Danesholme Academies Computing Progression

Computer Science (Coding)

Knowledge

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
• Understand that they can control the programmable toy	• Enact a given word and recall words that can be enacted • Predict the outcome of a command on a device • List which commands can be used on a given device • Recognise how to run a command (press a button) • Explain what a given command does • Match a command to an outcome • Choose a command for a given purpose • Understand that a program is a set of commands a computer can run • Recall that a series of instructions can be issued before they are enacted • Build a sequence of commands in steps • Combine commands in a program	• Describe that a series of instructions is a sequence • Recall that a series of instructions can be issued before they are enacted • Use logical reasoning to predict the outcome of a program	• Explain that programs start because of an input • Explain what a sequence is • Identify that a program includes sequences of commands • Identify that the sequence of a program is a process • Explain that the order of commands can affect a programs output • Identify that different sequences can achieve the same output • Identify that different sequences can achieve different outputs	• Explain what repeat means • Identify everyday tasks that include repetition as part of a sequence e.g., brushing teeth dance moves • Explain that we can use a loop command in a program to repeat instructions • Identify patterns in a sequence • Identify a loop within a program • Explain that in programming there are indefinite loops and count controlled loops • Explain that an indefinite loop will run until the program is stopped • Explain that you can program a loop to stop after a specific number of times • Identify patterns in a sequence e.g., step three times means the same as step, step, step • Identify when to use a loop and when not to • Explain the importance of instruction order in a loop • Recognise that not all tools enable more than one process to be run at once	• Explain that condition can only be true or false • Relate that count-controlled loop contains a condition • Compare count-controlled loop with a condition-controlled loop • Explain that condition-controlled loop will stop when a condition is met • Explain that when a condition is met a loop will complete a cycle before it stops • Explain that selection can be used to branch the flow of a program • Explain that a loop can be used to repeatedly check whether the condition has been met • Explain the importance of instruction order in 'if…then…else' statements • Define that conditional statements are used in computer programs • Relate that a conditional statement connects a condition to an outcome • Explain the instructions in a program would produce specific outcomes • Relate that a count-controlled loop contains a condition • Explain that a loop can stop when a condition is met for example number of times • Explain a sequence within a count-controlled or event-controlled loop • Explain that a loop can stop when a condition is met for example an event • Explain that program flow can branch according to a condition • Explain the importance of instruction, order in if then statements • Conclude that a loop can be used to repeatedly check weather condition has been met • Explain the importance of instruction, order in if then else statements	• Define 'variable' as something that is changeable • Identify examples of information that is variable for example a football score during a match • Explain that a variable is something that we can use in a program for example 'score' • Define a program variable as a placeholder in memory for a single value • Explain in a variable has a name and a value • Recognise that the value of a variable can be used in a program • Recognise that the value of a variable can be updated • Define the way that a variable is changed • Recognise that a variable can be set as a constant (fixed value) • Identify that variables can hold numbers (integers) or letters (strings) • Explain the importance of setting a variable at the start of a program (initialisation) • Explain that there is only one value for a variable at any one time • Explain that if you change the value of the variable you cannot access the previous value (cannot undo) • Explain that if you read a variable the value remains • Explain that the name of a variable is meaningless to the computer • Explain the name available needs to be unique

