



## F5.2 Flowcharts

Algorithms · GCSE · OCR J277 2.1.2, AQA 8525 3.1.1, Edexcel 1CP2 1.2.1 ·  
about 15 min

### What this lesson is about

The standard symbols, and turning a flowchart into code.

- The symbols
- From flowchart to code
- A loop that counts
- Drawing your own

### Questions

5 marks in all

1. Which flowchart symbol is used for a decision?

[1 mark]

- ☐ A A diamond
- ☐ B A rectangle
- ☐ C A rounded box
- ☐ D A slanted box

**Answer:** A. A decision is a diamond with a Yes arrow and a No arrow.

2. Which symbol is used for input or output?

[1 mark]

- ☐ A A slanted box (parallelogram)
- ☐ B A diamond
- ☐ C A rectangle
- ☐ D A box with double sides

**Answer:** A. Inputs and outputs use a parallelogram.

3. In a flowchart, an arrow goes back up to an earlier decision. What does that become in code?

[1 mark]

- ☐ A A while loop
- ☐ B An if with no loop
- ☐ C A function
- ☐ D A comment

**Answer:** A. Looping back to a decision repeats while the answer allows: a while loop.

4. What is the box with double lines on its sides for?

[1 mark]

- ☐ A A subroutine defined elsewhere
- ☐ B A decision
- ☐ C The start of the flowchart
- ☐ D A variable

**Answer:** A. It calls a subprogram, such as tone(note, 0.2).

5. The rising scale flowchart starts with count = 0 and loops while count < 5, adding 1 each time. How many notes does it play? [1 mark]

**Answer:** 5. count takes the values 0, 1, 2, 3 and 4 while the loop runs.

## The task: the password guard

Turn this flowchart into a program. Ask for a password with the prompt `Password?` . While it is not `bugbot`, print `wrong`, beep, and ask again. When it is right, turn the LED green and drive forward 20 cm. The task types `robot` first, then `bugbot`.

```
# the two lines every program starts with: the commands, then the robot
from bugbot import *
connect()

password = input("Password? ")
```

**The hint students can ask for:** Ask once before the loop, then keep asking while the answer is still wrong, warning each time. Only after the loop does the robot unlock and drive.

### A solution

```
from bugbot import *
connect()
password = input("Password? ")
while password != "bugbot":
    print("wrong")
    tone(220, 0.3)
    password = input("Password? ")
led("green")
forward(50, distance=20)
```

Any program that meets the task's checks is marked correct in the simulator; this is one way, not the only way.