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| OBS logo  **St. Luke’s Catholic Primary School**  **Progression in Computing (Key Stage 1)** | | |
| **Aspect** | **Class 1**  **(Year 1s)** | **Class 2**  **(Year 1/2)** |
| Understand what algorithm are, how they are implemented as programmes on digital devices, and the programs execute by following precise and unambiguous instructions | • Follow instructions  •Follow instructions to get the desired result  •Know that an algorithm is a precise, step-by-step set of instructions used to solve a problem or achieve an objective  •Follow instructions in a computer program  •Understand why instructions are needed  •Know what happens when instructions aren't followed  •Know that computers need precise instructions to follow  •Know that an algorithm written for a computer to follow is called a program  •Understand how the order in which the steps of a recipe are presented effects the outcome  •Compare forwards and backwards movements  •Start a sequence from the same place  •Compare left and right turns  •Experiment with turn and move commands to move a robot  •Use commands to move a sprite;  •Use a start block in a program  •Use move than one block by joining them together  •Change the values  •Find blocks that have numbers  •Create an algorithm for each sprite | •Choose a series of words that can be enacted as a sequence  •Follow instructions given by someone else  •Give clear and unambiguous instructions  •Create different algorithms for a range of sequences (using the same commands)  •Show the difference in outcomes between two sequences that consist of the same commands  •Follow a sequence  •Identify different routs around the mat  •Create an algorithm to meet the goal  •Create a detailed drawing of the project  •Describe what the project can do  •Identify a real-world example of a condition starting an action  •Test and debug the project  •Write an algorithm that describes what the model will do  •Identify that a program needs to be started  •Identify the start of a sequence  •Change the outcome of a sequence of commands  •Match two sequences with the same outcome  •Create an algorithm |
| Create and debug simple programs | •Organise instructions for a simple recipe  •Know that correcting errors in an algorithm or program is called 'debugging'  •Choose the order of commands in a sequence  •Debug the program  •Explain what the program should do  •Plan two programs  •Use 2 different programs to get to the same place  •Create an algorithm for each sprite  •Decide how each sprite will move  •Add programming blocks based on the algorithm  •Test the programs created  •Decide how each sprite will move | •Use an algorithm to program a sequence on a floor robot  •Test the mat to make sure it is useable  •Explain what the algorithm should achieve  •Use the algorithm to create a program  •Plan algorithms for different parts of the task  •Put together the different parts of the program  •Test and debug each part of the program  •Use selection to produce an intended outcome  •Show how to run the program  •Build the sequence of blocks I need  •Decide which blocks to use to meet the design  •Create a program based on a new design  •Debug the program  •Improve the project by adding features |
| Use logical reasoning to predict the behaviour of simple programs | •Predict the outcome of a sequence involving forwards and backwards commands  •Predict the outcome of a sequence involving up to 4 commands  •Say what happens when I change a value | •Compare a prediction to the program outcome  •Predict the outcome of a sequence  •Predict the outcome of a sequence of commands  •Work out the actions of a sprite in an algorithm |
| Use technology purposefully to create, organise, store, manipulate and retrieve digital content | •To use a mouse in different ways (click, drag and drop, create a picture, open a program);  •Use a keyboard to type on a computer (save work, type my name, delete letters, open work, use arrow keys)  •Draw lines on a screen and explain which tools I used  •Make marks on a screen and explain which tools I used  •Use the paint tools to draw a picture  •Make marks with the square and line tools effectively  •Use the shape and line tools to recreate the work of an artist  •Choose appropriate shapes  •Make appropriate colour choices  •Choose appropriate paint tools and colours to recreate the work of an artist  •Know that different paint tools do different jobs  •Know how to change the brush colour and size  •Make dots of colour on the page  •Make dots of colour to create a picture in the style of an artist on my own  •Say whether I prefer painting on a computer or using paper  •Say which tools were helpful and why  •Describe objects using labels  •Identify the label for a group of objects  •Match objects to groups  •Count a group of objects  •Group objects  •Describe an object  •Describe a property of an object  •Find objects with similar properties  •Count how many objects share a property  •Group objects in more than one way  •Group similar objects  •Choose how to group objects  •Describe groups of objects  •Record how many objects are in group  •Decide how to group objects to answer a question  •Record and share what they've found  •Compare different programming tools  •Find which commands move a sprite  •Add sprites that match the design  •Delete a sprite  •Show that a project can include more than one sprite  •Choose appropriate artwork for the project | •Use IT for different types of activities  •Identify and find keys on a keyboard  •Open a word processor  •Recognise keys on a keyboard  •Enter text into a computer  •Use backspace to remove text  •Use letter, number and space keys  •Explain what the keys do, that I have already learnt