multi-question arithmetic test might be a good example.  <i>(E.g. In 4.1, explain the algorithm for their question and answer game, including how they have used repetition and selection. In 4.2, explain the algorithms used in their toy, including how they have used repetition and selection.)</i>	4.1, 4.2, 4.3	Logical thinker 2
	C.4.3.2. Use logical reasoning to detect and correct errors in algorithms and programs.	The child can use logical reasoning to detect errors in <b>programs</b> .  The child can give well-thought-through reasons for errors they find in <b>programs</b> . Typically, the child can find errors by reasoning logically about the <b>program</b> code, but they might also be able to use logical reasoning to identify errors in <b>programs</b> when they are executed. The <b>programs</b> do not have to be written originally by the child.  <i>(E.g. Use logical reasoning to spot errors in their own programs in 4.1 and 4.2, or in their compositions in 4.3.)</i>	The child can use logical reasoning to detect and correct errors in <b>programs</b> .  The child can give well-thought-through reasons for errors they find in <b>programs</b> and explain how they have fixed these. The child can find and correct errors by reasoning logically about the <b>program</b> code; they might also be able to use logical reasoning to identify errors in <b>programs</b> when executed and confirm that they have fixed these by testing the new version of their <b>program</b> . The programs do not have to be written originally by the child.  <i>(E.g. Use logical reasoning to spot and correct errors in their own programs in 4.1 and 4.2, or in their compositions in 4.3.)</i>	The child can give reasons for errors in <b>programs</b> and explain how they have corrected these.  The child can give well-thought-through reasons for errors they find in <b>programs</b> and can explain, again using clear and logical reasoning, how they have fixed these. The child can find and correct errors by reasoning about the <b>program</b> code without having to run the <b>program</b> .  <i>(E.g. In 4.1 and 4.2, explain the errors in their programs and how to fix them. In 4.3, explain the errors in their compositions and how to correct them.)</i>	4.1, 4.2, 4.3	Logical thinker 2



## Computing Progression Framework

### Numbering system

Subject.Year.Strand.Statement

Text shown in **bold** is a key term,  
and is defined in the Glossary.

#### DOMAIN: COMPUTER SCIENCE

#### LOWER KEY STAGE 2

#### Year 4

Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant <i>Switched on Computing</i> unit(s)	<i>Switched on Computing</i> badge
Logical thinking	C.4.3.3. Understand computer networks including the internet.	<p>The child can understand that computer <b>networks</b> transmit information in a digital (binary) format.</p> <p>The child can explain that any information has to be converted to numbers before it can travel through computer <b>networks</b>. The child should understand that this conversion happens according to an agreed system or code.</p> <p><i>(E.g. In 4.3, understand that music is represented digitally on a computer. In 4.4, understand that HTML is transmitted digitally via the internet. In 4.6, understand that a process of digitisation happens in digital weather sensors.)</i></p>	<p>The child can understand that the internet transmits information as <b>packets of data</b>.</p> <p>When working online, the child can explain that the information they send and receive is automatically broken down into <b>packets of data</b>, and that these sometimes take different routes across the internet.</p> <p><i>(E.g. In 4.3, understand that music is broken down into packets for transmission over the internet. In 4.4, understand that the HTML for a web page is broken into packets for transmission over the internet.)</i></p>	<p>The child can understand that <b>packets</b> are not routinely <b>encrypted</b> on the internet.</p> <p>The child should show an awareness that their emails, requests for web pages and the contents of those pages, can be viewed by others, e.g. the school's <b>network</b> manager or internet provider. They might also show an awareness of when content is <b>encrypted</b> (e.g. passwords or <b>HTTPS web</b> traffic).</p> <p><i>(E.g. In 4.4, realise that the web pages they create are transmitted without any guarantee of privacy over the internet. In 4.5, realise that requests for, and contents of, wiki pages are transmitted without any guarantee of privacy over the internet.)</i></p>	4.3, 4.4, 4.5	Communicator
	C.4.4.1. Understand how networks can provide multiple services, such as the world wide web.	<p>The child can understand that the internet and the <b>web</b> are not the same.</p> <p>The child can give a clear explanation of some of the differences between the internet and the <b>web</b>.</p> <p><i>(E.g. In 4.4 and 4.5, recognise the difference between the web and the internet.)</i></p>	<p>The child can understand how the internet makes the <b>web</b> possible.</p> <p>The child can give an explanation of how requests for web pages, and the <b>HTML</b> for those pages, are transmitted via the internet.</p> <p><i>(E.g. In 4.4 and 4.5, recognise how the internet makes it possible to request and receive web pages.)</i></p>	<p>The child can show an awareness of how <b>HTTP</b> operates.</p> <p>The child can give an explanation of how <b>HTTP</b> GET requests and responses are transmitted via the internet, and show some awareness of how <b>URLs</b> are made up.</p> <p><i>(E.g. In 4.4 and 4.5, recognise the request and response aspects of HTTP; show some understanding of how data can be sent to the web server, e.g. edits to a Wikipedia page; be familiar with 404 not-found errors.)</i></p>	4.4, 4.5	Communicator



# Computing Progression Framework

## Numbering system

Subject.Year.Strand.Statement

Text shown in **bold** is a key term, and is defined in the Glossary.

DOMAIN: DIGITAL LITERACY						
LOWER KEY STAGE 2						
Year 4						
Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant Switched on Computing unit(s)	Switched on Computing badge
E-safety	C.4.1.1. Use technology safely, respectfully and responsibly.	<p>The child can use digital technology safely and show respect for others when working online.</p> <p>The child should know that they need to keep themselves safe when using digital technology. E.g. They should be respectful to others in online communities, such as the Scratch community, if they are allowed to use this. They should show respect when creating or remixing web pages. They should respect others' points of view when editing wiki pages.</p> <p><i>(E.g. In 4.1 and 4.2, show respect for others when using the Scratch community, if permitted to do so. In 4.4, take care to act respectfully when creating or remixing web pages. In 4.5, show respect for others' content and points of view when editing wiki pages.)</i></p>	<p>The child can demonstrate that they can act responsibly when using computers.</p> <p>The child can act responsibly when using computers. E.g. They should act responsibly when developing computer games or prototype products. They should behave responsibly when using sampled music or creating a composition. They should show responsibility when creating or remixing online content, including observing copyright and any terms and conditions. They should contribute positively to a shared wiki.</p> <p><i>(E.g. In 4.1 and 4.2, act responsibly in developing their game and toy prototype. In 4.3, act responsibly when creating their composition. In 4.4, take care to act responsibly when creating or remixing web pages, including observing copyright. In 4.5, contribute positively to the class wiki.)</i></p>	<p>The child can demonstrate that they can act responsibly when using the internet.</p> <p>The child can act responsibly when using the internet. E.g. They should act responsibly in participating in an online community, such as the Scratch community, if they are allowed to use this. They should show responsibility when creating or remixing online content, including observing copyright and any terms and conditions. They should contribute positively to a shared wiki and/or Simple Wikipedia.</p> <p><i>(E.g. In 4.1 and 4.2, contribute positively to the Scratch community, if permitted to do so. In 4.4, take care to act responsibly when creating or remixing web pages, including observing copyright. In 4.5, contribute positively to the class wiki and to Simple Wikipedia.)</i></p>	4.1, 4.2, 4.3, 4.4, 4.5	E-safety 2
	C.4.1.2. Recognise acceptable/unacceptable behaviour.	<p>The child can recognise unacceptable behaviour when using digital technology.</p> <p>The child can identify what would be unacceptable or inappropriate behaviour when using digital technology in a range of contexts. E.g. They should know what would be unacceptable when using online communities, such as the Scratch website. They should recognise that copyright and the terms and conditions of web-based services should be respected. They should know what would be unacceptable in remixing a web page or editing a class wiki or Wikipedia.</p> <p><i>(E.g. In 4.1 and 4.2, recognise what would be unacceptable in the Scratch community. In 4.3, recognise the importance of respecting copyright. In 4.4, recognise what would be unacceptable in a remix of a web page. In 4.5, recognise what would be unacceptable edits in the class wiki or on Wikipedia.)</i></p>	<p>The child can understand the difference between acceptable and unacceptable behaviours when using digital technology.</p> <p>The child can discuss the difference between acceptable and unacceptable behaviours when using digital technology in a range of contexts. Contexts could include the Scratch website, or other online communities; the use of others' original content, such as music samples or web pages; wikis, including Wikipedia.</p> <p><i>(E.g. In 4.1 and 4.2, know the difference between acceptable and unacceptable behaviour in the Scratch community. In 4.4, know the difference between acceptable and unacceptable web pages and remixes, recognising what constitutes parody or fair use. In 4.5, recognise the difference between acceptable and unacceptable behaviour in a class wiki or on Wikipedia.)</i></p>	<p>The child can discuss the consequences of particular behaviours when using digital technology.</p> <p>The child can discuss the likely or possible consequences of particular behaviours when using digital technology in a range of contexts. Contexts could include the Scratch website, or other online communities; the use of others' original content, such as music samples or web pages; wikis, including Wikipedia.</p> <p><i>(E.g. In 4.1 and 4.2, consider the consequences of positive or negative behaviour in the Scratch community. In 4.4, consider the consequences of positive or negative behaviour when remixing web content or creating web pages. In 4.5, consider the consequences of positive or negative behaviour when editing a class wiki or Wikipedia.)</i></p>	4.1, 4.2, 4.3, 4.4, 4.5	E-safety 2



# Computing Progression Framework

## Numbering system

Subject.Year.Strand.Statement

Text shown in **bold** is a key term, and is defined in the Glossary.