Skills						
EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
• Follow simple instructions • Use simple instructions • Program a toy (e.g. Bee-Bot) using basic commands	• Choose a series of words that can be enacted as a program • Choose a series of commands that can be run as a program • Run a program on a device	• Choose a series of words that can be enacted as a sequence • Explain what happens when we change the order of instructions • Choose a series of commands that can be run as a program • Trace a sequence to make a prediction • Test a prediction by running the sequence to create and debug a program that I have written • Run a program on a device	• Build a sequence of commands • Combine commands in a program • Order commands in a program • Create a sequence of commands to produce a given outcome	• List an everyday task as a set of instructions including repetition • Use an indefinite loop to produce a given outcome • Use a count-controlled loop to produce a given outcome • Plan a program that includes appropriate loops to produce a given outcome • Recognise tools that enable more than one process to be run at the same time (concurrency) • Create two or more sequences that run at the same time	• Modify a count-controlled or event-controlled loop • Create a count-controlled or event-controlled loop • Create a condition-controlled loop • Use a condition in an 'if…then' statement to start an action • Use selection to switch the program flow in one of two ways • Use a condition in an 'if…then…else' statement to produce given outcomes • Experiment with a repeat-until loop • Use a condition in an 'if. ….' statement to produce a given outcome • Show that a condition can switch program flow in one of two ways • Use a condition in an 'if…then…else…' statement to produce given outcomes	• Identify a variable in an existing program • Experiment with the value of an existing variable • Choose a name that identifies the role of a variable to make it more usable (to humans) • Decide where in a program to set a variable • Update a variable with the user input • Use an event in a program to update a variable • Use a variable in a conditional statement to control the flow of a program • Use the same variable in more than one location in a program

Computing Systems

Knowledge

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
• Talk about how to use the internet as a way of finding information online. • Identify devices They could use to access information on the internet • Identify ways that they can put information on the internet. • Recognise ways in which the internet can be used to communicate. • Give examples of how to use technology to communicate with people they know.	• Explain that technology is something that can help us • Identify examples of technology • Explain how examples of technology help us • Recognise that a computer is an example of technology • Recognise that choices are made when using technology • Explain why rules are needed when using technology	• Recognise different types of computers used in school • Identify that the computer is a part of information technology • Recognise the features of information technology • Talk about uses of information technology • Say how rules for using information technology can help us • Explain how information technology benefits us • Recognise that choices are made when using information technology • Recognise the information on the computer can be stored • Explain the information on a computer can be saved • Explain it stored information can be retrieved edited and re-saved • Recognise that my work can be shared between devices • Recognise that my work can be printed and shared • Recognise that people around me can view my screen to see my work	• Describe what an input is • Explain the process acts on the inputs • Explain that an output is produced by the process • Explain how computer systems can change the way that we work • Identify how changing the process can affect the output • Recognise that a digital device is made up of several parts • Recognise that computers can be connected to each other • Identify how devices in a network are connected with one another • Recognise that a network is made up of a number of components • Explain how information is passed through multiple connections • Identify the benefits of computer networks	• Describe how networks connect to other networks • Outline how information can be shared by the worldwide web • Describe how to access the worldwide web • Describe the types of content media that can be added created and shared on the worldwide web • Explain how the content of the worldwide web is created owned and shared by people • Describe the current limitations of the worldwide web media • Evaluate the reliability of content and consequences of unreliable content • Explain the benefits of the world wide web • Recognise that the worldwide web is part of the Internet • Explain that the global interconnection of networks is the Internet • Recognise the need for security on the Internet	• Recognise that computers can be part of a system in an electronic device • Understand that computers can be connected together to form systems • See that computers communicate with other devices including other computers • Recognise input, process and output in large computer systems • Recognise the role of computer systems in our lives • Recognise how information is transferred across the Internet • Recognise that data is transferred using agreed protocols (methods) • Explain that data is transferred in packets • Recognise that connections between computers allow us to access shared stored files • Recognise that connections between computers allow us to work together • Evaluate different ways of working together • Explain that the Internet lets people in different places work together • Recognise that Internet collaborations can be public or private • Explain that the Internet allows different media to be shared	• Recognise that there are a number of search engines • Explain why search engines exist • Define the purpose of an index • Explain why search engines create indexes and that they are different for each search engine • Explain the role of web crawlers • Explain how search engines are selected • Explain that ranking narrows down the search results returned from the index which makes it more useful • Explain that search results are ordered, and this is known as ranking • Explain how ranking is determined by rules and that different search engines use different rules • Examine the role of the searcher search engine and context creator in the searching process • Explain why the order of results is important and to whom • Identify some of the limitations of search engines • Recognise that some information is not searchable • Explain how search engines make money by selling advertising space • Define communication • Discuss the opportunities that technology offers for communication

