Seamer and Irton CP School
Progression of knowledge and skills in Computing
Programming B – Summer 2 and Programming A – Spring 1

The Programming stand is taught twice a year, with the same concept revisited and covered in more depth. The following year incorporates the previous skills, whilst progressing onto a new concept.

Throughout each half term, pupils are exposed to a range of computing careers linked directly to the cultural capital of our pupils and highlighting that computing can be aspirational and accessible to all. Visits by a diverse range of adults, based within the local community, will provide pupils with clear links to STEM career opportunities. Equity, diversity and inclusion are addressed through highlighting pioneers and influencers who represent a broad and inclusive range of characteristics, alongside those from differing socio-economic and cultural backgrounds, these are annually reviewed to ensure our pupils are exposed to relevant and meaningful experiences.

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Programming B **Summer 2** **EYFS** To complete 3rd of 3 Barefoot Computing units based on the seasons	Early Years | EN | Barefoot Computing Children explore their surroundings and get creative, take a journey and make a map, and discover seaside tangrams, in these three fun activities. **Early Learning Goals and Development Matters Links** Active learning	Programming B - Programming animations Programming animations Designing and programming the movement of a character on screen to tell stories. No. of lessons: 6 Skills and Concept Progression Learning Graph	Programming B - Programming quizzes Programming quizzes Designing algorithms and programs that use events to trigger sequences of code to make an interactive quiz. No. of lessons: 6 Skills and Concept Progression Learning Graph	Programming-b-events-and-actions Events and actions in programs Writing algorithms and programs that use a range of events to trigger sequences of actions. No. of lessons: 6 Skills and Concept Progression Learning Graph	Programming-b-repetition-in-games Repetition in games Using a block-based programming language to explore count-controlled and infinite loops when creating a game No. of lessons: 6 Skills and Concept Progression Learning Graph	Programming-b-selection-in-quizzes Selection in quizzes Exploring selection in programming to design and code an interactive quiz No. of lessons: 6 Skills and Concept Progression Learning Graph	Programming-b-sensing Link below Sensing movement Designing and coding a project that captures inputs from physical devices. No. of lessons: 6 First lessons with MakeCode and the micro:bit | micro:bit

Creating and thinking critically Understanding the World Communication and Language Mathematics							
		ScratchJr, command, sprite, compare, programming, area, block, joining, start, run, program, background, delete, reset, algorithm, predict, effect, change, value, instructions, design.	sequence, command, program, run, start, outcome, predict, blocks, design, actions, sprite, project, modify, change, algorithm, build, match, compare, debug, features, evaluate, decomposition, code.	motion, event, sprite, algorithm, logic, move, resize, extension block, pen up, set up, pen, design, action, debugging, errors, setup, code, test, debug, actions.	Scratch, programming, sprite, blocks, code, loop, repeat, value, infinite loop, count-controlled loop, costume, repetition, forever, animate, event block, duplicate, modify, design, algorithm, debug, refine, evaluate.	Selection, condition, true, false, count-controlled loop, outcomes, conditional statement, algorithm, program, debug, question, answer, task, design, input, implement, test, run, setup, operator	Micro:bit, MakeCode, input, process, output, flashing, USB, trace, selection, condition, if then else, variable, random, sensing, accelerometer, value, compass, direction, navigation, design, task, algorithm, step counter, plan, create, code, test, debug.
Aspirational **Careers Education** Including links to Equity, Diversity and Inclusion		**Lotte Reiniger** Credited with directing the first feature-length animated film [Lotte Reiniger: The animation genius you've probably never heard of | BBC Ideas (youtube.com)](#)	**Grace Brewster Murray Hopper** Invented the first compiler for a programming language and was one of the first programmers of the Harvard Mark I computer. She also popularized the term "debugging"	**Margaret Hamilton** The woman behind the moon landing software https://www.youtube.com/watch?v=wD7GmF2mzdc Read p108 Good Night stories for Rebel Girls		[How to become a games designer: Rhianne's story - BBC Bitesize](#)	**Katherine Johnson (Dorothy Vaughan and Mary Jackson)** made important contributions to the United States space program (NASA). Her work helped send astronauts to the Moon.