DOMAIN: DIGITAL LITERACY						
LOWER KEY STAGE 2						
Year 4						
Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant Switched on Computing unit(s)	Switched on Computing badge
E-safety	C.4.1.3. Know a range of ways to report concerns and inappropriate behaviour.	<p>Know who to talk to about concerns and inappropriate behaviour in school.</p> <p>Pupils should know to report inappropriate behaviour when using technology in school to their teacher, the <b>network</b> manager or another trusted adult, and that they can discuss any concerns they have with their teacher or other trusted adults in school.</p> <p><i>(E.g. Know to tell a teacher about any concerns or inappropriate behaviour in any units.)</i></p>	<p>Know who to talk to about concerns and inappropriate behaviour at home or in school.</p> <p>Pupils should know to report inappropriate behaviour when using technology in school to their teacher, the <b>network</b> manager or another trusted adult, and that they can discuss any concerns they have with their teacher or other trusted adults in school. They should also know that any concerns over, or inappropriate behaviour with, digital technology at home can be discussed with their parents, with you or with another trusted adult.</p> <p><i>(E.g. Know to tell a teacher about any concerns or inappropriate behaviour in any units. Know that concerns in relation to the Scratch community can be reported to the community moderators (units 4.1 and 4.2). Know that they should talk to their parents about concerns and inappropriate behaviour outside school.)</i></p>	<p>Know how to report concerns and inappropriate behaviour in a range of contexts.</p> <p>Pupils should know how to report inappropriate behaviour when using technology in school: typically this will be to their teacher, the <b>network</b> manager or another trusted adult. They should know how to report any concerns over, or inappropriate behaviour with, digital technology at home. Preferably this would be through discussion with their parents, with you or with another trusted adult. Pupils should also know how to report inappropriate behaviour to those running websites which they regularly use, and to ChildLine, CEOP or to the police.</p> <p><i>(E.g. Know to tell a teacher about any concerns or inappropriate behaviour in any units. Know that concerns in relation to the Scratch community can be reported to the community moderators (units 4.1 and 4.2). In unit 4.3, know that concerns over illegal web content can be reported to the police, but be aware that other countries have different legal codes. In unit 4.5, have some understanding of how the Wikipedia community deals with concerns and inappropriate behaviour. Know that they should talk to their parents about concerns and inappropriate behaviour outside school.)</i></p>	4.1, 4.2, 4.3, 4.4, 4.5, 4.6	E-safety 2
	C.4.1.4. Be discerning in evaluating digital content.	<p>The child can decide whether a web page is relevant for a given purpose or question.</p> <p>The child can form a judgement about whether a web page, such as a Wikipedia article, is appropriate for finding out the answer to a question they have or for a given purpose.</p> <p><i>(E.g. In 4.5, decide if a given Wikipedia page is helpful for the topic they are researching.)</i></p>	<p>The child can decide whether digital content is relevant for a given purpose or question.</p> <p>The child can form a judgement about whether a web page, such as a Wikipedia article, or other digital content is appropriate for finding out the answer to a question they have or for a given purpose.</p> <p><i>(E.g. In 4.5, decide if a given Wikipedia page or other content is helpful for the topic they are researching.)</i></p>	<p>The child can decide whether digital content is reliable and unbiased.</p> <p>The child can discuss whether particular content, such as a Wikipedia article or a page in a class wiki, is reliable and whether it has been written from a neutral point of view. They should be able to spot some examples of bias in digital content.</p> <p><i>(E.g. In 4.5, decide if pages in the class wiki are reliable and presented from a neutral point of view; decide whether Simple Wikipedia pages meet the Wikipedia community's standards for authority and neutrality.)</i></p>	4.5	Searcher
	C.4.1.5. Understand the opportunities networks offer for communication and collaboration.	<p>The child can contribute to a shared wiki.</p> <p>The child can contribute positively to a shared project such as a class wiki.</p> <p><i>(E.g. In 4.5, contribute to the class wiki.)</i></p>	<p>The child can work collaboratively with classmates on a shared wiki.</p> <p>The child can work collaboratively with their peers on a shared project, such as a class wiki, making useful contributions and providing feedback to others.</p> <p><i>(E.g. In 4.5, make useful contributions to the class wiki and provide feedback to others on their pages.)</i></p>	<p>The child can work collaboratively on a shared wiki, making changes to others' pages.</p> <p>The child can work collaboratively with their peers on a shared project, such as a class wiki, making useful contributions and constructive edits to pages begun by others.</p> <p><i>(E.g. In 4.5, make positive contributions to the class wiki and helpful edits to others' pages.)</i></p>	4.5	Communicator



# Computing Progression Framework

## Numbering system

Subject.Year.Strand.Statement

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### DOMAIN: INFORMATION TECHNOLOGY

#### LOWER KEY STAGE 2

#### Year 4

Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant <i>Switched on Computing</i> unit(s)	<i>Switched on Computing</i> badge
Creating content	C.4.1.1. Select, use and combine a variety of software (including internet services) on a range of digital devices.	<p>The child can use a range of <b>programs</b> on a computer.</p> <p>The child can use a range of <b>software</b> on laptop or tablet computers, possibly with some support as appropriate. <b>Software</b> might include audio editing, music composition, web browsers, text editors, spreadsheets and presentation <b>software</b>.</p> <p><i>(E.g. Use music software in 4.3, use web browsers in 4.4 and 4.5, use a text editor in 4.4, use spreadsheet and presentation software in 4.6.)</i></p>	<p>The child can use and combine a range of <b>programs</b> on a computer.</p> <p>The child can use multiple <b>programs</b> on laptop or tablet computers to achieve particular goals. E.g. They might record audio and then use this as samples in a composition; create <b>HTML</b> content in a text editor and preview it in a browser; analyse <b>data</b> in a spreadsheet and then create a presentation to show the results of their analysis.</p> <p><i>(E.g. Combine composition and audio editing software in 4.3, combine a text editor and web browser in 4.4, combine spreadsheet and presentation software in 4.6.)</i></p>	<p>The child can use and combine a range of <b>programs</b> on multiple devices.</p> <p>The child can use multiple <b>digital devices</b> (such as tablets and laptops or digital cameras and laptops) to achieve particular goals. The devices might include web <b>servers</b>, allowing them to use cloud-based applications. E.g. They might use portable audio recorders to collect audio samples and then laptop-based sequencing <b>software</b> to use these in their own composition; a laptop text editor and a web <b>server</b> to create and host a web page; a digital weather station and a laptop spreadsheet <b>program</b> to collect and record weather <b>data</b>.</p> <p><i>(E.g. Use audio recorders, computers and web-based applications in 4.3, use desktop and web-based applications in 4.4, use weather sensors, desktop computers and web-based services in 4.6.)</i></p>	4.3, 4.4, 4.5, 4.6	Content creator 2
	C.4.1.2. Design and create a range of programs, systems and content that accomplish given goals.	<p>The child can design and create content on a computer.</p> <p>The child can plan and execute a project in which they use <b>software</b> on a laptop or tablet to create digital content, with appropriate support if necessary. E.g. They could plan and compose original music using sequencing software; plan and create a web page; plan how they could contribute to a shared wiki and then do so; plan and create a presentation about the weather.</p> <p><i>(E.g. In 4.3, compose original music. In 4.4, create web content through writing HTML code. In 4.5, contribute content to a wiki. In 4.6, create a presentation on the weather.)</i></p>	<p>The child can design and create content on a computer in response to a given goal.</p> <p>With a given goal, the child can plan and execute a project in which they use <b>software</b> on a laptop or tablet to create digital content with some degree of independence. E.g. They could plan and compose original music using sequencing software; plan and create a web page; plan how they could contribute to a shared wiki and then do so; plan and create a presentation about the weather. They should evaluate how effectively they have met the requirements of the original goal.</p> <p><i>(E.g. In 4.3, compose original music for a particular purpose. In 4.4, create web content through writing HTML code for a particular purpose. In 4.5, contribute content to a wiki for a particular purpose. In 4.6, create a presentation on the weather.)</i></p>	<p>The child can design and create content on a computer in response to a given goal, paying attention to the needs of a known audience.</p> <p>With a given goal and a known audience in mind, the child can plan and execute a project in which they use <b>software</b> on a laptop or tablet to create digital content with some degree of independence. E.g. They could plan and compose original music using sequencing software; plan and create a web page; plan how they could contribute to a shared wiki and then do so; plan and create a presentation about the weather. They should evaluate how effectively they have met the requirements of the original goal and the needs of the intended audience.</p> <p><i>(E.g. In 4.3, compose original music for a particular purpose and with a particular audience in mind. In 4.4, create web content through writing HTML code for a particular purpose and with a particular audience in mind. In 4.5, contribute content to a wiki for a particular purpose and with a particular audience in mind; contribute to Simple Wikipedia. In 4.6 create a presentation on the weather with a particular audience in mind.)</i></p>	4.3, 4.4, 4.5, 4.6	Content creator 2
	C.4.1.3. Collecting, analysing, evaluating and presenting data and information.	<p>The child can collect <b>data</b>.</p> <p>The child can use computers to collect numerical <b>data</b> with appropriate support, if necessary. E.g. They could collect and present <b>data</b> about the weather over a period of time.</p> <p><i>(E.g. In 4.3, record audio samples. In 4.6, record weather data.)</i></p>	<p>The child can collect and present <b>data</b>.</p> <p>The child can use computers to collect numerical <b>data</b> and present this to an audience. E.g. They could collect and present <b>data</b> about the weather over a period of time. They should be able to do this with a degree of independence.</p> <p><i>(E.g. In 4.3, record and use audio samples. In 4.6, collect weather data and make a presentation about the weather.)</i></p>	<p>The child can collect, analyse and present <b>data</b>.</p> <p>The child can use computers to collect numerical <b>data</b>, analyse this (typically in a spreadsheet) and present this to an audience. E.g. They could collect, analyse and present <b>data</b> about the weather over a period of time. They should be able to do this with a degree of independence.</p> <p><i>(E.g. In 4.6, collect weather data, use this to look for trends or patterns, and make a presentation about the weather.)</i></p>	4.3, 4.6	Content creator 2



## Computing Progression Framework

### Numbering system

Subject.Year.Strand.Statement

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#### DOMAIN: INFORMATION TECHNOLOGY

#### LOWER KEY STAGE 2

#### Year 4

Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant <i>Switched on Computing</i> unit(s)	<i>Switched on Computing</i> badge
Searching	C.4.2.1. Use search technologies effectively.	<p>The child can search for information within a single site.</p> <p>The child can use browser- and site-specific tools to locate particular information on a web page or within a website such as Wikipedia.</p> <p><i>(E.g. In 4.5, find information on Wikipedia.)</i></p>	<p>The child can use a standard search engine to find information.</p> <p>The child can use a common search engine (such as Google with <b>safe search mode</b> locked in place) effectively, to search for particular information on the <b>web</b>, such as answers to questions they identify in a research project.</p> <p><i>(E.g. In 4.5, use Google to support their wiki research project.)</i></p>	<p>The child can use filters to make more effective use of a standard search engine.</p> <p>The child can use a common search engine (such as Google with <b>safe search mode</b> locked in place) effectively, to search for particular information on the <b>web</b>, such as answers to questions they identify in a research project. They should use built-in search tools to filter their results, such as by time, location or reading level.</p> <p><i>(E.g. In 4.5, use filters to make their use of Google in support of their research project more effective.)</i></p>	4.5 and across the curriculum.	Searcher
	C.4.2.2. Appreciate how search results are selected and ranked.	<p>The child can understand that search engines select pages according to keywords found in the content.</p> <p>When using search engines, the child should demonstrate their understanding that the pages shown include the keywords they have specified. The child can use this knowledge by thinking of good keywords appropriate for what they're searching.</p> <p><i>(E.g. In 4.6, know how to search for content in Wikipedia.)</i></p>	<p>The child can understand that search engines rank pages according to relevance.</p> <p>The child can demonstrate their understanding that search engine results are ranked according to relevance, and that normally the top results on the first page are likely to be those most relevant to their query. If the child is unable to find good results on the first page, expect them to reconsider their keywords rather than looking at further pages of results.</p> <p><i>(E.g. In 4.6, appreciate how Wikipedia's search engine ranks results.)</i></p>	<p>The child can understand that search engines use a <b>cached</b> copy of the crawled <b>web</b> to select and rank results.</p> <p>The child can explain how a search engine creates an index from a <b>cached</b> copy of the <b>web</b> and uses this to select and rank results. The child might also show an awareness of the Page Rank <b>algorithm</b> in which results are ranked according to the number and quality of in-bound links.</p> <p><i>(To be assessed across the curriculum.)</i></p>	4.6	Searcher