about  •Identify the toolbar and use bold, italic and underline  •Type capital letters  •Change the font  •Select all the text by clicking and dragging  •Select a word by double-clicking  •Use 'undo' to remove changes  •Explain the difference between typing and writing  •Say why they prefer typing or writing  •Explain what they did to capture a digital photo  •Talk about how to take a photo  •Explain the process of taking a good photo  •Explain why a photo looks better in portrait or landscape format  •Take photos in both portrait and landscape  •Identify what is wrong with a photograph  •Improve a photo by retaking it  •Experiment with different light sources  •Explain why a picture may be unclear  •Explore the effect light has on a photo  •Recognise that images can be changed  •Use a tool to achieve a desired effect  •Apply a range of photography skills to capture a photo  •Identify which photos are real and which have been changed  •Recognise which photos have been changed  •Compare totals in a tally chart  •Record data in a tally chart  •Represent a tally count as a total  •Enter data onto a computer  •Use a computer to view data in a different format  •Use pictograms to answer simple questions about objects  •Explain what the pictogram shows  •Organise data in a tally chart  •Use a tally chart to create a pictogram  •Answer 'more than'/'less than' and 'most'/'least' questions about an attribute  •Create a pictogram to arrange objects by an attribute  •Create a pictogram to arrange objects by an attribute  •Tally objects using a common attribute  •Choose a suitable attribute to compare people  •Collect the data needed  •Create a pictogram and draw conclusions from it  •Shared what has been found out using a computer  •Use a computer program to present information in different ways  •Explain the choices made for the mat design  •Choose backgrounds for the design  •Choose characters for the design   * •Compare the project to the design |
| Recognise common uses of information technology beyond school | •To identify technology;  •Identify a computer and its main parts.  •Match a command to an outcome  •Predict the outcome of a command on a device  •Run a command on a device  •Follow an instruction  •Give directions  •Recall words that can be acted out | •Describe some uses of computers  • Identify examples of computers  •Identify that a computer is a part of IT  •Identify examples of IT  •Identify that some IT can be used in more than one way  •Sort school IT by what it is used for  •Find examples of IT beyond school  •Sort IT by where it is found  •Talk about uses of IT  •Demonstrate how IT devices work together  •Recognise common types of technology  •Say why we use IT   * •Recognise what devices can be used to take photographs |
| Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about the content or contact on the internet or other online technologies | •Create rules for using technology responsibly (how we benefit from rules, give examples of rules, identify rules that keep us safe and healthy when we are using technology in and beyond the home)  •Use technology safely and respectfully | •Say how rules can help keep me safe  •Talk about different rules for using IT  •Explain the need to use IT in different ways  •Explain the choices made when using IT  •Explain the choices made when using IT  •Use technology safely and respectfully  •Give simple examples of why information should not be shared |

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| OBS logo**Graphical user interface, application  Description automatically generated**  **St. Luke’s Catholic Primary School**  **Progression in Computing (Key Stage 2)** | | | |
| **Aspect** | **Class 3**  **(Years 3/4)** | **Class 4**  **(Years 4/5)** | **Class 5**  **(Years 5/6)** |
| Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts | •Choose a word which describes an on-screen action for the plan  •Create a program following a design  •Identify that each sprit is controlled by the commands chosen  •Start a program in different ways  •Decide the actions for each sprite in a program  •Identify and name the objects needed for a project  •Implement the algorithm as code  •Relate a task description to a design  •Consider the real world when making design choices  •Choose blocks to set up the program  •Choose suitable keys to tun on additional features  •Modify a program using a design  •Test a program against a given design | •Create a code snippet for a given purpose  •Program a computer by typing commands  •Test an algorithm in a text-based language  •Use a template to create a design for the program  •Use a procedure in a program  •Design a program that includes count-controlled loops  •Develop a program by debugging it  •Make and use a design to write a program  •Modify a snippet of code to create a given outcome  •Develop my own design explaining what the project will do  •Select key parts of a key project to use in my own design  •Build a program that follows the design  •Evaluate the steps followed when building the project  •Refine the algorithm in the design  •Connect more than one output component to a microcontroller  •Design sequences that use count-controlled loops  •Use a count-controlled loop to control outputs  •Outline a given task  •Use a design format to outline my project  •Implement an algorithm to create the first section of the program  •Share the program with others  •Test the program  •Extend the program further  •Identify the setup code needed for the program  •Identify ways the program could be improved | •Create algorithms for the project  •Explain design choices  •Choose a name that identifies the role of the variable  •Test the code  •Extend the game further using more variables  •Identify ways that the game can be improved  •Share the game with others  •Apply knowledge of programming to a new environment  •Test the program on an emulator  •Modify a program to achieve a different outcome  •Decide what variables to include in a project  •Design the algorithm for the project  •Design the program flow for the project  •Create the program based on the design  •Test the program against the design  •Use a range of approaches to find and fix bugs |
