CSci 1113: Introduction to C/C++
Programming for Scientists and Engineers
Homework 5
Spring 2018

Due Date: Thursday, March 22, 2018 before 11:55pm.

Instructions: This is an individual homework assignment. There are two problems worth 20 points each. Solve the problem below by yourself (unlike the labs, where you work collaboratively), and submit the solution as a C++ source code file. Here are a few more important details:

1. Unlike the computer lab exercises, this is not a collaborative assignment.

2. Because all homework assignments are submitted and tested electronically, the following are important:
   - You follow any naming conventions mentioned in the homework instructions.
   - You submit the correct file(s) through Moodle by the due deadline.
   - You follow the example input and output formats exactly given in each problem description.
   - **Regardless of how or where you develop your solutions, your programs compile and execute on cselabs computers running the Linux operating system.**

3. You should test your program on other test cases (that you make up) as well. Making up good test cases is a valuable programming skill, and is part of ensuring your code solution is correct.

Note: There is only one part this week.

Problem A: Dice game (20 points)
Suppose you have a game where you roll two dice, that follow these rules:

Roll 1-11: Get that value
Roll 12: Reroll and add one to the value

The "roll 12" rule can be hit multiple times. For example, if you roll (6,6) then (6,6) then (1,1), your total value for that game will be 4 (as 1+1+2=4). Write a program that simulates one iteration of this game.

After making this part, ask the user how many times you want them to simulate the game. Then simulate the game the requested amount of times and show what percentage each game value occured.

Note: Make sure you use srand(time(0)) or srand(time(NULL)) (same thing) at the start of your main once and never again.

Example 1 (user input is underlined, but values are random for low input):

```
How many simulations?
1
11 happened 100%
```

Example 2 (user input is underlined, but values are random for low input):

```
How many simulations?
5
5 happened 20%
7 happened 20%
8 happened 40%
9 happened 20%
```

Example 3 (user input is underlined, but values are random for low input):

```
How many simulations?
1000000
2 happened 2.7828%
3 happened 5.6584%
4 happened 8.4906%
5 happened 11.3134%
6 happened 14.2119%
7 happened 17.0766%
8 happened 14.3611%
9 happened 11.4766%
10 happened 8.6745%
11 happened 5.7929%
12 happened 0.1567%
13 happened 0.0042%
14 happened 0.0003%
```

When you are done, name the source code file <username>_5A.cpp. Here you replace <username> with your U of M email address; for example, if your email address is smithx1234@umn.edu, your file should be named smithx1234_5A.cpp. Then submit your program using the HW 5 Problem A submission link in Moodle.