# Computing Progression Framework

## Numbering system

Subject.Year.Strand.Statement

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DOMAIN: COMPUTER SCIENCE						
UPPER KEY STAGE 2						
Year 5						
Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant Switched on Computing unit(s)	Switched on Computing badge
Problem solving	C.5.1.1. Design, write and debug programs that accomplish specific goals	<p>The child can design and write a <b>program</b> using a <b>block language</b> based on their own ideas.</p> <p>The child can design a <b>program</b> of their own and write this in a <b>block-based</b> language such as Scratch. The <b>program</b> need not be complex (a simple game or a turtle graphics <b>program</b> would suffice) but it should be accomplished with a degree of independent working.</p> <p><i>(E.g. In 5.1, design and write their own game in Scratch. In 5.3, design and program their own geometric pattern in Scratch.)</i></p>	<p>The child can design, write and <b>debug</b> a <b>program</b> using a <b>block language</b> based on their own ideas.</p> <p>The child can design a <b>program</b> of their own and write this in a <b>block-based</b> language such as Scratch. The child can test and <b>debug</b> their code, explain what bugs they found and how they fixed them. The <b>program</b> need not be complex (a simple game or a turtle graphics <b>program</b> would suffice) but it should be accomplished with a degree of independent working.</p> <p><i>(E.g. In 5.1, design, write and debug their own game in Scratch. In 5.3 design, program and debug their own geometric pattern in Scratch.)</i></p>	<p>The child can design, write and <b>debug</b> a <b>program</b> using a <b>block language</b> based on their own ideas; the child can use iterative development to make improvements.</p> <p>The child can design a <b>program</b> of their own and write this in a <b>block-based</b> language such as Scratch. The child can test and <b>debug</b> their code, explain what bugs they found and how they fixed them. The child can then review their code, decide for themselves how this might be extended or improved, and then implement, test and <b>debug</b> these modifications. The <b>program</b> should be accomplished with a degree of independent working.</p> <p><i>(E.g. In 5.1, design, write and debug their own game in Scratch. In 5.3, design, program and debug their own geometric pattern in Scratch. They should use iterative development approaches to make improvements to these.)</i></p>	5.1, 5.3	Problem solver 2
	C.5.1.2. Controlling or simulating physical systems.	<p>The child can understand that physical systems can be controlled by a computer.</p> <p>The child can give some examples of physical systems that are controlled by computers - these could include real-world examples such as engine management systems, refrigerators, DVD players or their own products made in design and technology.</p>	<p>The child can experiment with computer control applications.</p> <p>The child can use simple computer control and/or sensors with products they make in design and technology, perhaps using Lego WeDo kits, MaKey MaKey or similar.</p>	<p>The child can develop their own simple computer control application.</p> <p>The child can add computer control and/or sensors to products they design and make in design and technology, perhaps using Lego WeDo kits, MaKey MaKey or similar.</p>	Typically covered as part of the design and technology curriculum. See also <i>Switched on ICT Control</i> units.	Problem solver 2
	C.5.1.3. Solve problems by decomposing them into smaller parts.	<p>The child can identify component parts of a problem.</p> <p>When given a complex problem or project, the child can identify the component parts of the problem or project and explain how they might tackle these in order to solve the original problem or complete the given project. Projects might include designing a computer game, creating a website or designing a building.</p> <p><i>(E.g. In 5.1, think about the different parts of a game. In 5.4, think about the different elements that make up a web page or a website. In 5.6, think of the different parts of a building.)</i></p>	<p>The child can plan a solution to a problem using decomposition.</p> <p>The child can take a complex problem, identify component parts, use decomposition to break this problem down and then plan how they can solve the problem by working through the elements they have identified. Projects could include developing a computer game, creating a website or designing a building.</p> <p><i>(E.g. In 5.1, use decomposition to plan how they will create their game. In 5.4, use decomposition to plan how to make a website. In 5.6, use decomposition to plan how to create a virtual art gallery.)</i></p>	<p>The child can solve problems using decomposition, tackling each part separately.</p> <p>The child can take a complex problem, identify component parts, use decomposition to break this problem down and then plan how they can solve the problem by working through the elements they have identified. They can then use their plan to solve the original problem. Projects could include developing a computer game, creating a website or designing a building.</p> <p><i>(E.g. In 5.1, tackle the parts of their game separately. In 5.4, work together to tackle the different elements of a website separately. In 5.6, tackle each of the different stages of their gallery.)</i></p>	5.1, 5.4, 5.6	Problem solver 2



# Computing Progression Framework

## Numbering system

Subject.Year.Strand.Statement

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DOMAIN: COMPUTER SCIENCE						
UPPER KEY STAGE 2						
Year 5						
Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant Switched on Computing unit(s)	Switched on Computing badge
Programming	C.5.2.1. Use sequence, selection, and repetition in programs; work with variables.	<p>The child can use <b>sequence</b> and <b>repetition</b> in <b>programs</b>.</p> <p>The child's <b>program</b>, typically written in Scratch, or similar, should include <b>sequences of commands</b> or <b>blocks</b> and some <b>repetition</b>. <b>Repetition</b> would typically be for a fixed number of times, but might also include exit conditions (e.g. repeat...until...). <b>Programs</b> might include turtle graphics or a simple game.</p> <p><i>(E.g. In 5.1, their game should use sequence and repetition. In 5.3, their turtle graphics program should use sequence and repetition.)</i></p>	<p>The child can use <b>sequence</b>, <b>selection</b> and <b>repetition</b> in <b>programs</b>.</p> <p>The child's program, typically written in Scratch, or similar, should include <b>sequences of commands</b> or <b>blocks</b>, some <b>repetition</b> and <b>selection</b>. <b>Repetition</b> might include exit conditions (e.g. repeat...until...). Selection would normally be of an if...then or if...then...else type. At this level, expect the child to be able to combine <b>repetition</b> with <b>selection</b>. <b>Programs</b> might include a computer game or a turtle graphics design.</p> <p><i>(E.g. In 5.1, their game program should include sequence, selection and repetition.)</i></p>	<p>The child can use <b>sequence</b>, <b>selection</b>, <b>repetition</b> and <b>variables</b> in <b>programs</b>.</p> <p>The child's program, typically written in Scratch, or similar, should include <b>sequences of commands</b> or <b>blocks</b>, <b>repetition</b>, <b>selection</b> and <b>variables</b>. <b>Repetition</b> might include exit conditions (e.g. repeat...until...) and perhaps a counter-variable for <b>iteration</b>. <b>Selection</b> would normally be of an if...then or if...then...else type. At this level, expect the child to be able to combine <b>repetition</b> with <b>selection</b> and <b>variables</b>. <b>Programs</b> might include a computer game and a more complex turtle graphics design.</p> <p><i>(E.g. In 5.1, use sequence, selection and repetition in their game, and keep track of score, lives or time remaining using a variable.)</i></p>	5.1, 5.3	Programmer 2
	C.5.2.2. Work with various forms of input and output.	<p>The child can write a <b>program</b> that accepts keyboard <b>input</b> and produces on-screen <b>output</b>.</p> <p>In Scratch (or similar), the child can write a <b>program</b> that uses the keyboard to control the behaviour of a <b>sprite</b> on screen. This might be used as the basis for a simple computer game.</p> <p><i>(E.g. In 5.1, use the keyboard for control, producing output on screen.)</i></p>	<p>The child can write a <b>program</b> that accepts keyboard and mouse <b>input</b> and produces <b>output</b> on screen and through speakers.</p> <p>In Scratch (or similar), the child can create a computer game using the keyboard or mouse for <b>input</b> and the screen and speakers for <b>output</b>.</p> <p><i>(E.g. In 5.1, use the keyboard and/or mouse for input for their game, produce output on screen and use sound effects, music or narration.)</i></p>	<p>The child can show an awareness of the importance of good user-<b>interface</b> design when developing a <b>program</b>.</p> <p>In developing their <b>program</b>, the child should take account of the needs of their users and be able to explain how these have influenced design and development. They should test their <b>program</b> with users, making changes on the basis of feedback received.</p> <p><i>(E.g. In 5.1 explain how they have developed the user interface for their game, taking into account its intended users; discuss how they have tested this. In 5.4 and 5.5, discuss the design elements of their website and blog. In 5.6, demonstrate how their virtual gallery has been designed with its users in mind.)</i></p>	5.1, 5.4, 5.5, 5.6	Programmer 2
Logical thinking	C.5.3.1. Use logical reasoning to explain how some simple algorithms work.	<p>The child can predict the outcomes of a rule-based <b>algorithm</b>.</p> <p>When provided with rule-based <b>algorithms</b> (e.g. for a computer game) the child should be able to predict what would happen under a range of circumstances.</p> <p><i>(E.g. In 5.1, predict what happens in their game.)</i></p>	<p>The child can explain a rule-based <b>algorithm</b> in their own words.</p> <p>When provided with a rule-based <b>algorithm</b> (e.g. for a computer game), the child should be able to explain what it does and how it works, in their own words.</p> <p><i>(E.g. In 5.1, explain the rules of their game in their own words.)</i></p>	<p>The child can give a clear and precise explanation of a rule-based <b>algorithm</b>.</p> <p>When provided with a rule-based <b>algorithm</b> (e.g. for a computer game), the child should draw on logical reasoning to give a clear and precise explanation of what it does and how it works.</p> <p><i>(E.g. In 5.1, give a clear and precise explanation for the rules of their game.)</i></p>	5.1	Logical thinker 2



# Computing Progression Framework

## Numbering system

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UPPER KEY STAGE 2						
Year 5						
Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant Switched on Computing unit(s)	Switched on Computing badge
Logical thinking	C.5.3.2. Use logical reasoning to detect and correct errors in algorithms and programs.	<p>The child can spot errors in <b>algorithms</b>.</p> <p>When given an <b>algorithm</b> for a particular purpose, e.g. a rule-based <b>algorithm</b> for a computer game or a <b>sequence</b> of steps to draw a geometric pattern, the child can identify possible errors in their <b>algorithm</b>.</p> <p><i>(E.g. In 5.1, spot errors in the rules of their game. In 5.3, spot errors in the algorithm for their geometric pattern.)</i></p>	<p>The child can use logical reasoning to detect errors in <b>algorithms</b>.</p> <p>When given an <b>algorithm</b> for a particular purpose, e.g. a rule-based <b>algorithm</b> for a computer game or a <b>sequence</b> of steps to draw a geometric pattern, the child can use logical reasoning to identify possible errors in the <b>algorithm</b>, explaining why they believe the <b>algorithm</b> is incorrect.</p> <p><i>(E.g. In 5.1, spot and correct errors in the rules of their game. In 5.3, spot and correct errors in the algorithm for their geometric pattern.)</i></p>	<p>The child can use logical reasoning to detect and correct errors in <b>algorithms</b>.</p> <p>When given an <b>algorithm</b> for a particular purpose, e.g. a rule-based <b>algorithm</b> for a computer game or a <b>sequence</b> of steps to draw a geometric pattern, the child can use logical reasoning to identify possible errors in the <b>algorithm</b>, explaining why they believe the <b>algorithm</b> is incorrect. The child can use logical reasoning to suggest possible corrections to the <b>algorithm</b>, explaining why these would correct the bug they identified.</p> <p><i>(E.g. In 5.1, use logical reasoning to detect and correct errors in the rules of their game. In 5.3, use logical reasoning to detect and correct errors in the algorithm for their geometric pattern.)</i></p>	5.1, 5.3	Logical thinker 2
	C.5.3.3. Understand computer networks including the internet.	<p>The child can understand the internet as a <b>network</b> of networks.</p> <p>The child can give some explanation of how the internet allows computers on different <b>networks</b> (e.g. at school and at home) to communicate with one another.</p> <p><i>(E.g. In 5.2, understand that multiple networks may be involved in passing encrypted messages. In 5.4 and 5.5, recognise that multiple networks may be involved in providing web-based content.)</i></p>	<p>The child can understand how data routing works on the internet.</p> <p>The child can give a coherent explanation of how <b>data packets</b> are routed from one computer to another on a separate <b>network</b>, which is also connected to the internet.</p> <p><i>(E.g. In 5.2, understand how encrypted messages are routed on the internet. In 5.4 and 5.5, understand how web pages are routed on the internet.)</i></p>	<p>The child can explain how internet routing adapts to faults in the <b>network</b>.</p> <p>The child can give a coherent explanation of how <b>data packets</b> are routed from one computer to another on a separate <b>network</b>, which is also connected to the internet, and how this routing would change if the <b>network</b> were to develop a fault.</p> <p><i>(E.g. In 5.2, explain how encrypted messages could still be transmitted if there were faults on the network. In 5.4 and 5.5, explain how web pages could still be transmitted if there were faults on the network.)</i></p>	5.2, 5.4, 5.5	Communicator



