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|  **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 emulatorI 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 programI 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 inputsI 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 statementsI 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 projectI know how to design the algorithm for my projectI 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 designI 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 |