| **EYFS:**  Computer systems and networks:  To be able to understand what a computer keyboard is and recognise some letters and numbers.  To know that a mouse can be used to click, drag and create simple drawings.  To know that to use a computer you need to log in to it and then log out at the end of your session.  To know that different types of technology can be found at home and in school.  To know that you can take simple photographs with a camera or iPad.  To know that you must hold the camera still and ensure the subject is in the shot to take a photo.  Programming:  To know that being able to follow and give simple instructions is important in computing.  To understand that it is important for instructions to be in the right order.  To understand why a set of instructions may have gone wrong.  To know that you can program a Bee-Bot with some simple commands.  To understand that debugging means how to fix some simple programming errors.  To understand that an algorithm is a set of clear and precise instructions.  Data handling:  To know that sorting objects into various categories can help you locate information.  To know that using yes/no questions to find an answer is known as a branching database.  To know that a pictogram is a way of showing information. | | | | | | |
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|  | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **G**  **e**  **n**  **e**  **r**  **a**  **l**  **S**  **k**  **I**  **l**  **l**  **s** | Turn on and shutdown computing equipment safely.  Move the cursor and click using a trackpad or mouse.  Drag objects in a file from one location to another.  Create, name and date digital work (following save protocols).  Launch an application by doubling clicking it.  Save and open files in their folder.  Retrieve a piece of work to edit.  Can print a piece of work. | | Reinforce basic computer skills.  Can securely log in to their personal domain and gmail.  Use the Google/domain workspace.  Store and retrieve work both in school and remotely using school usernames and passwords.  Use and understand a range of computing vocabulary relevant for their Year group. | | | |
| **C**  **o**  **m**  **p**  **u**  **t**  **e**  **r**  **s**  **y**  **s**  **t**  **e**  **m**  **s**    **a**  **n**  **d**  **N**  **e**  **t**  **w**  **o**  **r**  **k**  **s** | To know that "log in  and log out" means to begin and end a  connection with a  computer.  To know that a  computer and mouse  can be used to click,  drag, fill and select  and also add  backgrounds, text,  layers, shapes and clip art.  To know that  passwords are  important for  security. | To know the  difference between a desktop and laptop  computer.  To know that people  control technology.  To know some input  devices that give a  computer an  instruction about  what to do (output).  To know that  computers often  work together.  To know that touch  typing is the fastest  way to type.  To know that I can  make text a different  style, size and colour.  To know that "copy  and paste" is a quick  way of duplicating  text. | To understand what a network is and how a school network might  be organised.  To know that a server is central to a network and responds to requests  made.  To know how the  internet uses  networks to share  files.  To know that a router  connects us to the  internet.  To know what a  packet is and why it is  important for  website data  transfer.  To understand that  email stands for  'electronic mail.'  To know that an  attachment is an  extra file added to an  email.  To understand that  emails should contain  appropriate content.  To know the roles  that inputs and  outputs play on  computers.  To know what some  of the different  components inside a  computer are e.g.  CPU, RAM, hard  drive, and how they  work together. | To understand that  software can be  used collaboratively  online to work as a  team.  To know what type  of comments and  suggestions on a  collaborative  document can be  helpful.  To know that you  can use images,  text, transitions and  animation in  presentation slides. | To know how  search engines  work.  To understand that  anyone can create a  website and  therefore we  should take steps to  check the validity of  websites.  To know that web  crawlers are  computer programs  that crawl through  the internet.  To understand what  copyright is. | To understand the  importance of having  a secure password  and what "brute  force hacking" is.  To know that the first  computers were  created at Bletchley  Park to crack the  Enigma code to help  the war effort in  World War 2.  To know about some  of the historical  figures that  contributed to  technological  advances in  computing.  To understand what  techniques are  required to create a  presentation using  appropriate  software. |