# Computing Progression Framework

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DOMAIN: COMPUTER SCIENCE						
UPPER KEY STAGE 2						
Year 5						
Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant Switched on Computing unit(s)	Switched on Computing badge
Logical thinking	C.5.4.1. Understand how networks can provide multiple services, such as the world wide web.	<p>The child can show an understanding of basic <b>HTML (hypertext mark-up language)</b>.</p> <p>The child can explain how a web page is transmitted in the form of <b>HTML</b> code. The child should be able to use simple tools (e.g. X-Ray Goggles) to view and edit the <b>HTML</b> code for a web page.</p> <p><i>(E.g. In 5.4 and 5.5, recognise that the web pages they are creating are transmitted and stored as HTML.)</i></p>	<p>The child can understand how web pages are created and transmitted.</p> <p>The child can explain how <b>HTML</b> is used to create a web page and how it is transmitted as <b>packets</b> of digital <b>data</b> over the internet. The child should have an awareness of simple <b>HTML</b> tags (such as &lt;h1&gt; and &lt;p&gt;) for marking up a web page.</p> <p><i>(E.g. In 5.4 and 5.5, gain experience of creating web pages using content management systems and understand how these pages are transmitted via the internet.)</i></p>	<p>The child can show an understanding of how <b>content management systems</b> are used on the <b>web</b>.</p> <p>The child can explain some differences between static web pages written as simple <b>HTML</b> files and those generated from a database of content elements by <b>content management systems</b> such as WordPress, MediaWiki or Moodle.</p> <p><i>(E.g. In 5.4 and 5.5, recognise that the content of the pages they create is stored in a database, and programs on the web server generate the transmitted HTML from this when pages are requested.)</i></p>	5.4, 5.5	Communicator



# Computing Progression Framework

## Numbering system

Subject.Year.Strand.Statement

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### DOMAIN: DIGITAL LITERACY

#### UPPER KEY STAGE 2

Year 5

Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant Switched on Computing unit(s)	Switched on Computing badge
E-safety	C.5.1.1. Use technology safely, respectfully and responsibly.	<p>The child can demonstrate that they can act responsibly when using computers.</p> <p>The child can act responsibly when using computers. E.g. They appreciate the importance of using <b>encryption</b> to keep information private and the need for strong passwords to protect their identity. They should act responsibly when creating web pages or writing blog posts.</p> <p><i>(E.g. In 5.2, recognise the importance of encrypting private information and using strong passwords. In 5.4 and 5.5, act responsibly when creating pages or blog posts.)</i></p>	<p>The child can demonstrate that they can act responsibly when using the internet.</p> <p>The child can act responsibly when using the internet. E.g. They should act responsibly when participating in an online community, such as the Scratch community, if permitted to do so. They should demonstrate that they understand the importance of <b>encrypted (HTTPS)</b> connections when browsing the <b>web</b> and of using strong passwords to protect their identity online. They should act responsibly when creating, editing or commenting on web pages or blog posts.</p> <p><i>(E.g. In 5.1, contribute positively to the Scratch community, if permitted to do so. In 5.2, recognise the importance of encrypting private information when communicating online and of using strong passwords. In 5.4 and 5.5, act responsibly when creating, editing or commenting on pages or blog posts.)</i></p>	<p>The child can show that they can think through the consequences of their actions when using digital technology.</p> <p>The child can discuss likely and potential consequences of their actions when using digital technology in a range of contexts. Contexts might include participation in online communities, such as the Scratch community, if they are permitted to do so; the use (or non-use) of <b>encryption</b>, of using weak passwords or sharing their passwords with others; of creating particular content for a class website or blog.</p> <p><i>(E.g. In 5.1, consider the consequences of uploads and comments to the Scratch community. In 5.2, consider the consequences of their own and others' use (or non-use) of encryption when communicating online and of setting weak passwords. In 5.4 and 5.5, recognise the consequences of creating particular content in a class website or blog.)</i></p>	5.1, 5.2, 5.4, 5.5	
	C.5.1.2. Recognise acceptable/unacceptable behaviour.	<p>The child can understand the difference between acceptable and unacceptable behaviour when using digital technology.</p> <p>The child can discuss the difference between acceptable and unacceptable behaviour when using digital technology in a range of contexts. Contexts could include the Scratch website, or other online communities; using cryptography and passwords; creating websites or writing blog posts.</p> <p><i>(E.g. In 5.1, understand the differences between acceptable and unacceptable behaviour in the Scratch community. In 5.2, understand the differences between acceptable and unacceptable behaviour when using cryptography and when using passwords. In 5.4 and 5.5, understand the differences between acceptable and unacceptable behaviour when developing online content for a website or blog.)</i></p>	<p>The child can discuss the consequences of particular behaviours when using digital technology.</p> <p>The child can discuss the likely or possible consequences of particular behaviours when using digital technology in a range of contexts. Contexts could include the Scratch website, or other online communities; using cryptography and passwords; creating websites or writing blog posts.</p> <p><i>(E.g. In 5.1, discuss the consequences of particular behaviours in the Scratch community. In 5.2, discuss the consequences of particular behaviours when using cryptography and when using passwords. In 5.4 and 5.5, discuss the consequences of particular behaviours when developing online content for a website or blog.)</i></p>	<p>The child can identify principles underpinning acceptable use of digital technologies.</p> <p>The child can identify some principles underpinning acceptable behaviour when using technologies in a range of contexts. Contexts could include the Scratch website, or other online communities; using cryptography and passwords; creating websites or writing blog posts.</p> <p><i>(E.g. In 5.1, identify principles underpinning acceptable behaviour in the Scratch community. In 5.2, identify principles underpinning acceptable behaviour when using cryptography and when using passwords. In 5.4 and 5.5, identify principles underpinning acceptable behaviour when developing online content for a website or blog.)</i></p>	5.1, 5.2, 5.4, 5.5	
	C.5.1.3. Know a range of ways to report concerns and inappropriate behaviour.	<p>Know who to talk to about concerns and inappropriate behaviour at home or in school.</p> <p>Pupils should know to report inappropriate behaviour when using technology in school to their teacher, the <b>network</b> manager or another trusted adult, and that they can discuss any concerns they have with their teacher or other trusted adults in school. They should also know that any concerns over, or inappropriate behaviour with, digital technology at home can be discussed with their parents, with you or with another trusted adult.</p> <p><i>(E.g. Know to tell a teacher about any concerns or inappropriate behaviour in any units. Know that concerns in relation to the Scratch community can be reported to the community moderators (units 5.1 and 5.3). Know that they should talk to their parents about concerns and inappropriate behaviour outside school.)</i></p>	<p>Know how to report concerns and inappropriate behaviour in a range of contexts.</p> <p>Pupils should know how to report inappropriate behaviour when using technology in school: preferably this will be to their teacher, the <b>network</b> manager or another trusted adult. They should know how to report any concerns over inappropriate behaviour with digital technology at home. Preferably this would be through discussion with their parents, with you or with another trusted adult. Pupils should also know how to report inappropriate behaviour to those running websites which they regularly use, and to ChildLine, CEOP or to the police.</p> <p><i>(E.g. Know to tell a teacher about any concerns or inappropriate behaviour in any units. Know that concerns in relation to the Scratch community can be reported to the community moderators (units 5.1 and 5.3). In unit 5.4 and 5.5, know that concerns over illegal web content can be reported to the police. Know that they should talk to their parents about concerns and inappropriate behaviour outside school.)</i></p>	<p>Know a range of ways to report concerns and inappropriate behaviour in a variety of contexts.</p> <p>Pupils should know how to report inappropriate behaviour when using technology in school: typically this will be to their teacher, the <b>network</b> manager or another trusted adult. They should know how to report any concerns over inappropriate behaviour with digital technology at home. Preferably this would be through discussion with their parents, with you or with another trusted adult. Pupils should also know how to report inappropriate behaviour to those running websites which they regularly use, and to ChildLine, CEOP or the police. Pupils should know that illegal content or activities can be reported to the police.</p> <p><i>(E.g. Know to tell a teacher about any concerns or inappropriate behaviour in any units. Know that concerns in relation to the Scratch community can be reported to the community moderators (units 5.1 and 5.3). In unit 5.4 and 5.5, know that concerns over illegal web content can be reported to the police, but be aware that other countries have different legal codes. Know that they should talk to their parents about concerns and inappropriate behaviour outside school. Know that they can also discuss concerns with CEOP or ChildLine)</i></p>	5.1, 5.3, 5.4, 5.5	



# Computing Progression Framework

## Numbering system

Subject.Year.Strand.Statement

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### DOMAIN: DIGITAL LITERACY