| Use sequence, selection and repetition in programs; work with variables and various form of input and output | •Explain that digital devices accept inputs  •Explain that digital devices produce outputs  •Follow a process  •Classify input and output devices  •Describe a simple process  •Design a digital device  •Create a sequence of connected commands  •Start a program in different ways  Combine sound commands.  •Explain what a sequence is  •Order notes into a sequence  •Build a sequence of commands  •Program movement  •Use a programming extension  •Build more sequences of commands to make the design work | •Describe that a computer system features inputs, processes and outputs  •Test an algorithm in a text-based language  •Write an algorithm to produce a given outcome  •Identify everyday tasks that include repetition as part of a sequence e.g. brushing teeth, dance moves  •Identify patterns in a sequence  •Use a count-controlled loop to produce a given outcome  •Choose which values to change in a loop  •Identify the effect of changing the number of times a task is repeated  •Explain that a computer can repeatedly call a procedure  •Identify 'chunks' of actions in the real world  •List an everyday task as a set of instructions including repetition  •choose when to use a count-controlled and an infinite loop  •Modify loops to produce a given outcome  •Recognise that some programming languages enable more than one process to run at once  •Choose which actions will be repeated for each object  •Evaluate the effectiveness of the repeated sequences used in the program  •Re-use existing code snippets on new sprites  •Create a simple circuit and connect it to a microcontroller  •Explain what an infinite loop does  •Program a microcontroller to make an LED switch on  •Design a conditional loop  •Program a microcontroller to respond to an input  •Identify a condition and an action in my project  •Use selection (an 'if...then...' statement) to direct the flow of a program  •Identify condition in a program  •Modify a condition in a program  •Recall how conditions are used in selection  •Create a program with different outcomes using selection  •Identify the condition and outcomes in an 'if…then…else…' statement  •Uses selection in an infinite loop to check a condition  •Design the flow of a program which contains 'if...then...else...'  •Explain that program flow can branch according to a condition  •Show that a condition can direct program flow in one of two ways  •Identify the outcome of user input in an algorithm | •Explain the way a variable changes can be defined  •Identify examples of information that are variable  •Identify that variables can hold numbers or letters  •Explain that a variable has a name and a value  •Identify a program variable as a placeholder in memory for a single value  •Recognise that the value of a variable can be changed  •Decide where in a program to change a variable  •Make use of an event in a program to set a variable  •Recognise that the value of a variable can be used by a program  •Determine the flow of a program using selection  •Identify examples of conditions in the real world  •Use a variable in a "If…then…else…" statement to select the flow of a program  •Experiment with different physical inputs  •Explain that if you read a variable, the value remains  •Use a condition to change a variable  •Use an operand (e.g. <>=) in an "if...then..." statement |
| use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs | •Explain that the object in the project will respond exactly to the code  •Choose which keys to use for actions and explain choices  •Explain the relationship between an event and an action  •Identify a way to improve a program  •Identify additional features (from a given set of blocks)  •Match a piece of code to an outcome | •Explain the effect of changing a value of a command  •Predict the outcome of a program containing a count controlled loop  •Predict the outcome of a snippet of code  •Explain what the outcome of the repeated action should be  •Explain the effect of the changes  •Identify which parts of a loop can be changed  •Evaluate the use of repetition in a project  •Explain that a condition is either true or not  •Explain that a condition being met can start an action  Show that a condition can direct program flow in one of two ways | •Explain the importance of the order of conditions in " else…if…" statements  •Explain that if you read a variable, the value remains |
