

Faculty of Computing

Year 1 Semester 1 (2024)

IT1120 – Introduction to Programming

Lab Sheet 10

Question 1

- a) Write a Java program that checks if a mark entered from the keyboard is within the valid range of 0 to 100 (inclusive).

Use assertions to verify that the mark is within the specified range. If the mark is outside this range, the program should throw an **Assertion Error** with the message *'Invalid Mark'*. If the mark is valid, display the message *'Mark is Validated'*.

- b) Modify the above program to determine the Grade.

If the mark is valid, the program should then determine the corresponding letter grade: 'A' for marks 75 and above, 'B' for marks 60 to 74, 'C' for marks 50 to 59, 'D' for marks 40 to 49, and 'F' for marks below 40.

Use assertions to verify the grade assigned. If the grade assigned is incorrect, the program should throw an **Assertion Error** with the message *'Incorrect Grade Assigned'*.

Save the file inside 'Lab 10' folder as: **ITxxxxxxxxLab10Q1.java**

Replace 'ITxx xxx xxx' of the filename, with your own Student ID.

Expected Output:

```
Microsoft Windows [Version 10.0.19045.4780]
(c) Microsoft Corporation. All rights reserved.

C:\Users\junius.a\Desktop\Lab 10>javac ITxxxxxxxxLab10Q1.java
C:\Users\junius.a\Desktop\Lab 10>java -ea ITxxxxxxxxLab10Q1

Enter the mark (0 - 100): 123
Exception in thread "main" java.lang.AssertionError: Invalid Mark
    at ITxxxxxxxxLab10Q1.main(ITxxxxxxxxLab10Q1.java:15)

C:\Users\junius.a\Desktop\Lab 10>java -ea ITxxxxxxxxLab10Q1

Enter the mark (0 - 100): 58
Mark is Validated
The Grade for the Entered Mark is: C
```

Enable Assertions by typing **-ea** in Java run command

The first Assertion Error message (out of range)

Best Case Scenario when Both Assertions Passed