



F2.1 Blocks and indentation

Decisions and loops · GCSE · OCR J277 2.2.1, AQA 8525 3.2.2, Edexcel
1CP2 6.2.1 · about 10 min

What this lesson is about

How Python groups lines: the colon and the indent.

- A block is a group of lines
- The colon and the indent go together
- How much to indent
- Where a block ends
- Blocks inside blocks
- Why Python does it this way

Questions

7 marks in all

1. What does this program print?

[1 mark]

```
if True:
    print("one")
    print("two")
print("three")
```

Answer:

```
one
two
three
```

The two indented lines are the block. The unindented line is not part of it and runs anyway.

2. What must a line that starts a block end with?

[1 mark]

- ☐ A A colon :
- ☐ B A semicolon ;
- ☐ C A full stop
- ☐ D Brackets ()

Answer: A. The colon says a block follows, and the next lines must be indented.

3. What does Python say about a line indented for no reason, with no : line above it?

[1 mark]

- ☐ A IndentationError: unexpected indent
- ☐ B Nothing, it runs normally
- ☐ C NameError
- ☐ D It skips the line

Answer: A. Indentation must belong to a block. Indentation with no block is an error.

4. Two lines in the same block are indented by four spaces and three spaces. What happens? [1 mark]
- ☐ A IndentationError: lines in one block must line up exactly
 - ☐ B Both run
 - ☐ C Only the first runs
 - ☐ D Python fixes it

Answer: A. What Python cares about is that every line in the same block has the same indentation.

5. How many spaces is the usual indent for a block inside a block? [1 mark]

Answer: 8. Four spaces for each level: a block inside a block is eight spaces in.

6. Where does a block end? [1 mark]

- ☐ A At the first line that is indented less
- ☐ B At the next blank line
- ☐ C At the next print
- ☐ D At the end of the program, always

Answer: A. The first line indented less than the block is outside it.

7. In OCR's Exam Reference Language, which word closes an if block? [1 mark]

- ☐ A endif
- ☐ B end
- ☐ C fi
- ☐ D Nothing: indentation is enough

Answer: A. The Reference Language closes blocks with words: endif, endwhile, next. Python uses indentation alone.

The task: fix the indentation

This program's lines are in the right order but the indentation is wrong. It should print `inside the block`, then leave the LED green, then print `after the block` once. Fix only the spaces.

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

if True:
    print("inside the block")
# the LED: green
led("green")
    print("after the block")
```

The hint students can ask for: Fix the indentation only. The two led and print lines belong inside the if; 'after the block' belongs outside it.

A solution

```
from bugbot import *
connect()
if True:
    print('inside the block')
    led('green')
print('after the block')
```

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