| 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 | •Discuss why we need a network switch  •Explain how messages are passed through multiple connections  •Recognise different connections  •Demonstrate for information can be passed between devices  •Explain the role of a switch, server and wireless access point in a network  •Recognise that a computer network is made up of a number of devices  •Identify how devices in a network are connected together  •Identify networked devices around me  •Identify the benefits of computer networks  •Demonstrate how information is shared across the internet  •Describe the internet as a network of networks  •Describe networked devices and how they connect  •Explain that the internet is used to provide many services  •Recognise that the World Wide Web contains websites and web pages  •Describe where websites are stored when uploaded to the WWW  •Explain the types of media that can be shared on the WWW  •Explain that internet services can be used to create content online  •Explain what media can be found on the WWW  •Recognise that I can add content to the WWW | •Explain that computer systems communicate with other devices  •Explain that systems are built using a number of parts  •Explain the benefits of a given computer system  •Identify tasks that are managed by computer systems  •Identify the human elements of a computer system  •Explain that data is transferred over networks in packets  •Explain that networked digital devices have unique addresses  •Recognise that data is transferred using agreed methods  •Explain that the internet allows different media to be shared  •Recognise that connected digital devices can allow us to access shared files stored online  •Send information over the internet in different ways  •Compare working online with offline  •Make thoughtful suggestions on the collaborative project  •Suggest strategies to ensure successful group work  •Explain how the internet enables effective collaboration  •Identify different ways or working together online  •recognise that working together on the internet can be public or private | •Choose methods of communication to suit particular purposes  •Explain the different ways in which people communicate  •Recognise that here are a variety of ways of communicating over the internet |
| Use search technologies effectively, appreciate how results are selected and ranked and be discerning in evaluating digital content | •Describe how to access websites on the WWW safely  Search for and identify the uses of desktop publishing in the real world | •Know that the internet allows different media to be shared  •Refine a search in a real-world context | •Compare results from different search engines  •Complete a web search to find specific information  •Refine my search  •Explain why we need tools to find things online  •Recognise the role of web crawlers in creating an index  •Relate a search term to the search engine's index  •Explain that a search engine follows rules to rank relevant pages  •Explain that search results are ordered  •Suggest some of the criteria that a search engine checks to decide on the order of results  •Describe some of the ways that search results can be influenced  •Explain how search engines make money  •Recognise some of the limitations of search engines  •Discuss the different types of media used on websites  •Explore a website  •Know that websites are written in HTML |
| Select use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information | •Explain how digital devices are used for different activities  •Recognise similarities between digital devices and non-digital tools  •Suggest differences between using digital devices and non-digital tools  •Create an effective flip book-style animation  •Draw a sequence of pictures  •Explain how an animation/flip book works  •Create an effective stop-frame animation  •Explain why little changes are needed for each frame  •Predict what an animation will look like  •Break down a story into settings, characters and events  •Create a storyboard  •Describe an animation that is achievable on screen  •Evaluate the quality of the animation  •Review a sequence of frames to check work  •Use onion skinning to help make small changes between frames  •Evaluate another learner's animation  •Explain ways to improve the animation  •Improve the animation based on feedback  •Add other media to the animation  •Evaluate the final film  •Explain why other media was added to the animation  •Explain the difference between text and images  •Identify the advantages and disadvantages of using text and images  •Recognise that text and images can communicate messages clearly  •Change font style, size and colours for a given purpose  •Edit the text  •Explain that text can be changed to communicate more clearly  •Create a template for a particular purpose  •Define the term 'page orientation'  •Recognise placeholders and say why they are important  •Choose the best locations for the content  •Make changes to content after it has been added  •Paste text and images to make (for example) a magazine cover  •Choose a suitable layout for a given purpose  •Identify different layouts  •Match a layout to a purpose  •Combine work made on desktop publishing to work created by hand  •Say why desktop publishing might be useful  •Create 2 groups of objects separated by one attribute  •Investigate questions with yes/no answers  •Make up a yes/no question about a collection of objects  •Arrange objects into a tree structure  •Create a group of objects within an existing group  •Select an attribute to separate objects into groups  •Group objects using yes/no questions  •Prove the branching database works  •Select objects to arrange in a branching database  •Compare 2 branching database structures  •Create yes/no questions using given attributes  •Explain that questions need to be ordered carefully to split objects into similarly sized groups  •Create questions and apply them to the tree structure  •Select a theme and choose a variety of objects  •Use the branching database to answer questions  •Compare 2 ways of presenting information  •Explain what a branching database tells me  •Explain what a pictogram tells me  •Explain that objects in Scratch have attributes  •Identify the objects in a scratch project (sprites, backdrops)  Recognise that commands in scratch are represented as blocks  •Make design choices for the artwork  •Choose a character for the project  •Choose a suitable size for a character in a maze  •Evaluate the project  •Implement the design  •Make design choices and justify them | •Contribute to