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| computing | **Sharing Information**  **Skills**  Explain that computers are connected together to form systems.  Explain that systems are built using a number of parts.  Describe that a computer system features inputs, processes and outputs.  Explain that computer systems communicate with other devices.  Recognise the role of computer systems in our lives.  Identify tasks that are managed by a computer system.  Identify the human elements of a computer system.  Explain the benefits of a given computer system.  Recognise how information is transferred over the internet.  Explain that networked digital devices have unique addresses.  Explain that data is transferred over networks in packets.  Explain that sharing information online lets people in different places work together.  Recognise that connected digital devices can allow us to access shared files stored online.  Send information over the internet in different ways.  Explain that the internet allows different media to be shared.  Share project online.  Suggest strategies to ensure successful group work.  Can make thoughtful suggestions on my group’s work.  Compare working online with working offline.  Evaluate different ways of working together.  Identify different ways of working together online on the internet which can be public or private.  Explain how the internet enables effective collaboration.  **Knowledge**  Parcel delivered to a convenient locker.  Knowledge of barcodes, when a system recognises codes.  Smart lockers/Amazon lockers.  Digital systems are used in a wide range of public contexts (airports, departure boards).  Understand puffin crossings (pedestrian) uses sensors to detect vehicles. Sensors provide input to the system.  Online shopping can be ordered online using tablet or computer.  Sending messages and information.  Shared online space. Modify and create templates.  Create and copy a presentation with a different name.  Add simple text and images to slides.  How to work together and which approaches suit online working.  Scratch 3 – see and remix buttons. View and change other people’s work. Save and create accounts on scratch platform.  Understand copyright.  **Vocabulary**  System, connection, digital, input, process, output, protocol, address, packet, chat, explore, slide deck, explore, reuse, remix, collaboration | **Vector Drawing**  **Skills**  Tools can be used to produce different outcomes.  Vector drawings are made using shapes.  Identify main drawing tools.  Vector drawing tools are different from paper-based drawings.  Create vector drawings by combining shapes.  Identify the shapes used to make a vector drawing.  Explain that each element added to a drawing is an object.  Move, resize and rotate objects that have been duplicated.  Use zoom tool to add detail.  Explain alignment grids and resize handles to improve consistency.  Modify objects to create different effects.  Understand that vector drawings have layers.  Add objects to create a new layer in the drawing.  Identify front and back layers and change the order of the layers.  Group objects.  Copy part of an object by duplicating it several times.  Create a single object.  Reuse a group of objects to develop drawing.  Evaluate vector drawing.  Evaluate alternatives, suggest improvements and apply what has already been learned.  **Knowledge**  Knowledge and understanding of digital painting.  Desktop publishing to use digital images.  Create images that can be used in desktop publishing documents.  Tools within google drawings.  Use the gradient fill tool.  Know how to access previous work.  **Vocabulary**  Vector, drawing tools, shapes, object, icons, toolbar, move, resize, colour, rotate, duplicate, copy, organise, zoom, select, rotate, object, alignment grid, handles, consistency, modify, layers, front, back, order, copy, paste, group, ungroup, duplicate, vector drawing, reuse, improvement, evaluate, alternatives. | **Video Editing**  **Skills**  Know and understand videos can include visual and audio media.  Adding audio (speech and music) to a video.  Plan a video project using a storyboard.  Name digital devices that can record video and sound.  Choose suitable digital devices for recording.  Locate and identify the working features of a digital device that can record a video.  Select suitable device, software and method to capture video.  Safe handling and use of devices.  List features of an effective video.  Record a video that demonstrates some of the features of an effective video.  Explain why lighting and angle are important in creating an effective video.  Store, retrieve and export recording to a computer.  Improve a video by reshooting and editing using the correct tools.  Recognise that the choices made will impact the quality of the final outcome.  Evaluate video.  **Knowledge**  History of video and animation.  Roles within a group – facilitator, recorde4r, summariser, presenter, timekeeper.  Know how devices work – integrated microphones, microphones.  Research suitable Youtuber.  Know where to locate video files, where to save and retrieve files.  Import video files to the computer.  **Vocabulary**  Video, audio, recording, storyboard, script, soundtrack, dialogue, capture, zoom, storage, digital, tape, AV (audiovisual), save, videographer, video techniques, pan, tilt, angle, lighting, setting, Youtuber, content, light, sound, camera angle, colour, export computer, Microsoft moviemaker, split, trip/clip, edit, titles, end credits, timeline, transitions, retake/reshoot, special effects, title screen, constructive feedback. | **Flat File Databases**  **Skills**  Create multiple questions about the same field, true, false, more than, less than.  