

### **Characteristics of a Computer Programmer / Coder / Technician**


- Competence in coding for a variety of practical and inventive purposes, including the application of ideas within other subjects.
- The ability to connect with others safely and respectfully, understanding the need to act within the law and with moral and ethical integrity.
- An understanding of the connected nature of devices.
- The ability to communicate ideas well by using applications and devices throughout the curriculum.
- The ability to collect, organise and manipulate data effectively.


**Learning Opportunities**

<b>Key Stage 1</b>	<b>Key Stage 2</b>
<p>Look at:</p> <ul style="list-style-type: none"> <li>• Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following a sequence of instructions.</li>   <li>• Write and test simple programs.</li>   <li>• Use logical reasoning to predict the behaviour of simple programs.</li>   <li>• Organise, store, manipulate and retrieve data in a range of digital formats.</li>   <li>• Communicate safely and respectfully online, keeping personal information private and recognise common uses of information technology beyond school.</li> </ul>	<ul style="list-style-type: none"> <li>• Design and write programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</li>   <li>• Use sequence, selections and repetition in programs; work with variables and various forms of input and output; generate appropriate inputs and predicted outputs to test programs.</li>   <li>• Use logical reasoning to explain how a simple algorithm works, detect and correct errors in algorithms and programs.</li>   <li>• Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration.</li>   <li>• Describe how internet search engines find and store data; use search engines effectively; be discerning in evaluating digital content; respect individuals and intellectual property; use technology responsibly, securely and safely.</li>   <li>• Select, use and combine a variety of software (including internet services) on a range of digital devices to accomplish given goals, including collecting, analysing, evaluating and presenting data and information.</li> </ul>

## Learning Objectives

 To code

 To connect

 To communicate

 To collect

**Milestones 1**

	Year 1			Year 2		
	1	2	3	1	2	3
<b>To Code</b>						
Motion: Control motion by specifying the number of steps to travel, direction and turn.		Y		Y		
Looks: Add text strings, show and hide objects and change the features of an object.			Y	Y		
Sound: Select sounds and control when they are heard, their duration and volume.		Y	Y	Y		
Draw: Control when drawings appear and set the pen colour, size and shape.		Y		Y		
Events: Specify user inputs (such as clicks) to control events.	Y		Y	Y		
Control: Specify the nature of events (such as a single event or a loop).		Y	Y	Y		
Sensing: Create conditions for actions by waiting for a user input (such as responses to questions like: What is your name?).		Y				
<b>To Connect</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>3</b>
Participate in class social media accounts.		Y	Y			
Understand online risks and the age rules for sites.	Y	Y	Y	Y		
<b>To Communicate</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>3</b>
Use a range of applications and devices in order to communicate ideas, work and messages.	Y	Y	Y	Y		
<b>To Collect</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>3</b>
Use simple databases to record information in areas across the curriculum.		Y	Y			

## Milestones 2

	Year 3			Year 4		
	1	2	3	1	2	3
<b>To Code</b>						
Motion: Use specified screen coordinates to control movement.			Y		Y	
Looks: Set the appearance of objects and create sequences of changes.		Y			Y	
Sound: Create and edit sounds. Control when they are heard, their volume, duration and rests.	Y			Y		
Draw: Control the shade of pens.		Y				Y
Events: Specify conditions to trigger events.			Y	Y		
Use IF THEN conditions to control events or objects.			Y	Y		
Control: Create conditions for actions by sensing proximity or by waiting for a user input (i.e. proximity or a line or responses to questions).			Y		Y	
Sensing: Use variables to store a value.		Y			Y	Y
Variables and lists: Use the functions define, set, change, show and hide to control the variables.		Y			Y	
Operators: Use the Reporter operators $() + ()$ $() - ()$ $() * ()$ $() / ()$ to perform calculations.		Y			Y	Y
<b>To Connect</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>3</b>
Contribute to blogs that are moderated by teachers.	Y				Y	Y
Give examples of the risks posed by online communications.	Y			Y	Y	Y
Understand the term 'copyright'.	Y				Y	Y
Understand that comments made online that are hurtful or offensive are the same as bullying.	Y			Y	Y	Y
Understand how online services work.				Y		
<b>To Communicate</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>3</b>
Use some of the advanced features of applications and devices in order to communicate ideas, work or messages professionally.	Y	Y	Y	Y	Y	
<b>To Collect</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>3</b>
Devise and construct databases using applications designed for this purpose in areas across the curriculum.			Y	Y		

### Milestones 3

	Year 5			Year 6		
	1	2	3	1	2	3
<b>To Code</b>						
Set IF conditions for movements. Specify types of rotation giving the number of degrees.	Y	Y		Y		
Change the position of objects between screen layers (send to back, bring to front).	Y					
Upload sounds from a file and edit them. Add effects such as fade in and out and control their implementation.	Y			Y		
Combine the use of pens with movement to create interesting effects.	Y			Y		
Set events to control other events by 'broadcasting' information as a trigger.	Y			Y		
Use IF THEN ELSE conditions to control events or objects.	Y			Y		
Use a range of sensing tools (including proximity, user inputs, loudness and mouse position) to control events or actions.	Y					
Use lists to create a set of variables.	Y			Y		
Use the Boolean operators to define conditions.	Y					
Use the Reporter operators to perform calculations.	Y					
<b>To Connect</b>	1	2	3	1	2	3
Collaborate with others online on sites approved and moderated by teachers.	Y					
Give examples of the risks of online communities and demonstrate knowledge of how to minimise risk and report problems.	Y			Y		
Understand and demonstrate knowledge that it is illegal to download copyrighted material, including music or games, without express written permission from the copyright holder.	Y					
Understand the effect of online comments and show responsibility and sensitivity when online.	Y			Y		
Understand how simple networks are set up and used.	Y					
<b>To Communicate</b>	1	2	3	1	2	3
Choose the most suitable applications and devices for the purposes of communication.	Y					
Use many of the advanced features in order to create high quality, professional or efficient communications.	Y					
<b>To Collect</b>	1	2	3	1	2	3
Select appropriate applications to devise, construct and manipulate data and present it in an effective and professional manner.	Y					