a collaborate online project  •Explain the effect that editing can have on an image  •Explain how images can be changed in real life  •Identify changes that we can make to an image  •Change the composition of an image by selecting parts of it  •Consider why someone might want to change the composition of an image  •Explain what has changed in an edited image  •Choose effects to make my image fit a scenario  •Explain why my choice fits a scenario  •Talk about changes made to images  •Choose appropriate tools to retouch an image  •Give example of positive and negative effects that retouching can have on an image  •Identify how an image has been retouched  •Combine parts of images to create new images  •Compare the original image with my completed publication  •Consider the effects of adding other elements to the work  •Evaluate the impact of the publication on others through feedback  •Create multiple questions about the same field  •Explain how information can be recorded  •Order, sort and group data cards  •Choose which filed to sort data by to answer a given question  •Explain what a 'field' and a 'record' is in a database  •Navigate a flat-file database to compare different views of information  •Combine grouping and sorting to answer more specific questions  •Explain how information can be grouped  •Group information to answer questions  •Choose multiple criteria to answer a given question  •Choose which field and vale are required to answer a given question  •Outline how 'AND' and 'OR' can be used to refine data selection  •Explain the benefits of using a computer to create graphs  •Refine a chart by selecting a particular filter  •Select an appropriate chart to visually compare data  •Ask questions that will need more than field to answer  •Present findings to a group  •Refine a search in a real-world context  •Create a detailed drawing of the project | •Compare different methods of communicating on the internet  Select use and combine software for the project design  •Draw a web page layout that suits the purpose  •Recognise the common features of a web page  •Suggest media to include on the page  •Add content to my own web page  •Evaluate what the web page looks like on different devices and suggest/make edits  •Preview what the webpage looks like  •Describe why navigation paths are useful  •Evaluate the user experience of the website  •Discuss the similarities and differences between 2D and 3D shapes  •Explain why we might represent 3D objects on a computer  •Select, move and delete a digital 3D shape  •Change the colour of a 3D object  •Identify how graphical objects can be modified  •Resize a 3D object  •Position 3D objects in relation to each other  •Rotate a 3D object  •Select and duplicate multiple 3D objects  •Create 3D objects of an appropriate size  •Group a digital 3D shape and a placeholder to create a hole in a object  •Identify the 3D shapes needed to create a model of a real-world object  •Choose which 3D objects are needed to construct the model  •Modify multiple 3D objects  •Plan own 3D model  •Decide how the model can be improved  •Evaluate the model against certain criteria  •Modify the model to improve it  •Answer questions from an existing data set  •Ask simple relevant questions which can be answered using data  •Explain the relevance of data headings  •Apply an appropriate number format to a cell  •Build a data set in a spreadsheet application  •Explain what an item of data is  •Construct a formula in a spreadsheet  •Explain the relevance of a cell's data type  •Identify that changing inputs changes outputs  •Apply a formula to multiple cells by duplicating it  •Create a formula which includes a range of cells  •Recognise that data can be calculated using different operations  •Apply a formula to calculate data needed to answer questions  •Explain why data should be organised  •Use a spreadsheet to answer questions  •Produce a graph  •Suggest when to use a table or graph  •Use a graph to show the answer to questions  •Choose the artwork for the project  •Create artwork for the project  •Transfer the program to a controllable device  •Create a sensing program on a physical computing device |
| Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact | •Discuss why networks need protecting  •Recognise that I can add media to the WWW  •Explain that there are rules to protect content  •Explain that websites and their content are created by people  •Suggest who owns the content on websites  •Explain that not everything on the WWW is true  •Explain why I need to think carefully before I share or reshare content  •Explain why some information I find online may not be honest, accurate or legal  •Suggest ways and rules for staying safe online  •Identify a range of ways to report concerns and content and contact  Use technology safely, respectfully and responsibly | •Send information over the internet in different ways  •Explain why I need to think carefully before I share or reshare content  •Explain why some information I find online may not be honest, accurate or legal  •Suggest ways and rules for staying safe online  •Identify a range of ways to report concerns and content and contact  •Sort images into 'fake' or 'real' and explain choices  •Talk about 'fake' images around me | •Decide when and what I should and should not share  •Explain that communication on the internet may not be private  •Describe what is meant by the term 'fair use'  •Find copyright-free images  •Say why copyright-free images should be used  •Explain the implication of linking to content owned by others |

EYFS: Computational thinking is thoughtfully considered and taught within the EYFS curriculum to provide children with early digital literacy, information technology and computer science skills.