#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|

|:------:|-----------|

|`==`|greater than|

|`<`|less than or equal to|

|`>`|greater than or equal to|

|`!=`|less than|

|`<=`|equal to|

|`>=`|not equal to|

Answer

|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`|True|

|`not test\_score > 50`|false |

##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.

```python

#test grading program

test\_score = input("Please enter your test score: ")

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:

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|

|------------|-----------|

|line 4 error | it reads testScore as a string and when it is meant to be greater than the int 40 it is not compatible |

|line 7| the text was not being finished so it was being continued on. |

###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|

|-----------|

|It reads the test score up to 80 and going further such as 94 it isn't being catagorisied so it is called an error |

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| |

|Run-time error| |

|Logical error| |

###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)| |

|Task 2 (error message 2)| |

|Task 3 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.