Foreword

This document serves as a guideline only. Teachers are encouraged to explore Project lesson plans, platform content and learning journals themselves to figure out how to integrate each Project into their curriculum units. Although Projects offer a complete experience with their own self-contained content, we recommend that teachers look for areas where they can incorporate additional content that makes use of their own unique experience, knowledge and classroom learning objectives. If your curriculum is not yet included in one of these documents, that does not mean that this Project will not be suitable for your class. We recommend all teachers explore the Project content themselves before deciding how to integrate it into their curriculum as they know the requirements of their students and the topics they will find engaging better than anyone.

Table Key

The contents of this Project are well suited to delivering this aspect of the curriculum. As a teacher, you are free to skip over or de-emphasise content if this part of the curriculum is not something that you want to focus on.	The contents of this Project can deliver part of this aspect of the curriculum. This Project may require additional activities or discussions from the teacher to highlight key concepts of this aspect of the curriculum.	The contents of this Project do not explicitly cover this aspect of the curriculum. You can still use the simulations as a base for delivering your own content if you want to incorporate this aspect of the curriculum into the Project.

England

National curriculum in England: computing programmes of study

Attainment targets			
Key stage 1	Key stage 2	Key stage 3	Key stage 4
Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems	Develop their capability, creativity and knowledge in computer science, digital media and information technology
create and debug simple programs	Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	Understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem	Develop and apply their analytic, problem-solving, design, and computational thinking skills
Use logical reasoning to predict the behaviour of simple programs	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Use 2 or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions	Understand how changes in technology affect safety, including new ways to protect their online privacy and identity, and how to report a range of concerns
Use technology purposefully to create, organise, store, manipulate and retrieve digital content	Understand computer networks, including the internet; how they can provide multiple services, such as the	Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming;	

	World Wide Web, and the opportunities they offer for communication and collaboration	understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]	
Recognise common uses of information technology beyond school	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems	
Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies	Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information	Understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits	
	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users	
		Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability	

		Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns	