Computing

Lesson 1: Programming Paradigms

KS4 Object-Oriented Programming (OOP)

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Materials from the Teach Computing Curriculum created by the National Centre for Computing Education

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 - oaknat.uk/comp-procedural-programming

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 -
oaknat.uk/comp-procedural-programming

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 - oaknat.uk/comp-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 -
oaknat.uk/comp-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?**