			[Who is Grace Hopper? Meet the Queen of Code (youtube.com)](#) Read p60 Good Night Stories for Rebel Girls				[KS1/KS2 History: Katherine Johnson - NASA mathematician - BBC Teach](#) Read The Extraordinary Life of Katherine Johnson Read p82 Good Night Stories for Rebel Girls 2
Community **experts** (Visitors and visits) Supplemented by STEM ambassador visits and online opportunities linked to the termly focus as and when available			2024 My Job at Google (KS1/4-7) Part of the STEM Ambassadors - webinars for schools collection Meet a STEM Ambassador who is an industrial design engineer at Google, to find out about their job, and ask your questions!			

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Programming A: **Spring 1**	Story sequencing Pupils will identify and sequence events from a familiar story or song they are learning. In this way they will learn that the order of events is important.	Programming A - Moving a robot Writing short algorithms and programs for floor robots, and predicting program outcomes. No. of lessons: 6 Skills and Concept Progression Learning Graph	Programming A – Robot algorithms Creating and debugging programs, and using logical reasoning to make predictions. No. of lessons: 6 Skills and Concept Progression Learning Graph	**Programming-a-sequence-in-music** Sequencing sounds Creating sequences in a block-based programming language to make music. No. of lessons: 6 Skills and Concept Progression **Learning Graph**	**Programming-a-repetition-in-shapes** Repetition in shapes Using a text-based programming language to explore count-controlled loops when drawing shapes. No. of lessons: 6 Skills and Concept Progression **Learning Graph**	Programming-a-selection-in-physical-computing (link below) Selection in physical computing Exploring conditions and selection using a programmable microcontroller. No. of lessons: 6 **Getting started with a Crumble - teachictnt.org.uk**	**Programming-a-variables-in-games** Variables in games Exploring variables when designing and coding a game. No. of lessons: 6 Skills and Concept Progression Learning Graph
Vocabulary		Bee-bot, forwards, backwards, turn, clear, go, commands, instructions, directions, plan, algorithm, program, route	Instruction, Sequence, Clear, Order, Commands, Prediction, Design, Route, Debugging	Programming, Scratch, Blocks, Code, Sprite, Costume, Stage, Backdrop, Motion, Point in direction, Go to, Event, Task, Run the code, Order, Note, Chord, Bug	Commands, code, snippet, pattern repetition repeat value trace decompose procedure	Programming, Circuit, Electricity, Microcontroller, Code, LED, Algorithm, Motor, Modify, Debugging	Variable, Change, Name, Value, Set, Design, Event, Code, Task, Test, Motion, Callout
Aspirational		**Ada Lovelace**	**Alan Turing** (with retrieval of Ada Lovelace)	**Joanne Armitage** Leeds-based algorithmic	**Anne-Marie Imafidon**	**Limor Fried** (Ladyada)	**Carol Shaw**

Careers Education Including links to Equity, Diversity and Inclusion		Regarded by some computer historians as being the world's first computer programmer. [Ada Lovelace - Little People, BIG DREAMS (littlepeoplebigdreams.com)](#)	His ideas shaped the development of the first electrical computers [Significant individuals: A comparison between Ada Lovelace and Alan Turing - BBC Teach](#)	composer and winner of British Science Association Award for digital innovation [Meet the female coders pushing electronic music into the future - Features - Mixmag](#) **Daphne Oram and Delia Derbyshire** Paved the way for electronic music - and inspired everyone from The Beatles to Aphex Twin. [https://www.bbc.co.uk/ideas/videos/the-bbc-women-who-pioneered-electronic-music/p05tdppj?playlist=amazing-women-in-stem-you-need-to-know-about](#)	A tech leader, passionate about breaking down stereotypes. [Anne-Marie Imafidon - child genius to tech leader - BBC Ideas](#)	An American electrical engineer and owner of the electronics hobbyist company Adafruit Industries [About : Adafruit Industries, Unique & fun DIY electronics and kits](#)	Believed to be the first ever female video game designer [Carol Shaw: A Look At Video Games' First Female Developer | #InternationalWomensDay - YouTube](#)
Community experts (Visitors and visits) Supplemented by STEM					Online visitor – **Catherine Woolley** [Catherine Woolley - Game Designer (catmoo.co.uk)](#)	**Visitor from S6F** [IT: Software Development and Design - L3 Applied General - Scarborough Sixth](#)	**Visitor from Coventry University (Scarborough Campus)** [https://www.coventry.ac.uk/cus/cours](#)

ambassador visits and online opportunities linked to the termly focus as and when available					[Form College (s6f.org.uk)](s6f.org.uk)	e-structure/hnc-hnd-degree/computing-science/