

# CSC 15: Chapter 4 Lab, Week 1

## Problem

Write a program called `Grader` that prompts a user how many times they would like to run the program, then runs that many times asking them to enter a score and print out the grade assigned for that score. You will need to have a method `getGrade` that accepts an integer representing a student's average score in a course and returns that student's numerical course grade. The grade can be between 0.0 (failing) and 4.0 (perfect). Assume that scores are in the range of 0 to 100 and that grades are based on the following scale:

Score...	Grade
<60.....	0.0
60-62....	0.7
63.....	0.8
64.....	0.9
65.....	1.0
...	
92.....	3.7
93.....	3.8
94.....	3.9
>=95....	4.0

For an added challenge, make your method throw an `IllegalArgumentException` if the user passes a grade lower than 0 or higher than 100.

When the program is done running you must print out the average score and the average grade for all scores that have been input.

## Requirements

You must have a helper class `GraderHelper` with the following methods. It will be up to you to determine the return type and parameters required for each:

- `getNumTimes`: Get the number of times that the user would like to run the program
- `getGrade`: Given a score return a grade between 0.0 and 4.0 using the table above.
- `printDescription`: Output a description of the program

Also, you will need to have a driver class `Grader` with the following methods:

- `main`: Call the `runProgram` method, be sure to create your `Scanner` object here and pass it as a parameter
- `runProgram`: Use the methods in the helper class to solve the problem.

## Submission

You are to work in teams of 2 but you each need your own copy of the code. To receive full credit you must have your code thoroughly documented with method-level and algorithm-level comments as well as have a header block on each class file. You must meet all the other requirements given in the requirements section and match the sample output.

## Sample Output

```
How many times would you like to run this
program? 10
Please enter a score:
92
This student earned a 3.7 for score of 92
Please enter a score:
84
This student earned a 2.9 for score of 84
Please enter a score:
85
This student earned a 3.0 for score of 85
Please enter a score:
71
This student earned a 1.6 for score of 71
Please enter a score:
65
This student earned a 1.0 for score of 65
Please enter a score:
40
This student earned a 0.0 for score of 40
Please enter a score:
101
Exception in thread "main"
java.lang.IllegalArgumentException
    at
GraderHelper.getGrade(GraderHelper.java:13
)
    at Grader.runProgram(Grader.java:16)
    at Grader.main(Grader.java:7)
```

```
How many times would you like to run this
program? 10
Please enter a score:
75
This student earned a 2.0 for score of 75
Please enter a score:
92
This student earned a 3.7 for score of 92
Please enter a score:
84
This student earned a 2.9 for score of 84
Please enter a score:
85
This student earned a 3.0 for score of 85
```

```
Please enter a score:
71
This student earned a 1.6 for score of 71
Please enter a score:
65
This student earned a 1.0 for score of 65
Please enter a score:
40
This student earned a 0.0 for score of 40
Please enter a score:
95
This student earned a 4.0 for score of 95
Please enter a score:
91
This student earned a 3.6 for score of 91
Please enter a score:
85
This student earned a 3.0 for score of 85
Average student score: 78.30, Average
student grade: 2.3
```