#### UPPER KEY STAGE 2

Year 5

Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant <i>Switched on Computing</i> unit(s)	<i>Switched on Computing</i> badge
E-safety	C.5.1.4. Be discerning in evaluating digital content.	<p>The child can decide whether digital content is relevant for a given purpose or question.</p> <p>The child can form a judgement about whether digital content, such as sound and graphics for a game or media for a web page or 3D model, is appropriate for finding out the answer to a question they have or for a given purpose.</p> <p><i>(E.g. In 5.1, decide whether particular sound and graphics are appropriate for their game. In 5.4, decide whether particular content is relevant to the purpose of the web page they are developing. In 5.6, decide whether particular media would be suitable for their virtual gallery.)</i></p>	<p>The child can decide whether digital content is reliable and unbiased.</p> <p>The child can discuss whether particular content (such as a web page, other children's pages or blog posts) is reliable and whether it has been written from a neutral point of view. They should be able to spot some examples of bias in digital content.</p> <p><i>(E.g. In 5.4, decide whether external content is reliable and unbiased before using it in their own web page. In 5.4 and 5.5, comment on the reliability and bias of others' pages or posts.)</i></p>	<p>The child can form an opinion about the effectiveness of digital content.</p> <p>Taking into account the intended audience and purpose of the content, the child should be able to form a judgement, and provide reasons, for the extent to which they consider digital content to be effective. Content could be a game or media, their own or their peers' artwork, their own or classmates' pages or posts or a 3D model.</p> <p><i>(E.g. In 5.1, form a view of the effectiveness of their game and the media they use in it. In 5.3, form an opinion about how effective their artwork is. In 5.4 and 5.5, form an opinion about how effective their own and their classmates' pages and posts are. In 5.6, form an opinion about how effective their virtual gallery is.)</i></p>	5.1, 5.3, 5.4, 5.5, 5.6	
	C.5.1.5. Understand the opportunities networks offer for communication and collaboration.	<p>The child can contribute to a class website or blog.</p> <p>The child can make a positive contribution to a shared website or class blog.</p> <p><i>(E.g. Contribute to the class website in 5.4 and blog in 5.5.)</i></p>	<p>The child can work collaboratively with classmates on a class website or blog.</p> <p>The child can work productively and positively with others when developing a shared website or contributing to a class blog.</p> <p><i>(E.g. Work collaboratively with classmates on the class website in 5.4 and the class blog in 5.5.)</i></p>	<p>The child can provide constructively critical feedback to classmates in a class website or blog project.</p> <p>Showing appropriate sensitivity, the child can provide constructive, critical feedback to another, e.g. on others' contributions to a shared website or a class blog.</p> <p><i>(E.g. Provide constructively critical feedback to one another on contributions to the class website in 5.4 and blog in 5.5.)</i></p>	5.4, 5.5	



# Computing Progression Framework

## Numbering system

Subject.Year.Strand.Statement

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DOMAIN: INFORMATION TECHNOLOGY						
LOWER KEY STAGE 2						
Year 5						
Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant <i>Switched on Computing</i> unit(s)	<i>Switched on Computing</i> badge
Creating content	C.5.1.1. Select, use and combine a variety of software (including internet services) on a range of digital devices.	<p>The child can use and combine a range of <b>programs</b> on a computer.</p> <p>The child can use multiple <b>programs</b> on laptop or tablet computers to achieve particular goals. E.g. They might use an audio editor or image editor to develop media content for a computer game; use image or video editing <b>software</b> to develop media content for a web page or blog; use image-editing <b>software</b> to develop images to use in 3D design <b>software</b>.</p> <p><i>(E.g. In 5.1, make use of audio and image content in Scratch. In 5.4 and 5.5, add media content to their web pages or blog. In 5.6, add images to the walls of their virtual gallery.)</i></p>	<p>The child can use and combine a range of <b>programs</b> on multiple devices.</p> <p>The child can use multiple <b>digital devices</b> (such as tablets and laptops or digital cameras and laptops) to achieve particular goals. The devices might include <b>web servers</b>, allowing them to use cloud-based applications. E.g. They might use local media in conjunction with a cloud-based programming <b>platform</b>, such as Scratch; digital cameras and video cameras to capture content to use on an externally hosted website or blog; a digital camera to take photos they could import into 3D design <b>software</b> on a laptop.</p> <p><i>(E.g. In 5.1, combine local media with web-based Scratch programs. In 5.4 and 5.5, combine local media, including that captured using portable technology, with a web-based content management system. In 5.6, use digital photographs and other media in a virtual art gallery.)</i></p>	<p>The child can select, use and combine a range of <b>programs</b> on multiple devices.</p> <p>The child can choose for themselves from a range of available <b>programs</b> on laptops, tablets or cloud-based services to achieve particular goals. E.g. They might select and use an audio editor or image editor to develop media content for a computer game; use their own choice of image or video editing <b>software</b> to develop media content for a web page or blog; use their own choice of image-editing <b>software</b> to develop images to use in 3D design <b>software</b>. The child should be able to use multiple <b>digital devices</b> (such as tablets and laptops or digital cameras and laptops) to meet their given goals.</p> <p><i>(E.g. In 5.1, choose how they will develop graphics and sound for their game. In 5.4 and 5.5, choose how they will develop original media for their web pages or blogs. In 5.6, choose how they will create content for their gallery.)</i></p>	5.1, 5.4, 5.5, 5.6	Content creator 2
	C.5.1.2. Design and create a range of programs, systems and content that accomplish given goals.	<p>The child can design and create <b>programs</b> on a computer.</p> <p>The child can design a <b>program</b> of their own and write this in a <b>block</b>-based language such as Scratch. The <b>program</b> need not be complex - a simple game or a turtle graphics <b>program</b> would suffice.</p> <p><i>(E.g. In 5.1, design and create a computer game. In 5.3, design and create a geometric pattern using turtle graphics.)</i></p>	<p>The child can design and create <b>programs</b> on a computer in response to a given goal.</p> <p>The child can design a <b>program</b> of their own in response to a given goal and write this in a <b>block</b>-based language such as Scratch. The program need not be complex - a simple game or a turtle graphics <b>program</b> would suffice, but it should be accomplished with a degree of independent working.</p> <p><i>(E.g. In 5.1, design and create a computer game in response to a given brief. In 5.3, design and create a geometric pattern using turtle graphics in response to a given brief.)</i></p>	<p>The child can design and create <b>programs</b> on a computer in response to a given goal and paying attention to the needs of a known audience.</p> <p>With a given audience in mind, the child can design a program of their own in response to a given goal and write this in a <b>block</b>-based language such as Scratch. E.g. The child could design and create a computer game for a particular, known audience.</p> <p><i>(E.g. In 5.1, design and create a computer game in response to a given brief, paying attention to the needs of the intended audience.)</i></p>	5.1, 5.3	Content creator 2
	C.5.1.3. Collecting, analysing, evaluating and presenting data and information.	<p>The child can evaluate information.</p> <p>Working with text, audio, images or video, the child can evaluate the quality of the information, perhaps looking for bias or questioning assumptions that have been made, or considering the effectiveness of its presentation. E.g. They could work with a number of sources of information on <b>e-safety</b>, evaluating its quality, or they could provide constructive critical feedback to peers on the quality of their work in design projects.</p> <p><i>(E.g. In 5.3, evaluate the quality of their own and others' artwork. In 5.4, evaluate the quality of the information on which they base their web page. In 5.5, provide feedback to classmates about the</i></p>	<p>The child can analyse and evaluate information.</p> <p>Working with text, audio, images or video, the child can analyse information, perhaps summarising this. They should evaluate the quality of the information, looking for bias or questioning assumptions that have been made. E.g. They could work with information on <b>e-safety</b>, evaluating its quality and providing a clear and coherent summary.</p> <p><i>(E.g. In 5.4, evaluate the quality of the information on which they are drawing. Analyse this to provide a clear and coherent summary on their own page.)</i></p>	<p>The child can analyse and evaluate information from multiple sources.</p> <p>Working with text, audio, images or video, the child can analyse information, perhaps summarising this or looking for common features or exceptions. They should evaluate the quality of the information, looking for bias or questioning assumptions that have been made. E.g. They could work with a number of sources of information on e-safety, evaluating their quality and providing a clear and coherent summary, drawing on multiple sources.</p> <p><i>(E.g. In 5.4, evaluate the quality of the information from the multiple sources on which they are drawing. Analyse this to provide a clear and coherent synthesis on their own page.)</i></p>	5.3, 5.4, 5.5, 5.6	Content creator 2



# Computing Progression Framework

**Numbering system**  
 Subject.Year.Strand.Statement

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DOMAIN: INFORMATION TECHNOLOGY						
LOWER KEY STAGE 2						
Year 5						
Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant Switched on Computing unit(s)	Switched on Computing badge
Searching	C.5.2.1. Use search technologies effectively.	<p>The child can use a standard search engine to find information.</p> <p>The child can use a common search engine (such as Google with <b>safe search mode</b> locked in place) effectively, to search for particular information on the <b>web</b>, such as answers to questions they identify in a research project.</p> <p><i>(E.g. In 5.4, use Google to search for information relevant to the topic of their web page.)</i></p>	<p>The child can use filters to make more effective use of a standard search engine.</p> <p>The child can use a common search engine (such as Google with <b>safe search mode</b> locked in place) effectively, to search for particular information on the <b>web</b>, such as answers to questions they identify in a research project. They should use built-in search tools to filter their results, such as by time, location or reading level.</p> <p><i>(E.g. In 5.4, use the filters in Google to search for information relevant to the topic of their web page and appropriate for its intended audience.)</i></p>	<p>The child can use advanced search options to make more effective use of a standard search engine.</p> <p>The child can use a common search engine (such as Google with <b>safe search mode</b> locked in place) effectively, to search for particular information on the <b>web</b>, such as answers to questions they identify in a research project. They should use advanced search options to filter their results, perhaps searching for a key phrase rather than keywords, using alternate keywords, or restricting their search to particular locations or domains.</p> <p><i>(E.g. In 5.4, use 'advanced search' in Google to search for information relevant to the topic of their web page and appropriate for its intended audience.)</i></p>	5.4	Searcher
	C.5.2.2. Appreciate how search results are selected and ranked.	<p>The child can understand that search engines use a <b>cached</b> copy of the crawled <b>web</b> to select results.</p> <p>The child can explain how a search engine creates a <b>cached</b> copy of the <b>web</b> and uses an index of this to select results.</p> <p><i>(E.g. In 5.4, understand that Google uses a cached copy of the crawlable web to generate search results.)</i></p>	<p>The child can understand that search engines use a <b>cached</b> copy of the crawled <b>web</b> to select and rank results.</p> <p>The child can explain how a search engine creates an index from a <b>cached</b> copy of the <b>web</b> and uses this to select and rank results. The child might also show an awareness of the Page Rank <b>algorithm</b> in which results are ranked according to the number and quality of in-bound links.</p> <p><i>(E.g. In 5.4, understand that Google uses a cached copy of the crawlable web to generate search results, using the links between the pages in the cache to determine the rank order in which results are displayed.)</i></p>	<p>The child can understand how search engines build a <b>cached</b> copy of the <b>web</b> using <b>HTTP</b> and web-crawler <b>programs</b>.</p> <p>The child can explain how a search engine creates a <b>cached</b> copy of the <b>web</b> using automated <b>HTTP</b> GET requests, follows links found, indexes results and uses the resulting index to select and rank results. The child might also show an awareness of the Page Rank <b>algorithm</b> in which results are ranked according to the number and quality of in-bound links.</p> <p><i>(E.g. In 5.4, understand that Google's web-crawler programs run on their servers simply using HTTP requests to obtain copies of web pages, using the links in these for further HTTP requests to add or update pages in their cache.)</i></p>	5.4	Searcher



