Starter - Selection Statements

These tasks are designed to refresh the reading and research you have undertaken at home prior to this lesson. If you have not completed the R&R assignment then please speak to your teacher before attempting these exercises.

Relational and Boolean Operators

Relational and boolean operators are used to construct selection statements. Refresh your knowledge of these concepts by attempting the below tasks.

Task 1

Match each relational operator to its description.

Operator	Description
==	Equal To
<	less than
>	greater than
!=	Not equal to
<=	less than or equal to
>=	Greater than or equal to

Task 2

Look at each of the following expressions, without using a computer what would they evaluate to?

Variable	Value
test_score	54
age	18

Expression	Result
5 > 3	True
test_score < 12	False
4 != test_score	True
age == 17	False
test_score > 50 and age > 12	False
not test_score > 50	True

Debugging Code

Debugging code is an important skill you must develop. The below will introduce you to **syntax**, **run-time** and **logical errors** that can occur in your code.

Task 1

The code shown below contains some errors. Annotate the code to show where the errors occur.

```
#test grading program
test_score = input("Please enter your test score: ")  #The input statement is expecting a string data type and not an interger
if test_score > 40:
    print("E grade")
elif test_score > 50:
    print("D grade")
elif test_score > 60:
```

```
    print("C grade")
elif test_score > 70:
    print("B grade")
elif test_score > 80: #The boolean statements don't have the correct range, I.E if they scored 80 it will print all the grades.
    print("A grade")
else:
    print("Fail")
```

Task 2

Now, load the selection_errors.py Python file and attempt to run it - note down any error messages you encounter and attempt to explain them.

Error Message	Explanation
EOL While scanning string literal	Missing speech mark to close the string
TypeError	The program got a different data type from the input than it was expecting

Task 3

Assuming that you have corrected the errors in selection_errors.py, run the program and enter a test score which will give an A grade. For example, 94. What happens? Use the space below for your explanation.

Explanation
The boolean statements do not have suitable ranges meaning that an A grade score is also all the other grades before it

There are three types of error in selection_errors.py:

1. Syntax errors
2. Run-time errors
3. Logical errors

In the space below develop a definition of each type and state the type of each error in Tasks Two and Three.

Task 4

Please read page 95 of the AS Computing textbook and then use the space below for your definitions.

Error	Definition
Syntax error	The logic of the program means the computer cannot compile the programm
Run-time error	When the programm crashes or gets stuck in a loop it cannot get out of.
Logical error	There is nothing wrong with the program according to the computer however the programmers logic means the program is doing something it shouldn't

Task 5

Indicate whether you think the errors in **Task 2 and 3** where syntax, run-time or logical errors.

Error	Type
Task 2 (error message 1)	Syntax Error

Error	Type
Task 2 (error message 2)	Syntax Error
Task 3 error	Logical Error

Summary

In this section you have debugged a selection statement and discovered that there are three types of errors: syntax, run-time and logical. You will encounter these errors repeatedly in your code so it is vital that you have an appreciation of the differences between them.