

Computing

Lesson 1: Programming Paradigms

KS4 Object-Oriented Programming (OOP)

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Task 1.1 - Programming conventions

What is wrong with this program?

Describe the convention that has been broken.

```
1 count = 10
2
3 time_taken = 0
4
5 numbers = []
6
7 import time
8 from random import randint
9
10 for second in range(count):
11     numbers.append(randint(0, 100))
12     time.sleep(1)
13     time_taken += 1
14
15 print(numbers)
16 print(time_taken)
```



Task 1.2 - Programming conventions

What is wrong with this program?

Describe the convention that has been broken.

How would you fix it?

```
1 timer = 5
2
3 if timer > 0:
4     timer = timer - 1
5
6 if timer > 0:
7     timer = timer - 1
8
9 if timer > 0:
10    timer = timer - 1
11
12 if timer > 0:
13    timer = timer - 1
14
15 if timer > 0:
16    timer = timer - 1
17
18 if timer == 0:
19    print("Alarm!!")
```



Task 2 - The benefits of conventions.

Finish these two answers about the benefits of programming conventions.

- 1. Conventions in programming help *the writer* of a program because...**
- 2. Conventions in programming help *the reader* of a program by...**



Task 3.1 - Investigate & Predict

Take a look at the program here - <https://ncce.io/ks4-oop-procedural>

It has been written by a fellow Computer Science student, your job is to read and interpret the program. Answer the question on the right to help guide your investigation.

- What do you think the program does?
 - Describe what will happen when it is executed.



Task 3.2 - Run

Run the program here -

<https://ncce.io/ks4-oop-procedural>

Were your predictions correct?

Did something happen that you weren't expecting.

Note down anything you got wrong, to help your future self remember for next time.



Task 4 - A new program

Have a look at the program here - <https://ncce.io/ks4-oop-procedural>
V2

It has been updated to follow the procedural programming paradigm.

Answer the questions on the right about the new version of the program.

- **Has anything changed about the execution of the program?**
- **What has changed about the way the program is written?**
- **What benefits does this new program have for a reader**
- **What benefits does this new program have for the writer?**



Task 4 - A new program

Have a look at the program here - <https://ncce.io/ks4-oop-procedural-v2>

It has been updated to follow the procedural programming paradigm.

Answer the questions on the right about the new version of the program.

- **How would you change the program so that the books are placed in descending order?**