# Computing Progression Framework

## Numbering system

Subject.Year.Strand.Statement

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DOMAIN: COMPUTER SCIENCE						
KEY STAGE 1						
Year 6						
Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant Switched on Computing unit(s)	Switched on Computing badge
Problem solving	C.6.1.1. Design, write and debug programs that accomplish specific goals.	<p>The child can design and write a <b>program</b> using a second programming language based on their own ideas.</p> <p>The child can design a <b>program</b> of their own and write this in a programming language other than Scratch (or whichever language has formed the focus for their programming in other years), such as TouchDevelop or App Inventor, and be aware of errors in their <b>program</b>. The <b>program</b> need not be complex - a simple app would suffice.</p> <p><i>(E.g. In 6.1, 6.4, 6.5, plan and implement their own app for a smartphone or tablet and be aware of errors in their program.)</i></p>	<p>The child can design, write and <b>debug</b> a <b>program</b> using a second programming language based on their own ideas.</p> <p>The child can design a program of their own and write this in a programming language other than Scratch (or whichever language has formed the focus for their programming in other years), such as TouchDevelop or App Inventor. The second language does not need to be text based, but Logo or Python could be used.</p> <p>The child can test and <b>debug</b> their code, explain what bugs they found and how they fixed these. The <b>program</b> need not be complex - a simple app would suffice.</p> <p><i>(E.g. In 6.1, 6.4, 6.5, plan, implement and debug their own app for a smartphone or tablet.)</i></p>	<p>The child can design, write and <b>debug</b> a <b>program</b> using a second programming language based on their own ideas, using iterative development to make improvements.</p> <p>The child can design a program of their own and write this in a programming language other than Scratch (or whichever language has formed the focus for their programming in other years), such as TouchDevelop or App Inventor. The second language does not need to be text based, but Logo or Python could be used. The child can test and <b>debug</b> their code, explain what bugs they found and how they fixed these. The child can review their code, decide for themselves how this might be extended or improved, and then implement, test and <b>debug</b> these modifications. At this level, expect the child to be able to develop relatively complex apps with a degree of independence.</p> <p><i>(E.g. In 6.1, 6.4, 6.5, plan, implement and debug their own app for a smartphone or tablet, drawing on iterative development approaches to make improvements.)</i></p>	6.1, 6.4, 6.5	Problem solver 2
	C.6.1.2. Controlling or simulating physical systems.	<p>The child can experiment with computer control applications.</p> <p>The child can use simple computer control and/or sensors using smartphone <b>hardware</b> or with products they make in design and technology, perhaps using Lego WeDo kits, MaKey MaKey or similar.</p> <p><i>(E.g. In 6.1, 6.4, 6.5, learn about additional input and output available in smartphones and tablets, making use of this in their app, if appropriate.)</i></p>	<p>The child can design, write and <b>debug</b> their own computer control application.</p> <p>The child can add computer control and/or sensors to a smartphone app or to products they design and make in design and technology, perhaps using Lego WeDo kits, MaKey MaKey or similar. The child can show evidence of designing, writing and debugging their <b>program</b>, ensuring that this functions correctly on the available <b>hardware platform</b>.</p> <p><i>(E.g. In 6.1, 6.4, 6.5, incorporate additional input and output available in the smartphone or tablet for which they are developing their app, if appropriate.)</i></p>	<p>The child can design, write and <b>debug</b> own computer control application, using iterative development to make improvements.</p> <p>The child can add computer control and/or sensors to a smartphone app or to products they design and make in design and technology, perhaps using Lego WeDo kits, MaKey MaKey or similar. The child can show evidence of designing, writing and debugging their <b>program</b>, ensuring that this functions correctly on the available <b>hardware platform</b>. The child can review their code and, perhaps, their <b>hardware</b>, decide for themselves how this might be extended or improved, and then implement, test and <b>debug</b> these modifications.</p> <p><i>(E.g. In 6.1, 6.4, 6.5, incorporate additional input and output available in the smartphone or tablet for which they are developing their app, if appropriate, making use of iterative development approaches to make improvements.)</i></p>	6.1, 6.4, 6.5	Problem solver 2
	C.6.1.3. Solve problems by decomposing them into smaller parts.	<p>The child can plan a solution to a problem using decomposition.</p> <p>The child can take a complex problem, identify component parts, use decomposition to break this problem down and then plan how they can solve the problem by working through the elements they have identified. Projects could be extended, such as developing a smartphone app.</p> <p><i>(E.g. In 6.2, use decomposition to plan how they will tackle the app development project.)</i></p>	<p>The child can solve problems using decomposition, tackling each part separately.</p> <p>The child can take a complex problem, identify component parts, use decomposition to break this problem down and then plan how they can solve the problem by working through the elements they have identified. They can then use their plan to solve the original problem. Projects can be extended, such as developing a smartphone app.</p> <p><i>(E.g. In 6.2, use decomposition to plan how they will tackle the app development project; follow their plan in subsequent units.)</i></p>	<p>The child can apply decomposition to help understand complex systems.</p> <p>The child can apply the principle of decomposition to help them to understand how complex systems operate. This could be <b>software</b> or combined <b>hardware/software</b> systems such as a smartphone. In this case, the child could consider <b>input</b>, processing, memory, <b>output</b> and connectivity <b>hardware</b>, <b>operating system</b>, application <b>software</b> and <b>data</b> as separate, interconnected component systems.</p> <p><i>(E.g. In 6.1, use decomposition approaches to develop their understanding of the different hardware and software components of smartphones or tablets.)</i></p>	6.1, 6.2	Problem solver 2



# Computing Progression Framework

## Numbering system

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**DOMAIN: COMPUTER SCIENCE**

**KEY STAGE 1**

**Year 6**

Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant Switched on Computing unit(s)	Switched on Computing badge
Programming	C.6.2.1. Use sequence, selection and repetition in programs; work with variables.	<p>The child can use <b>sequence, selection and repetition</b> in <b>programs</b>.</p> <p>The child's <b>program</b> should include <b>sequences of commands or blocks</b>, some <b>repetition</b> and <b>selection</b>. <b>Repetition</b> might include exit conditions (e.g. repeat...until...). <b>Selection</b> would normally be of an if...then or if...then...else type. At this level, expect the child to be able to combine <b>repetition</b> with <b>selection</b>. <b>Programs</b> might include a simple smartphone app.</p> <p><i>(E.g. In 6.5, make use of sequence, selection and repetition in their app.)</i></p>	<p>The child can use <b>sequence, selection, repetition and variables</b> in <b>programs</b>.</p> <p>The child's <b>program</b> should include <b>sequences of commands or blocks, repetition, selection and variables</b>. <b>Repetition</b> might include exit conditions (e.g. repeat...until...) and perhaps a counter-variable for <b>iteration</b>. <b>Selection</b> would normally be of an if...then or if...then...else type. At this level, expect the child to be able to combine <b>repetition</b> with <b>selection and variables</b>. <b>Programs</b> might include a simple smartphone app.</p> <p><i>(E.g. In 6.5, make use of sequence, selection, repetition and variables in their app.)</i></p>	<p>The child can use <b>sequence, selection, repetition, variables</b> and procedures in <b>programs</b>.</p> <p>The child's program should include <b>sequences of commands or blocks, repetition, selection, variables</b> and user-defined procedures, functions or custom <b>blocks</b>. <b>Repetition</b> might include exit conditions (e.g. repeat...until...) and perhaps a counter-variable for <b>iteration</b>. <b>Selection</b> would normally be of an if...then or if...then...else type. At this level, expect the child to be able to combine <b>repetition</b> with <b>selection and variables</b>. Procedures or custom <b>blocks</b> need not include passing parameters, although they might. <b>Programs</b> might include a smartphone app.</p> <p><i>(E.g. In 6.5, make use of sequence, selection, repetition variables and procedures or functions in their app.)</i></p>	6.5	Programmer 2
	C.6.2.2. Work with various forms of input and output.	<p>The child can write a program that accepts keyboard and mouse or touch screen <b>input</b> and produces <b>output</b> on screen and through speakers.</p> <p>The child could create a smartphone app, using the touch screen for input and the screen and speakers or headphones for <b>output</b>.</p> <p><i>(E.g. In 6.4 and 6.5, use touch screen input and screen and speaker output in their app.)</i></p>	<p>The child can write a program that accepts <b>inputs</b> other than keyboard and mouse and produces <b>outputs</b> other than screen or speakers.</p> <p>The child could create a smartphone app, using the touch screen and the GPS sensor or accelerometer for <b>input</b>, and the screen and speakers or headphones plus vibration motor or <b>network</b> connection for <b>output</b>.</p> <p><i>(E.g. In 6.4 and 6.5, use touch screen and other input (e.g. GPS or accelerometer) and screen, speaker and other output (e.g. vibration motor, network connectivity) in their app.)</i></p>	<p>The child can use principles of good user-<b>interface</b> design, including accessibility, when developing <b>programs</b>.</p> <p>In developing their program, the child should take account of the needs of their intended users and be able to explain how these have influenced design and development decisions. The child should test their program with intended users, making changes on the basis of the feedback they receive. The child should consider design for accessibility, perhaps providing haptic feedback, audio narration or internationalisation to make, e.g. a smartphone app, more accessible.</p> <p><i>(E.g. In 6.4, explain how they have designed the interface of their program with principles of effective design, their intended audience and some elements of accessibility in mind.)</i></p>	6.4, 6.5	Programmer 2



# Computing Progression Framework

## Numbering system

Subject.Year.Strand.Statement

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**DOMAIN: COMPUTER SCIENCE**

**KEY STAGE 1**

**Year 6**

Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant Switched on Computing unit(s)	Switched on Computing badge
Logical thinking	C.6.3.1. Use logical reasoning to explain how some simple algorithms work.	<p>The child can explain an <b>algorithm</b> using <b>sequence</b>, <b>repetition</b> and <b>selection</b> in their own words.</p> <p>Given an <b>algorithm</b> using <b>sequence</b>, <b>repetition</b> and <b>selection</b>, the child can give a coherent, logically reasoned explanation of what it does and how it works. <b>Repetition</b> is likely to be using end conditions (e.g. repeat...until...), and <b>selection</b> is likely to be simply if...then. <b>Algorithms</b> used in familiar smartphone apps would be good examples.</p> <p><i>(E.g. In 6.4 and 6.5, explain the event-driven algorithms they've used in the app.)</i></p>	<p>The child can give clear and precise logical explanations of a number of <b>algorithms</b>.</p> <p>Given an <b>algorithm</b>, the child can describe what it does and, using logical reasoning, give precise explanations of how it works. <b>Algorithms</b> could be linked to programming projects, but might include a key <b>algorithm</b> such as binary search.</p> <p><i>(E.g. In 6.4 and 6.5, give clear and precise explanations of the event-driven algorithms they've used in the app.)</i></p>	<p>The child can use logical reasoning to explain how more complex <b>algorithms</b> work.</p> <p>Given an <b>algorithm</b>, the child should be able to describe what it does and, using logical reasoning, give precise explanations of how it works. <b>Algorithms</b> could be linked to programming projects, but might include key <b>algorithms</b> such as binary search, bubble sort or finding highest common factors.</p> <p><i>(E.g. In 6.1, discuss some of the underlying algorithms for smartphone or tablet operating systems or GUIs.)</i></p>	6.1, 6.4, 6.5	Logical thinker 2
	C.6.3.2. Use logical reasoning to detect and correct errors in algorithms and programs.	<p>The child can use logical reasoning to detect errors in <b>algorithms</b>.</p> <p>When given an <b>algorithm</b> for a particular purpose, e.g. a rule-based <b>algorithm</b> for a smartphone app, the child can use logical reasoning to identify possible errors in the <b>algorithm</b>, explaining why they believe the <b>algorithm</b> is incorrect.</p> <p><i>(E.g. In 6.4 and 6.5, use logical reasoning to detect errors in the event-based algorithms they use in their app.)</i></p>	<p>The child can use logical reasoning to detect and correct errors in <b>algorithms</b> (and <b>programs</b>).</p> <p>When given an <b>algorithm</b> for a particular purpose, e.g. a rule-based <b>algorithm</b> for a smartphone app, the child can use logical reasoning to identify possible errors in the <b>algorithm</b>, explaining why they believe the <b>algorithm</b> is incorrect. The child can use logical reasoning to suggest possible corrections to the <b>algorithm</b>, explaining why these would correct the bug they identified.</p> <p><i>(E.g. In 6.4 and 6.5, use logical reasoning to detect and correct errors in the event-based algorithms they use in their app and in their code.)</i></p>	<p>The child can suggest ways in which the efficiency of <b>algorithms</b> and <b>programs</b> can be improved.</p> <p>The child can consider alternative <b>algorithms</b> for particular problems, using logical reasoning to compare these for efficiency. Examples might include comparing linear and binary search, or comparing exhaustive search and Euclid's <b>algorithm</b> for finding highest common factors.</p> <p><i>(E.g. In 6.4 and 6.5, suggest ways in which their algorithms or code can be made more efficient.)</i></p>	6.4, 6.5	Logical thinker 2
	C.6.3.3. Understand computer networks including the internet.	<p>The child can understand that computers can communicate through <b>network</b> technologies other than the internet.</p> <p>The child can demonstrate an awareness of other networking technologies they might encounter, such as Bluetooth, mobile phone <b>networks</b> and the telephone <b>network</b>.</p> <p><i>(E.g. In 6.1, recognise other networking technology provided in a smartphone or tablet.)</i></p>	<p>The child can understand how mobile phone or other <b>networks</b> operate.</p> <p>The child can give an explanation of how mobile phone (or other) <b>networks</b> operate: they should know that information is transmitted digitally, and have some understanding of the network topology involved. In the case of mobile phone <b>networks</b>, the child should show some understanding of the interactions between a phone, cell transmitters/receivers and the <b>network's</b> control systems.</p> <p><i>(E.g. In 6.1, demonstrate an understanding of how networks such as the cellular telephone system, Bluetooth and NFC operate.)</i></p>	<p>The child can understand differences between <b>network</b> technologies.</p> <p>The child can compare and contrast different <b>network</b> technologies, discussing differences in topology, range, bandwidth and fault tolerance.</p> <p><i>(In 6.1, explain some of the differences between the cellular telephone network, the internet, Bluetooth and NFC.)</i></p>	6.1	Communicator



