# Course Project

## *Testing a JAVA program for Student Grading*


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**Computer & System Engineering Program**
**CSE337s: Software Testing– Spring 2023**

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It is required to build an application for student grading using **JAVA**. The application requires the following as inputs data:

1. Subject name: It must be Alphabetic characters and Spaces. the name should not start with space
2. Subject-code: It must be 6-7 Alphanumeric characters. The first 3 are Alphabetic followed by 3 numeric characters. The sevens should be s if exists.
3. Full mark: It is a numeric number of one of the following values: 100
4. Student name: It must be Alphabetic characters and Spaces. the name should not start with space.
5. Student number: the length of this field must be Alphanumeric characters of exact length of 8 characters. It should start with numbers and might End with only one Alphabetic character
6. Student Activities mark: It is an integer of a value from 0 up to 10 of the full mark
7. Oral/Practical mark: It is an integer of a value from 0 up to 10 of the full mark
8. Midterm exam mark: It is an integer of a value from 0 up to 20 of the full mark
9. Final exam mark: It is an integer of a value from 0 up to 60 of the full mark

The application input is a file. The application reads each line in this file as one string where each of its fields are separated by comma ",".

The first line of the file contains the subject name, subject-code and the full mark of that subject where each of their fields are separated by comma ","

Each of the following lines of that file (starting from line 2 to the end of file) till the end of the fill should consists of the following items Student name, Student number, Student Activities mark, Oral/Practical mark, Midterm exam mark and Final exam mark

The application result is to produce the GPA and Grade in this subject. The following table describe the values of each case:

| Mark Range | GPA | Grade |
|---|---|---|
| **>= 97 and < =100** | 4 | A+ |
| **>= 93 and < 97** | 4 | A |
| **>= 89 and < 93** | 3.7 | A- |
| **>= 84 and < 89** | 3.3 | B+ |
| **>= 80 and < 84** | 3 | B |
| **>= 76 and < 80** | 2.7 | B- |
| **>= 73 and < 76** | 2.3 | C+ |
| **>= 70 and < 73** | 2 | C |
| **>= 67 and < 70** | 1.7 | C- |
| **>= 64 and < 67** | 1.3 | D+ |
| **>= 60 and < 64** | 1 | D |
| **< 60** | 0 | F |

The output of this application is a file that contains in the first line of each page the Following: "**Subject Name:**" subject-name "**Max Mark:**" full mark
The line after contains a hear of the table which is:
**Student name Student number GPA Grade**
Teach of the following lines contains the name student, its number, GPA and Grade separated by space.

***Requirements:*** Work in groups as early as possible. Each group should be 5 students (same ones of labs). One submission is required by each group.

1. Build the described application using JAVA. Make sure to validate that each of the input is fulfilling the requirement before any processing.
2. You need to test each unit of your application separately.
3. White box, data flow and black bock testing are required
4. Integration testing is required as well

**First delivery due date is:** by end of the day of **7th of April 2023** through LMS. It includes at least:

1. The first version of the application.
2. Set of test case to test each of the units that validate the input data and the calculation of the GPA and the grade of the student separately.
3. Use Juint to create your testcases
4. Use one of the testcase templates documents to descript your test cases

***Tips:***

To speed up building your application, the following links might help you:

1. https://codescracker.com/java/program/java-program-calculate-student-grade.htm
2. https://codescracker.com/java/program/java-program-read-file.htm
3. https://codescracker.com/java/program/java-count-occurrence-of-each-word-in-string.htm

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str.split
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it is required to use **JUint** and the equivalence classes for a program that loops until a -1 is entered, asking for the number of points on this scale, prints the appropriate letter grade (A-F), and then prints the average number of points when -1 has been entered.

The grades of student must be calculated as per the following table:

**Note** - In above table, the range **>= 90 and < 94** means, if the average mark is greater than or equal to 90 and less than 94, then the grade should be **A-**. Under this range, some marks may lie are **90, 90.23, 92, 93.89** etc. That is, in the range of **90-94** here, 90 is included, whereas 94 is excluded.

The numbers are integer only

Since the program given above has some limitations such as what if user enters a mark, greater than 100?
also the program works on 8 subjects only ?
Therefore keeping in mind, these types of limitations, I've modified the program and created a new one as given below.

# Java Program to Read a File

As we notice there is a bug in the code that the code can’t

handle invalid range