Skills						
EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
•	• Choose a piece of technology to do a job • Recognise that some technology can be used in different ways • Identify the main parts of a computer • Use a mouse in different ways • Use a keyboard to type • Use the keyboard to edit text • Show how to use technology safely	• describe some uses of computers • identify information technology in school • identify information technology beyond school • show how to use information technology safely	• Identify input and output devices • Explain that a computer system accepts the input and process it to produce an output • Explain how a computer network can be used to share information • Explain the role of a switch server and wireless access point in a network • Identify network devices around me • Explain how networks can be connected to other networks	•	•	• Recall how to use a search engine • Compare the results from different search engines • Demonstrate that different search terms produce different results • Explain that search terms need to be chosen carefully • Evaluate the results of search terms • Identify different ways to communicate without technology • Use methods of communicating using the internet • Choose an appropriate method of internet communication for a given purpose • Evaluate different methods of online communication • Explain which types of media can be shared through the internet • Explain that communicating through the internet can be public or private • Decide what i should and should not share • Classify internet communication by messenger and recipient or audience

Creating Media

Knowledge

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
• Know that work they create belongs to them. • Name own work so that others know it belongs to them. • Know that pressing buttons or manipulating a mouse causes something to happen • Recognise when a device is touchscreen	• Recognise that tools can be changed to produce different outcomes • Choose options to achieve a desired effect • Consider impact or choices made • Recognise that information on a computer can be stored • Explain that information on a computer can be saved • Explain that stored information can be retrieved edited re-saved • Recognise that my work can be shared between devices • Recognise that my work can be printed and shared • Recognise that people around me can view my screen to see my work • Recognise that keyboard is used to enter text into a computer • Recognise that the shift key changes the output of a key • Recognise that text can be changed • Recognise that text can be edited • Recognise that appearance of text can be changed • Consider the impact of choices made	• Recognise that some digital devices can capture images using a camera • Recognise that people around me can view my screen to see my photos • Explain that photos can be saved • Recognise that a photograph is composed by the photographer • Recognise when to choose a landscape or portrait photograph • Recognise that photographs can be changed through editing • Recognise the features of a good photograph • Choose an image that could be improved by editing • Explain that photos can be retrieved edited and re-saved to identify that some images are not real/fake • Consider the results of choices I have made • Use a computer to create a piece of music • Listen to music • Say how music can make us think and feel • Recognise that music is made by humans • Describe how music can be used in different ways • Identify that there are patterns in music • Show how music is made from a series of notes • Create music for a purpose • Consider how different musical sequences create different effects • Review and refine our computer work	• Recognise that an animation is made up of a sequence of images • Recognise that an animation can be drawn images or captured photographs • Recognise the relationship between frames and motion • Understand the terms 'composition', 'stage' and 'capture area' • Decompose a known story into characters stages and key events • Recognise the need for consistency in working • Recognise that a capturing device needs to be in a fixed position • know how to fix mistakes in captured images • Recognise the impact of adding other media • Recognise how text and images can be used together to convey information • Define landscape and portrait as two different page orientations • Consider how different layouts can suit different • Recognise purposes • Consider the benefits of using DTP (Desktop Publisher) application • Recognise that DTP pages can be structured with place holders	• Recognise that sound can be digitally recorded • Recognise that some digital devices have microphones • Recognise that recorded audio is stored as a file • Recognise audio can be edited and altered • Recognise that sound can be layered • Consider the results of editing choices made • Recognise that digital images can be manipulated • Recognise the images can be changed for different purposes • Use the most appropriate tool for a particular purpose • Recognise that not all images are real • Consider the impact of changes made on the quality of the image	• Recognise that tools can be changed to produce different outcomes • Choose options to achieve a different effect • Recognise an image comprises of separate objects • Recognise objects are layered • Combine options to achieve a desired effect • Consider the impact of choices made • Recognise the objects can be modified in groups • Recognise that vector images can be scaled without impact quality • Recognise video as moving pictures that can be combined with audio • Identify the key concepts of composition • Recognise that some digital devices can capture video using a camera • Recognise that video can be captured by a person operating a camera • Recognise that video can be captured automatically for example a wildlife camera • Identify the features of a good video • Identify how a video can be improved • Recognise that video can be improved through editing • Consider the results of choices made	• Recognise that 3D objects comprise length width and height (depth) • Recognise the difference when working in 3D Compared with 2D • Recognise that structures can be broken down into a collection of 3D objects • Recognise the similarities and differences between real life 3D and virtual 3D • Recognise relationship between HTML and visual display • Recognise that web pages can contain different media types • Recognise that web pages are written by people • Recognise that a website is a set of hyperlinked web pages • Recognise components of a web page layout • Consider the ownership and use of images (copyright) • Recognise the need to preview pages (different screens/devices) • Recognise the need for a navigation path • Recognise the implications of linking to content owned by others