# Computing Progression Framework

## Numbering system

Subject.Year.Strand.Statement

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DOMAIN: COMPUTER SCIENCE

KEY STAGE 1

Year 6

Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant <i>Switched on Computing</i> unit(s)	Switched on Computing badge
Logical thinking	C.6.4.1. Understand how networks can provide multiple services, such as the world wide web.	<p>The child can understand the difference between a domain name and an <b>IP address</b>.</p> <p>The child can distinguish between a domain name used by people (e.g. risingstars-uk.com) and an <b>IP address</b> used by computers (e.g. 192.237.142.203), and appreciate why domain names are more commonly used on the internet.</p> <p><i>(E.g. In developing a website in 6.6, know the difference between a domain name and an IP address.)</i></p>	<p>The child can understand how domain names are converted into <b>IP addresses</b> on the internet.</p> <p>The child can give some explanation of how a domain name is converted into an <b>IP address</b> using something similar to a set of phone books. The child should show an awareness of the looked-up addresses (<b>DNS</b> records) being copied (<b>cached</b>), and that more local records are used in preference to more authoritative records in most circumstances.</p> <p><i>(E.g. In 6.6, know how a domain name is converted into an IP address.)</i></p>	<p>The child can show awareness of some of the security implications of <b>DNS</b> lookups.</p> <p>The child can discuss some of the security implications of being given the wrong <b>IP address</b> when looking up a domain name, recognising that malware could compromise the integrity of this system on their computer and the importance of <b>network</b> managers maintaining the integrity of this system at internet service provider level. The child might also be aware of how seriously the security of root <b>DNS servers</b> is treated.</p>	6.6	Communicator



# Computing Progression Framework

**Numbering system**  
Subject.Year.Strand.Statement

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<b>DOMAIN: DIGITAL LITERACY</b>						
<b>UPPER KEY STAGE 2</b>						
Year 6						

Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant Switched on Computing unit(s)	Switched on Computing badge
E-safety	C.6.1.1. Use technology safely, respectfully and responsibly.	<p>C.6.7.2. The child can demonstrate that they can act responsibly when using the internet.</p> <p>The child can demonstrate that they act responsibly when using the internet. E.g. They should show responsibility when conducting web-based research; in using online project management tools; when creating and analysing surveys (including paying due regard to data protection legislation and ethical principles); in observing the terms and conditions of online tools; when creating digital content.</p> <p><i>(E.g. In 6.1, conduct research safely. In 6.2, use online project management tools responsibly. In 6.3, create surveys, paying due regard to data protection and ethical guidance. In 6.4 and 6.5, use online tools responsibly. In 6.6, consider carefully how to protect personal information and act responsibly when creating digital content.)</i></p>	<p>C.6.7.3. The child can show that they can think through the consequences of their actions when using digital technology.</p> <p>The child can discuss likely and potential consequences of their actions when using digital technology in a range of contexts. Contexts might include developing smartphone apps; using online project management tools; collecting information for market research; posting original content online.</p> <p><i>(E.g. In 6.1, 6.4 and 6.5, consider the potential consequences of any apps they develop for themselves and their users. In 6.2, think through the consequences of how they use online project management tools. In 6.3, consider the consequences of collecting information in market research. In 6.6, consider the consequences of posting original content online.)</i></p>	<p>C.6.7.4. The child can consider critically some of the wider implications of the use of digital technology.</p> <p>The child can discuss critically some wider implications of the use of digital technology, such as the ready availability of smartphones and connectivity; creating and distributing digital content; designing and developing apps.</p> <p><i>(E.g. In 6.1, consider some of the wider implications of the ready availability of smartphones or tablets and their embedded sensors and network connections. In 6.4 and 6.5, consider the wider implications of app design and development. In 6.6, consider the wider implications of the ready availability of tools to create and distribute digital content.)</i></p>	6.1, 6.2, 6.3, 6.4, 6.5, 6.6	E-safety 2
	C.6.1.2. Recognise acceptable/unacceptable behaviour.	<p>C.6.7.2. The child can discuss the consequences of particular behaviours when using digital technology.</p> <p>The child can discuss the likely or possible consequences of particular behaviours when using digital technology in a range of contexts. Contexts could include smartphone or tablet use; the use of online project management tools; online surveys and recording of interviews; creating and sharing digital content.</p> <p><i>(E.g. In 6.1, 6.4 and 6.5, discuss the consequences of positive or negative smartphone and tablet use. In 6.2, discuss the consequences of positive or negative use of online project management tools. In 6.3, discuss the consequences of positive or negative use of surveys and recorded interviews. In 6.6, discuss the consequences of the positive or negative creation and sharing of digital content.)</i></p>	<p>C.6.7.3. The child can identify principles underpinning acceptable use of digital technologies.</p> <p>The child can identify some principles underpinning acceptable behaviour when using technologies in a range of contexts. Contexts could include smartphone or tablet use; the use of online project management tools; online surveys and recording of interviews; creating and sharing digital content.</p> <p><i>(E.g. In 6.1, 6.4 and 6.5, identify principles underpinning acceptable smartphone and tablet use. In 6.2, identify principles underpinning acceptable use of online project management tools. In 6.3, identify principles underpinning acceptable use of surveys and recorded interviews. In 6.6, identify principles underpinning acceptable creation and sharing of digital content.)</i></p>	<p>C.6.7.4. The child can consider questions of ethics and morality in relation to digital technology.</p> <p>The child can consider some of the ethical or moral questions raised by the use of digital technology in a range of contexts. Contexts could include smartphone or tablet use; the use of online project management tools; online surveys and recording of interviews; creating and sharing digital content.</p> <p><i>(E.g. In 6.1, 6.4 and 6.5, consider ethical and moral questions relating to smartphone and tablet use. In 6.2, consider ethical and moral questions relating to the use of online project management tools. In 6.3, consider ethical and moral questions relating to the use of surveys and recorded interviews. In 6.6, consider ethical and moral questions relating to the creation and sharing of digital content.)</i></p>	6.1, 6.2, 6.3, 6.4, 6.5, 6.6	E-safety 2
	C.6.1.3. Know a range of ways to report concerns and inappropriate behaviour.	<p>Know how to report concerns and inappropriate behaviour in a range of contexts.</p> <p>Pupils should know how to report inappropriate behaviour when using technology in school; preferably this will be to their teacher, the <b>network</b> manager or another trusted adult. They should know how to report any concerns over, or inappropriate behaviour with, digital technology at home. Preferably this would be through discussion with their parents, with you or with another trusted adult. Pupils should also know how to report inappropriate behaviour to those running websites which they regularly use, and to ChildLine, CEOP or to the police.</p> <p><i>(E.g. Know to tell a teacher about any concerns or inappropriate behaviour in any units. Know that concerns in relation to the App Inventor or Touch Develop can be reported to the providers of these services. Know that they should talk to their parents about concerns and inappropriate behaviour outside school.)</i></p>	<p>Know a range of ways to report concerns and inappropriate behaviour in a variety of contexts.</p> <p>Pupils should know how to report inappropriate behaviour when using technology in school; preferably this will be to their teacher, the <b>network</b> manager or another trusted adult. They should know how to report any concerns over, or inappropriate behaviour with, digital technology at home. Preferably this would be through discussion with their parents, with you or with another trusted adult. Pupils should also know how to report inappropriate behaviour to those running websites which they regularly use, and to ChildLine, CEOP or the police. Pupils should know that illegal content or activities can be reported to CEOP or the police.</p> <p><i>(E.g. Know to tell a teacher about any concerns or inappropriate behaviour in any units. Know that concerns in relation to the App Inventor or Touch Develop can be reported to the providers of these services. Know that concerns over the content of digital media can be reported to those hosting this content. Know that they should talk to their parents about concerns and inappropriate behaviour outside school.)</i></p>	<p>Consider how they would determine the best way to address particular concerns or inappropriate behaviour.</p> <p>Pupils should think about how they would determine the best way to address particular concerns or inappropriate behaviour. They should take into account whether their concerns, or the behaviour, relates to home or to school, whether the person is another pupil, an adult they know or someone else, whether it might be illegal, how serious it is and whether others are likely to be affected.</p>	6.1, 6.2, 6.3, 6.4, 6.5, 6.6	E-safety 2



# Computing Progression Framework

**Numbering system**  
Subject.Year.Strand.Statement

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<b>DOMAIN: DIGITAL LITERACY</b>						
<b>UPPER KEY STAGE 2</b>						
Year 6						

Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant <i>Switched on Computing</i> unit(s)	Switched on Computing badge
<b>E-safety</b>	C.6.1.4. Be discerning in evaluating digital content.	<p>C.6.5.2. The child can decide whether digital content is reliable and unbiased.</p> <p>The child can discuss whether particular content (such as advertising copy and product reviews) is reliable, and whether it has been written from a neutral point of view. They should be able to spot some examples of bias in digital content.</p> <p><i>(E.g. In 6.1, consider how reliable or unbiased advertising copy and reviews for apps are. In 6.6, consider how reliable and unbiased their own copy on their app is.)</i></p>	<p>C.6.5.3. The child can form an opinion about the effectiveness of digital content.</p> <p>Taking into account the intended audience and purpose of the content, the child can form a judgement as to, and provide reasons for, the extent to which they consider digital content to be effective. The content might be an app, media resources or marketing materials.</p> <p><i>(E.g. In 6.1, form an opinion about the effectiveness of the apps they explore. In 6.4, form an opinion about how effective their own media resources and interface designs are. In 6.6, form an opinion about how effective their own marketing materials are.)</i></p>	<p>C.6.5.4. The child can consider principles they can use to evaluate digital content.</p> <p>The child should identify some principles they could use to evaluate digital content, such as absence of bias, effective design, acknowledgement of sources, agreement with other sources, the reputation of the author, any indication that it has been checked or reviewed, absence of errors or logical inconsistencies.</p> <p><i>(E.g. In 6.1, consider principles that could help in evaluating apps they explore. In 6.4, consider principles that could help in evaluating their own media resources and interface designs. In 6.6, consider principles that could help in evaluating their own marketing materials.)</i></p>	6.1, 6.4, 6.6	Searcher
	C.6.1.5. Understand the opportunities networks offer for communication and collaboration.	<p>C.6.4.2. The child can use online tools to plan a collaborative project.</p> <p>The child can make use of an online tool to plan a collaborative project (such as developing an app).</p> <p><i>(E.g. In 6.2, plan the app development project using online tools.)</i></p>	<p>C.6.4.3. The child can use online tools to plan and carry out a collaborative project.</p> <p>The child can make use of an online tool to plan and carry out a collaborative project (such as developing an app).</p> <p><i>(E.g. In 6.2, plan the app development project using online tools. In 6.3 - 6.6, use these tools to keep track of progress and share ideas.)</i></p>	<p>C.6.4.4. The child can use online tools to plan, carry out and evaluate a collaborative project.</p> <p>The child can make use of an online tool to plan, carry out and then evaluate a collaborative project (such as developing an app).</p> <p><i>(E.g. In 6.2, plan the app development project using online tools. In 6.3 - 6.6, use these tools to keep track of progress and share ideas. Use the tools to support an evaluation of their project in 6.6.)</i></p>	6.2, 6.3, 6.4, 6.5, 6.6	Communicator



# Computing Progression Framework

## Numbering system

Subject.Year.Strand.Statement

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### DOMAIN: INFORMATION TECHNOLOGY

#### UPPER KEY STAGE 2

#### Year 6

Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant Switched on Computing unit(s)	Switched on Computing badge
Creating content	C.6.1.1. Select, use and combine a variety of software (including internet services) on a range of digital devices.	<p>The child can use and combine a range of <b>programs</b> on multiple devices.</p> <p>The child can use multiple <b>digital devices</b> (such as tablets and laptops or digital cameras and laptops) to achieve particular goals. The devices might include web <b>servers</b>, allowing them to use cloud-based applications. E.g. They might use local media to make a presentation using cloud-based presentation <b>software</b>, such as Google Slides, local media, cloud-based programming environments and a connected tablet or smartphone to help in developing and testing an app; a video camera, laptop-based editing <b>software</b> and online video streaming to create a marketing video for an app.</p> <p><i>(E.g. In 6.1, use a range of media to create an effective pitch presentation.</i>  <i>In 6.2, use online project management software.</i>  <i>In 6.3, combine Google Forms, Google Sheets and Google Slides.</i>  <i>In 6.5, use an online development environment, local media and a smartphone, tablet or emulator.</i>  <i>In 6.6, use a range of media packages to market their app.)</i></p>	<p>The child can select, use and combine a range of <b>programs</b> on multiple devices.</p> <p>The child can choose for themselves from a range of available <b>programs</b> on laptops, tablets or cloud-based services to achieve particular goals. E.g. They might choose which image editors and presentation <b>software</b> to use when making a presentation; which image and audio editors to use when creating media content for an app; which DTP, video editor and website tools to use when developing marketing materials for an app.</p> <p><i>(E.g. In 6.1, use a range of media to create an effective pitch presentation in software of their own choice.</i>  <i>In 6.6, use a range of media packages of their own choice to market their app.)</i></p>	<p>The child can show some understanding of the differences between, and relative merits of, different applications, <b>operating systems</b> and <b>hardware</b>.</p> <p>The child can discuss the differences between smartphones, tablets, laptops and <b>servers</b>. They should be able to compare and contrast different applications (e.g. Word and Google Docs). They should be able to compare and contrast <b>operating systems</b> they have used (e.g. Windows and iOS or Android).</p> <p><i>(E.g. In 6.1 and 6.6, give explanations for why they chose particular packages to develop content.</i>  <i>In 6.1, 6.4 and 6.5, compare the app development environment with Scratch, and the mobile operating system with the desktop operating system.)</i></p>	6.1, 6.2, 6.3, 6.4, 6.5, 6.6	Content creator 2
	C.6.1.2. Design and create a range of programs, systems and content that accomplish given goals.	<p>The child can create systems in response to a given goal.</p> <p>The child can plan and design a system with multiple, interrelated components with a given goal in mind. E.g. They could develop a smartphone app, taking into account <b>input, output</b> and connectivity, the <b>operating system</b>, the <b>algorithms</b>, code and user <b>interface</b> of their own <b>program</b>.</p> <p><i>(E.g. In 6.4 and 6.5, create a smartphone or tablet app for an agreed purpose.)</i></p>	<p>The child can design and create systems in response to a given goal.</p> <p>The child can plan, design and implement a system with multiple, interrelated components with a given goal in mind. E.g. They could develop a smartphone app, taking into account <b>input, output</b> and connectivity, the <b>operating system</b>, the <b>algorithms</b>, code and user <b>interface</b> of their own <b>program</b>.</p> <p><i>(E.g. In 6.1, 6.4, 6.5, design and build a smartphone or tablet app for an agreed purpose.)</i></p>	<p>The child can design and create systems in response to a given goal, paying attention to the needs of a known audience.</p> <p>The child can plan, design and implement a system with multiple, interrelated components with a given goal and a known audience in mind. E.g. They could develop a smartphone app, taking into account <b>input, output</b> and connectivity, the <b>operating system</b>, the <b>algorithms</b>, code and user <b>interface</b> of their own <b>program</b>. They should evaluate how effectively their system meets the specified goal and the needs of their audience.</p> <p><i>(E.g. In 6.1, 6.3, 6.4, 6.5, design and build a smartphone or tablet app for an agreed purpose, taking into account the needs of a known audience.)</i></p>	6.1, 6.3, 6.4, 6.5	Content creator 2
	C.6.1.3. Collecting, analysing, evaluating and presenting data and information.	<p>The child can analyse <b>data</b>.</p> <p>The child can analyse numerical <b>data</b> (typically using a spreadsheet) perhaps producing summary statistics, looking for relationships, trends and exceptions. E.g. They could conduct market research for a smartphone app and analyse the data they obtain.</p> <p><i>(E.g. In 6.3, conduct market research into their planned app, analysing the data obtained.)</i></p>	<p>The child can analyse and evaluate <b>data</b>.</p> <p>The child can evaluate the quality of numerical <b>data</b>, deciding the extent to which it is affected by systematic or random errors. They should analyse their data, perhaps producing summary statistics, looking for relationships, trends and exceptions. E.g. They could conduct market research for a smartphone app, and analyse and evaluate the data they obtain.</p> <p><i>(E.g. In 6.3, conduct market research into their planned app, evaluating and analysing the data obtained.)</i></p>	<p>The child can analyse, evaluate and interpret <b>data</b>, being aware of the limitations of any conclusions drawn.</p> <p>The child can evaluate the quality of numerical data, deciding the extent to which it is affected by systematic or random errors. They should analyse their data, perhaps producing summary statistics, looking for relationships, trends and exceptions. They should provide an interpretation of their data and discuss the limitations of their findings. E.g. They could conduct market research for a smartphone app, and evaluate, analyse and interpret the data they obtain.</p> <p><i>(E.g. In 6.3, conduct market research into their planned app, analysing, evaluating and interpreting the data obtained.)</i></p>	6.3	Content creator 2

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**DOMAIN: INFORMATION TECHNOLOGY**

**UPPER KEY STAGE 2**

**Year 6**

Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant <i>Switched on Computing</i> unit(s)	Switched on Computing badge
Searching	C.6.2.1. Use search technologies effectively.	<p>The child can appreciate that a range of different search technologies are available.</p> <p>The child can show that they are aware of a range of different search technologies, including alternatives to Google (such as Bing or Yahoo) and site-specific search engines (such as those for the App Store or Google Play). E.g. They could name several search engines that could be used when researching available smartphone apps for a particular purpose.</p> <p><i>(E.g. In 6.1, show awareness that a number of search engines can be used to find out about smartphone or tablet apps.)</i></p>	<p>The child can make use of a range of search engines appropriate to finding information that is required.</p> <p>The child can show that they can use effectively a range of different search technologies, including alternatives to Google (such as Bing or Yahoo) and site-specific search engines (such as those for the App Store or Google Play). E.g. They could demonstrate how they would use a range of search engines when researching available smartphone apps for a particular purpose.</p> <p><i>(E.g. In 6.1, use a number of search engines to find out about smartphone or tablet apps.)</i></p>	<p>The child can appreciate that much information cannot easily be found using search engines.</p> <p>The child should be aware that not all questions can be answered using search engines. They should be able to give examples of 'ungoogleable' questions and consider some other ways in which these could be answered.</p> <p><i>(E.g. In 6.1 and 6.3, recognise that some questions are 'ungoogleable' and other approaches to answering them are required.)</i></p>	6.1, 6.3	Searcher
	C.6.2.2. Appreciate how search results are selected and ranked.	<p>The child can appreciate that search engines rank results based on in-bound links to a page.</p> <p>The child can demonstrate some awareness of the Page Rank <b>algorithm</b>, explaining that the ranking of a page is determined largely on the basis of the links pointing to that page in the engine's <b>cached</b> copy of the <b>web</b>.</p> <p><i>(E.g. In developing their website in 6.6, recognise how its search rank can be improved by having links to it from other websites.)</i></p>	<p>The child can appreciate that search engines rank pages based on the number and quality of in-bound links.</p> <p>The child can demonstrate some awareness of the Page Rank <b>algorithm</b>, explaining that the quality of a page is determined largely on the basis of the number and quality of links pointing to that page in the engine's <b>cached</b> copy of the <b>web</b>, and that quality is itself determined recursively through Page Rank.</p> <p><i>(E.g. In developing their website in 6.6, recognise how its search rank can be improved by having links to it from other high-ranking websites.)</i></p>	<p>The child can appreciate that search engines now use many additional 'signals' to provide more relevant results.</p> <p>The child should be aware of the Page Rank <b>algorithm</b> used for ranking search results, but should also be able to discuss other signals used in ranking <b>algorithms</b>, such as bounce back rates, accessibility indicators, localisation and personalisation of search results.</p> <p><i>(E.g. In 6.1 and 6.6, recognise that search results may be personalised using many other factors.)</i></p>	6.1, 6.6	Searcher