| **key vocab** | account, clipart, computer, log on, log off, mouse, password, resize, screen (monitor), software, tool, username | battery, buttons, backspace, copyright, computer, desktop, delete, device, electricity, image, import, input, invention, keyboard, keyboard character, laptop, monitor, mouse, output, paste, redo, space bar, touch type, technology, undo, word processing, wire | account, algorithms, attachment, BCC, CC, computer, computer program, CPU, cyberbullying, cyberbully, domain, device, DSL, data, desktop, email, email account, emoji, file, GPU, hard disk drive HDD, internet, information, instructions, log off, log on, network, network maps, router, RAM, ROM, password, server, submarine cables, the cloud, spam, tablet device, trackpad, username, wifi, wired, wireless, wireless access point | collaborate, comment, e-document, edit, email, icon, insert (file), link, presentation software, presentation, reply, reviewing comments, reply, reviewing comments, share, spreadsheet, transition | algorithm, company logo, data leak, data privacy, fake news, inaccurate information, index, keywords (internet), network, online, page rank, search engine, TASK, web crawler, website, WWW | acrostic code, brute force hacking, caesar cipher, chip and pin system, cipher, date shift cipher, encrypt, invention, Nth letter cipher, password, pigpen chiper, technological advancements, trial and error |
| **C**  **r**  **e**  **a**  **t**  **I**  **n**  **g**  **m**  **e**  **d**  **I**  **a** | To understand that  holding the camera  still and considering  angles and light are  important to take  good pictures.  To know that you can  edit, crop and filter  photographs.  To know how to  search safely for  images online. | To understand that  an animation is made  up of a sequence of  photographs.  To know that small  changes in my frames will create a  smoother looking  animation.  To understand what  software creates  simple animations  and some of its  features e.g. onion  skinning. | To know that  different types of  camera shots can  make my photos or  videos look more  effective.  To know that I can  edit photos and  videos using film  editing software.  To understand that I can add transitions  and text to my video. | To know that a  website is a  collection of pages  that are all  connected.  To know that  websites usually  have a homepage  and subpages as  well as clickable  links to new pages,  called hyperlinks.  To know that  websites should be  informative and  interactive. | To know that  decomposition of an  idea is important  when creating  stop-motion  animations.  To understand that  stop motion  animation is an  animation filmed one  frame at a time using models, and with tiny changes between each photograph.  To know that editing  is an important  feature of making  and improving a stop  motion animation. | To know that radio  plays are plays where  the audience can only  hear the action so  sound effects are  important.  To know that sound  clips can be recorded using sound  recording software.  To know that sound  clips can be edited  and trimmed. |
| **key vocab** | camera, crop, delete, download, drag and drop, editing software, image, import (software), photograph, resize, save as, search engine, sequence, smart device, storage space, visual effects. | animation, animator, contraption, decompose, design, device, download, film review, filming, import image, plan, sketch, software, stop motion, storyboard, upload | application, desktop, digital device, edit, film, film editing software, graphics, import, key events, laptop, plan, recording (media), sound effects, time code, video, voiceover | collaboration, content, create, design, edit, embed, feature, header, hyperlink, insert (file), online, plan, tab, web page, website, WWW | animation, animator, background, decompose, device, duplicate, editing, frame, illusion, stop motion, storyboard, upload | background noise, byte, computer, CPU, memory storage, mouse, operating system OS, radio play, RAM, ROM, sound effects, touch screen, trackpad |
| **D**  **a**  **t**  **a**  **h**  **a**  **n**  **d**  **l**  **i**  **n**  **g** | To know how charts and pictograms can be created using a computer.  To understand that a  branching database is a way of classifying a  group of objects.  To know that computers understand different  types of 'input'. | To know that you can  write a program to  create a musical  instrument or tell a  joke.  To understand what  steps you need to  take to create an  algorithm.  To know what data to  use to answer certain  questions.  To know that  computers can be  used to monitor  supplies. | To know that a  database is a  collection of data  stored in a logical,  structured and  orderly manner.  To know that  computer databases  can be useful for  sorting and filtering  data.  To know that  different visual  representations of  data can be made on  a computer. | To know that computers  can use different forms  of input to sense the  world around them so that they can record and  respond to data (‘sensor  data’).  To know that a weather  machine is an automated  machine that respond to  sensor data.  To understand that  weather forecasters use  specific language,  expression and  pre-prepared scripts to  help create weather  forecast films. | To know that Mars  Rover is a motor  vehicle that collects  data from space by  taking photos and  examining samples of  rock.  To know what numbers  using binary code look  like and be able to  identify how messages  can be sent in this  format.  To understand that  RAM is Random Access  Memory and acts as  the computer’s  working memory.  To know what simple  operations can be used  to calculate bit  patterns. | To know that data  contained within  barcodes and QR  codes can be used by  computers.  To know that infrared  waves are a way of  transmitting data.  To know that Radio  Frequency  Identification (RFID)  is a more private way  of transmitting data.  To know that data is  often encrypted so  that even if it is  stolen it is not useful  to the thief.  To know that data  can become  corrupted within a  network but this is  less likely to happen  if it is sent in  ‘packets’.  I know that devices  or that are not  updated are most  vulnerable to  hackers.  To know the  difference between  mobile data and WiFi. |
