Unit 4.1: We are software developers

5 Key words to remember

Algorithm – a sequence of precise instructions or steps to achieve a goal.

Debug – to spot and correct mistakes (bugs) in a computer program or algorithm.

Repetition – a programming feature where a group of instructions is repeated a number of times, or until a certain condition is met.

Selection – if/then/else programming which shows which code will run depending on which condition is met.

Variable – a value which can change based on what is happening in the program, for example, scoring and timer variables are often used in computer games.

Key takeaways

- ☐ Software developers create computer programs. Computer programming involves taking an **algorithm** and turning it into a language that a computer can follow.
- ☐ Good computer games allow players to make progress and offer challenge. They are interactive, so players have to input information to create outputs.
- ☐ An input is data (information) that users provide to a computer. Examples of input devices include a keyboard, mouse and game controller.
- ☐ An output is data (information) which is produced by the computer. In your game, sound, motion and messages may be examples of outputs.
- ☐ Computer games need to look appealing to players. There should be a theme behind your choice of sprites, backgrounds and sounds.
- ☐ In Scratch, you must create a **variable** for scoring or for timing. After naming your **variable**, you must program it to change based on events in your game.
- ☐ Testing of games is important before they are published. Testing helps to identify whether the program has bugs and needs to be **debugged**. It also gives feedback on what works well in your game and what can be improved.

Knowledge check – code check

Check the code below line-by-line to understand the **algorithm**.

Test yourself: Can you explain what the **selection** block (if/then/else) below will do when the game is being played?

Test yourself: Can you also spot the **variable** block which has been created? What is its purpose?

Knowledge check – good games

Think about your favourite educational game and answer these questions.

- What does the game help you learn?
- What happens in the game if answers are correct?
- What happens if the answers are incorrect?
- How can you input your responses/answers into the game?
- Is there **repetition** in the game?
- Is there progression in the game?
- Does the game have scoring/timers?

People – Scratch creator Mitch Resnick

Scratch was created in 2007 by a team led by American computer scientist Mitch Resnick. He wanted to create a programming tool which was free, for all children around the world to express their creativity through coding.

Mitch Resnick was also involved in created Lego Mindstorms, which allows users to build and program their own robots. As of 2022, there are an estimated 95 million registered users of Scratch worldwide!