CS 1110 Fall 2016 Lab 3

Lucky High School Graduates

Due: 11:59 pm, two weeks from the date of your handout

Objectives:

- *Gain experience with method calling*
- *Generate random numbers*
- *Use loops*
- *Use multiple classes*

In order to graduate from a high school, the students need to pass five tests on Math, English, Physics, History and Biology. Write a program that asks user to input a student's grades (0-100) of the 5 courses (Force input between 0 and 100), and evaluates the grades to determine whether he can graduate.

When the program starts, it first prints out messages asking user to input the grades of the five courses.

The program evaluates the grades and prints out a message telling user whether this student can graduate based on the following graduation policy:

1. The lowest grade should be more than or equal to 55. **(Required)**
2. The highest grade should be higher than the lowest grade by at least 10 points or more. **(Required)**
3. The average of the grades should be more than or equal to 65. **(Game Changer)**
4. If all 3 conditions are met, then the student graduates. If condition 3 is not met, the student can still get a chance to pass. They should be lucky. The student is given 5 chances to roll a dice with 6 surfaces with values from 1 to 6. If out of the 5 chances, the dice never hits 6, the student cannot graduate.

Rules:

- Your program should have 2 classes, in each of their separate file
- One class (Call it Graduate) contains the following methods:

  a. public static int minGrade(int h, int m, int p, int b, int e)

  This method takes all the grades as input and returns the lowest grade.

  b. public static int maxGrade(int h, int m, int p, int b, int e)

  This method takes all the grades as input and returns the highest grade.

  c. public static int averageGrade(int h, int m, int p, int b, int e)

This method takes all the grades as input and calculates the average grade.

Note: The average will be a double value, so convert it (round it to the next higher integer)

d. public static boolean evaluate(int h, int m, int p, int b, int e)

This method takes student's grades as input and returns a Boolean value. The return value means whether this student can graduate.

e. main()

Asks the student to input their grade, one subject at a time. Prints out whether the student graduates.

- Other class (call it Dice) contains the following method:

  a. public static boolean chance()

  This method return a Boolean value. It generates a random number range from 1 to 6, thereby simulating a dice roll. If 6 is generated, return true otherwise return false.

Sample Run 1:

High School Graduation

Enter your grade in Math: 101
Your grade should be from 0-100

Enter your grade in Math: 43
Enter your grade in English: 82
Enter your grade in Physics: 67
Enter your grade in History: 90
Enter your grade in Biology: 100

Sorry, you failed.

Sample Run 2:

High School Graduation

Enter your grade in Math: 63
Enter your grade in English: 67
Enter your grade in Physics: 65
Enter your grade in History: 72
Enter your grade in Biology: 70

Sorry, you failed.

Sample Run 3:

High School Graduation

Enter your grade in Math: 58
Enter your grade in English: 58
Enter your grade in Physics: 58
Enter your grade in History: 58
Enter your grade in Biology: 97

Congratulations, you passed!

Sample Run 4:

High School Graduation

Enter your grade in Math: 58
Enter your grade in English: 58
Enter your grade in Physics: 58
Enter your grade in History: 58
Enter your grade in Biology: 70

Your average is 61, but you can still pass:

Roll a dice five times.

Dice Roll had at least one 6: Congratulations, you passed!

**Alternate:

Dice Roll had no 6: Sorry, you failed.