SWITCHED ON Computing

5 words to remember

abstraction: a process that helps simplify things by identifying what is important and what detail can be hidden or ignored

algorithm: a sequence of precise instructions or steps to achieve a goal

bug: an error or a mistake in a program or algorithm, which stops it running in the correct way

debug: to spot and correct mistakes (bugs) in a computer program or algorithm

logical reasoning: a problem-solving skill that gives a reason for something that others have to accept as correct

People: Admiral Grace Hopper

The word **debugging** is believed to have been first used by Admiral Grace Hopper when she was working on a Mark II computer at Harvard University in the 1940s.
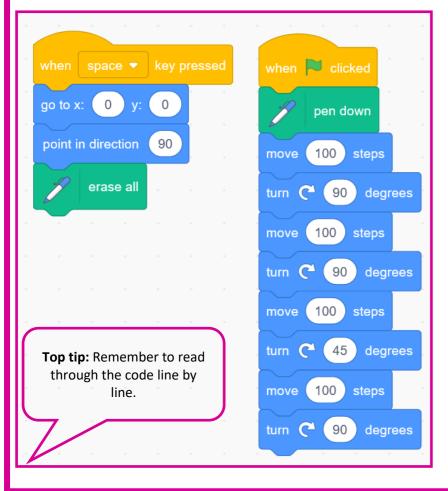
Admiral Hopper and her colleagues discovered a moth stuck in a circuit switch, which stopped the computer from operating. Hopper remarked that they were 'debugging' the system!
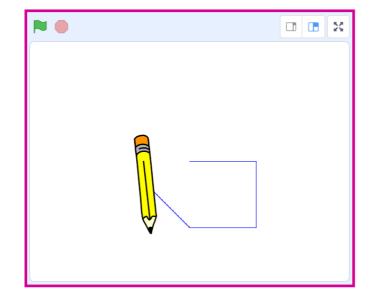
Key takeaways

- ☐ When computer programs do not work or could be improved, they need 'debugging'.
- ☐ Did you know that computer programmers spend more time fixing code than writing it!
- ☐ Debugging mistakes needs patience and resilience.
- ☐ When creating programs, it is best to test as you go rather than waiting until the end to check for errors.
- ☐ **Abstraction** helps to simplify code, which can be helpful in making debugging less complex.
- ☐ There are different ways to develop debugging skills, such as:
  - o Firstly, identify what the error is by running the program.
  - o Next, identify where in the **algorithm** the error or **bug** must be.
  - o Reading through the code line by line is very helpful.
  - o Working with a partner can also help to spot and work through errors. Explaining each step to someone else also helps develop **logical-reasoning** skills.
  - o Once the error is fixed, check whether the program now works.

Knowledge check: Can you spot the bug?

This Scratch code should draw a square but, as you can see from the drawing below, the program is not running correctly and does not draw a complete square. Can you spot the error?

Hint: The square should have sides of 100 steps in length and vertices (corner angles) of 90°.

Top tip: Remember to read through the code line by line.

Knowledge check: Can you debug this error?

When the green flag is clicked, the question 'What is 5 × 6?' appears. I answer correctly with 30, but a 'Sorry, that's wrong' message appears on screen. Which of the following explains the bug?

A – The green flag block is in the wrong place.
B – The answer to 5 × 6 is wrong in the code.
C – The code blocks are in the wrong order.
D – The wrong sprite has been used.