Unit 4.1: We are software developers

5 words to remember

algorithm: a sequence of precise instructions or steps for achieving 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 that can change based on what is happening in a program, for example scoring and timer variables are often used in computer games

Key takeaways

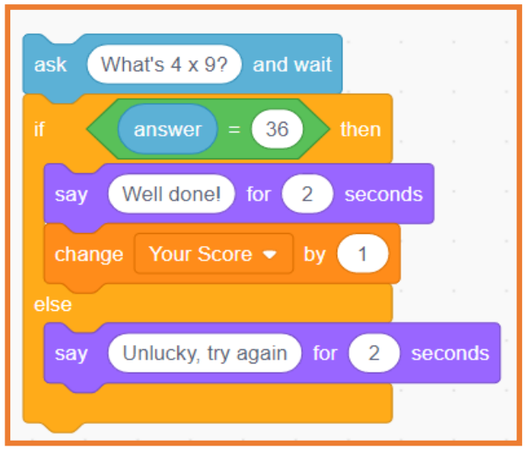
- ☐ Software developers create computer programs. Computer programming involves taking an algorithm and turning it into a language that a computer can follow.
- ☐ Good computer games allow players to make progress and provide challenge. They are interactive, so players have to input information to create 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) that 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 games is an important step 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 that 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 that was free, so that all children around the world could express their creativity through coding.

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