|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Term Pentecost 2: Programming B**  **Subject Computing Year 6 Medium Term Planning** | | | | | | |
| **National Curriculum Objectives**  ● Design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts  ● Use sequence, selection, and repetition in programs; work with variables and various forms of input and output  ● Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs  ● 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 | | | | | | |
|  | Lesson 1 | Lesson 2 | Lesson 3 | Lesson 4 | Lesson 5 | Lesson 6 |
| **Learning intention for each lesson:** | To create a program to run on a controllable device | To explain that selection can control the flow of a program | To update a variable with a user input | To use an conditional statement to compare a variable to a value | To design a project that uses inputs and outputs on a controllable device | To develop a program to use inputs and outputs on a controllable device |
| **Recall and retrieval** |  | How do I transfer my program to a controllable device. | Which are examples of conditions in the real world. | What happens if I change the variable? | What will the outcome be if I modify the program? | What parts of the program flow are missing from my program? |
| **Sequence of knowledge throughout the lesson**  **:**  **Key skills within each lesson** | **Key knowledge**  I know how to apply my knowledge of programming to a new environment  I know how to test my program on an emulator  I know how to transfer my program to a controllable device  **To know that a micro:bit is an input, process, output device that can be programmed. Become familiar with a microbit and the programming environment.**  **Create and run a programs on the microbit** | **Key knowledge**  I know how to identify examples of conditions in the real world  I know how to use a variable in an if, then, else statement to select the flow of a program  I know how to determine the flow of a program using selection  **Explore and create programs using how if, then, else statements to direct the flow of a program.**  **Relate if, then, else statements to real-world situations,.**  **Create programs in MakeCode.** | **Key knowledge**  I know how to use a condition to change a variable  I know how to experiment with different physical inputs  I know how to explain that checking a variable doesn’t change its value  **Use the buttons to change the value of a variable using selection.**  **Develop a program to update the variable by moving the micro:bit using the accelerometer to sense motion.** | **Key knowledge**  I know how to use an operand (e.g. <>=) in,an, if, then statement  I know how to explain the importance of the order of conditions in else, if statements  I know how to modify a program to achieve a different outcome  **Apply understanding of the importance of order in programs.**  **Use operands in selection to determine the flow of a program.**  **Modify a program to enable the micro:bit to be used as a navigational device.** | **Key knowledge**  I know how to decide what variables to include in a project  I know how to design the algorithm for my project  I know how to design the program flow for my project  **Design the algorithm and program flow for their step counter project.** | **Key knowledge**  I know how to create a program based on my design  I know how to test my program against my design  I know how to use a range of approaches to find and fix bugs  **Create a code.**  **Test and debug code, using the emulator and physical device.** |
| **Scaffolding** | Supported to become familiar with a microbit. | Create a simple program. | Labelled picture to support identifying the buttons. | More simple operand | Simple algorithm. | Supported to debug. |
| **Challenge** | More complex program. | Create a more complex program. | Update different variables. | More than one modification. | A more complex algorithm. | To debug different programs. |
|  | **Key Vocabulary**  Micro:bit, MakeCode, input, process, output, flashing, USB, trace | **Key Vocabulary**  Selection, condition, if then else, variable, random | **Key Vocabulary**  Input, selection, condition, variable, sensing, accelerometer, value | **Key Vocabulary**  Compass, direction, variable, navigation | **Key Vocabulary**  Micro:bit, design, task, algorithm, variable, step counter | **Key Vocabulary**  Plan, create, code, test, debug |