Skills						
EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
• Use age appropriate software to create art • Use video app to record videos	•	• Digitally make marks on a computer screen • Use the brush tool • Change brush colour and size • Use tools to draw shapes • Change fill colour in a shape • Use tools to draw lines • Change line size and colour • Use the fill tool to change colours • Use the undo button to correct a mistake • Use letter, number and space keys to enter text into a computer • Use punctuation and special characters • Select text • Choose options to achieve a desired effect • Change the appearance of text on a computer • Use the backspace key to remove text • Position the text cursor in a chosen location • Use undo	• Use a computer to create animation tell a story • Set up a device to capture the stock frame photos • Capture a series of images • Move a subject between catches • Use tools such as onion skinning to review subject position • Play a sequence of images back to review • Remove images to improve animation • Add sound effects • Add text scenes credits captions • Playback and review a film • Export film • Show that page orientation can be changed • Add text to a placeholder • Organise text and image place holders in a page layout • Add and remove images to and from place holders • Edit text in a placeholder to choose fonts and apply effects to text • Move resize and rotate images • Review a document	• Record sound • Know where the microphone is on a device • Press buttons to start recording • Press buttons to stop recording • Locate recorded audio • Playback audio • Select a selection of audio • Apply effects to a selection of audio • Delete a selection of audio • Save export an audio file • Use a computer to further manipulate images • Open/retrieve an image • Change the composition of an image, rotate flip crop • Apply a change globally adjust colours, apply filters add effects • Apply changes locally retouch reuse • Make additions draw, add text, add an element e.g. A border	• Create graphical objects on a computer screen • Add or remove objects • Select a shape type to add to a drawing • Select a line type to add to a drawing • Add text to a drawing • Drag out an object on the page • Select an object • Duplicate an object • Delete an object • Modify an object reposition, rotate, resize, alter proportions and re-colour • Select multiple objects • Combine objects • Group objects • Modify multiple objects • Change the layers of an object • Use a recording device add a computer to make a video • Hold the device safely in landscape orientation • Locate the function on the device to record the video • Pan left and right or tilt up and down • Focus zoom and compose • Use techniques to create specific effects • Press the start stop button to end recording • Playback video by locating the video captured on a device and using the playback video option • Edit the video by selecting a section of the video • Apply effects in a selection of video • Delete a section of video • Split a section of video • Crop a section of video • Save an export to video file	• Create three graphical objects on a computer screen • Alter the view of the 3d space • Place a 3d object in 3d space • Select, duplicate and delete an object • Reposition objects in three dimensions • Rotate objects in three dimensions • Resize an object in three dimensions • Recolouring object • Using object as a placeholder • Select, group and modify multiple objects • Recognise that blank objects must be used as place holders to create holes • Recognise the role of scale in design • Review an existing website (navigation bars header) • Create a new blank web page • Add text to a web page • Set the style of text on a web page • Change the appearance of text • Preview a web page (different screen sizes) • Embed media in a web page • Add web pages to a website • Insert hyperlinks between pages • Insert hyperlinks to another site