Explain how information can be recorded.  Can order, sort and group data cards.  Navigate a flat-file database to compare different views of information.  Explain what a field and a record is in a database.  Choose which field to sort data by to answer a given question.  Explain how information can be grouped.  Group information to answer questions.  Combine grouping and sorting to answer more specific questions.  Choose which field and value are required to answer to a given question.  Outline how ‘AND’ and ‘OR’ can be used to refine data selection.  Choose multiple criteria to answer a given question.  Select an appropriate chart to visually compare data.  Refine a chart by selecting a particular filter.  Explain the benefits of using a computer to create graphs.  Ask questions that will need more than one field to answer.  Refine a search in a real-world context.  Present my findings to a group.  **Knowledge**  Create a paper-based database.  Use the term ‘attribute’.  Explain the terms ‘record’ and ‘field’, in relation to a database.  Know how to carry out a flight search using expedia and the ability to screenshot flight details from a web browser.  **Vocabulary**  Databases, data, information, record, field, sort, order, group, search, value, criteria, graph, chart, axis, compare, filter, presentation, | **Programming A – Selection in Physical Computing**  **Skills**  Build simple circuit to connect a micro controller to a computer.  Programme a microcontroller to light an LED.  Explain why an infinite loop is used.  Connect more than one output device to a microcrontroller.  Design sequences for given output devices.  Decide which output devices to control with a count-controlled loop.  Explain that a condition is something that can be either true or false.  Experiment with a ‘do until’ loop.  Program a micro controller to respond to an input.  Explain that condition being met can start an action.  Identify a condition and an action in the project.  Use selection (if…then) to direct the flow of a program.  Describe what the project will do.  Create a detailed drawing of the project.  Write an algorithm to control lights and a motor.  Use a selection to produce an intended outcome.  Test and debug project.  **Knowledge**  Repetition  Know how to connect a crumble controller to a battery box, sparkle and a computer.  Write programs using crumble programming software, to turn LEDs known as sparkles on and off and set them to different colours.  Connect sparkles to crumble controllers and write programs.  Write programs.  Use count-controlled loops in programs.  To connect a push switch.  Know the difference between how switches are used in simple circuits and programmed circuits.  Understand the conditions in programs.  Test ideas for the algorithm.  Design plans, models and electric circuits.  **Vocabulary**  Microcontroller, crumble controller, components, LED, sparkle, crocodile clips, connect, battery box, repetition, infinite loop, output devices, motor, count-controlled loop, switch, condition, true, false, input, selection, action, task, design, algorithm, program, debug, evaluate | **Programming B – Selection in Quizzes**  **Skills**  Recall how conditions are used in selection.  Identify and modify conditions in a program.  Use selection in an infinite loop to check a condition.  Identify the condition and outcomes in an if...the…else statement.  Create a program with different outcomes using selection.  Explain that program flow can branch according to a condition.  Design the flow of a program which contains if..then…else  Show a condition can direct program flow in one of two ways.  Outline a given task.  Use a design format to outline the project.  Identify the outcome of user input in an algorithm.  Implement the algorithm to create the first section of the program.  Test and share the program with others.  Identify ways the program could be improved.  Identify what setup code is needed for the project.  Extend the program further.  **Knowledge**  Know that conditions are statements that need to be met for a set of actions to be carried out.  Understand that selection is a programming construct that makes use of conditions to decide which set of actions to follow.  Know the blocks available in Scratch to allow conditions to be used in programs, including those that use selection.  Identify the conditions that are used in a program and the effect that meeting these conditions will have.  Know that repetition needs to be used in selection where the condition needs to be repeatedly checked, and without this, the actions will not be carried out when the condition is true.  Know that selection can be represented by the structure if… then… else…  Set of actions to be carried out when the condition is false, as when the condition is true.  Represent the form of selection in algorithms, and identify which outcome will be selected and why.  Construct a program using scratch using if... then… else…  Know that selection I the structure if… then… else can be used to control the flow of actions in programs.  Understand that and algorithm with a branching structure can be used to represent selection if… then… else structure.  Know when using the ask () and wait command block, an infinite loop is not required.  Know how to test whether selection has been used properly.  Identify the outcomes that should be carried out for correct and incorrect answers.  **Vocabulary**  Selection, condition, true, false, controlled-loop, outcomes, conditional statements, algorithm, program, debug, question, task, design, input, implement, test, run, set-up, share, evaluate, constructive |