| **key vocab** | branching database, categorise, chart, computer, data, information, label, pictogram, record, sort, table, text | approximate, astronaut, data, digital content, experiment, interactive map, international space station, interpret, laboratory, monitor, satellite, sensor, space, survival, thermometer | categorise, data, database, fields (data), filter (data), graphs and charts, information, record, sort, spreadsheet | algorithm, automated machine, calculate, climate, device, forecast, log data, predict, record, sensor, source, spreadsheet, temperature, weather | binary code, data, data transmission, discovery, distance, input, mars rover, moon, numerical data, output, planet, radio signal, scientist, sequence, signal, computer simulation, space (astronomy) | barcode, big data, bluetooth, boolean, brand, corrupt data, commuter, contactless, digital revolution, data, data privacy, encrypt, GPS, infrared waves, internet of things (IoT), NFC, QR code, radio waves, RFID, SIM, signal, systems or data analyst, computer simulation, smart school/city, transmission |
| **P**  **r**  **o**  **g**  **r**  **a**  **m**  **m**  **I**  **n**  **g** | To understand that an algorithm is when instructions are put in an exact order.  To know that input  devices get  information into a  computer and that  output devices get  information out of a  computer.  To understand that  decomposition means  breaking a problem  into manageable  chunks and that it is  important in  computing.  To know that we call  errors in an algorithm  'bugs' and fixing these  'debugging'.  To understand the  basic functions of a  Bee-Bot.  To know that you can  use a camera/tablet to  make simple videos.  To know that  algorithms move a  Bee-Bot accurately to  a chosen destination. | To know that coding is writing in a special language so that a computer understands what to do.  To understand what  machine learning is  and how it enables  computers to make  predictions.  To know that loops in  programming are  where you set a  certain instruction  (or instructions) to be  repeated multiple  times.  To know that  abstraction is the  removing of  unnecessary detail to  help solve a problem.  To understand that  the character in  ScratchJr is  controlled by the  programming blocks.  To know that you can  write a program to  create a musical  instrument or tell a  joke. | To know that Scratch  is a programming  language and some of  its basic functions.  To understand how to  use loops to improve  programming.  To understand how  decomposition is  used in programming.  To understand that  you can remix and  adapt existing code. | To understand that a  variable is a value that  can change  (depending on  conditions) and know  that you can create  them in Scratch.  To know what a  conditional statement  is in programming.  To understand that  variables can help you to create a quiz on Scratch.  To know that combining  computational  thinking skills can  help you to solve a  problem.  To understand that  pattern recognition  means identifying  patterns to help  them work out how  the code works.  To understand that  algorithms can be  used for a number  of purposes e.g.  animation, games  design etc. | To know that a  soundtrack is music  for a film/video and  that one way of  composing these is  on programming  software.  To understand that  using loops can make  the process of writing  music simpler and  more effective.  To know how to  adapt their music  while performing.  To know that a  Micro:bit is a  programmable  device.  To know that  Micro:bit uses a block  coding language  similar to Scratch.  To understand and  recognise coding  structures including  variables.  To know what  techniques to use to  create a program for  a specific purpose  (including  decomposition). | To know that there  are text-based  programming  languages such as  Logo and Python.  To know that nested  loops are loops inside  of loops.  To understand the  use of random  numbers and remix  Python code. |
| **Key vocab** | algorithm, bug, bee-bot, computer, computer code, computer program, debug, decompose, device, explain, explore, input, instructions, predict, output, tinker, solution, video | abstraction, algorithm, animation, artificial intelligence, bug, code (computer), code (verb), correct, data, debug, decompose, error, icon, imitate, instructions, loop, key features, predict, repeat, unnecessary, scratch JR, sequence | animation, application, code, code brock, debug, decompose, interface, loop, predict, program, remixing code, repetition code, review, sprite, tinker | abstraction, algorithm design, code (computer), code block, computational thinking, computer, conditional statement, decompose, direction, feature, icon, orientation, position, program verb, project (scratch), pattern recognition, problem, scratch, sprite, stage (scratch), sequence, tinker, variable | .hex file, .zip file, bluetooth, basic commands, bug, code blocks, code (verb), computer code, code block, debug, decompose, error, emulator, feature, live loop, loop, micro:bit, pedometer, pitch (music), predict, program language, rhythm, systematic, scratch, sprite, soundtrack, tinker, tempo, timbre, variable | algorithm, code (computer), computer command, decompose, import (software), indentation (programming), loop, nested loop, random numbers, remix, script libraries, variable |