CSE 1133 – Introduction to Programming

2016 – 2017 Fall Semester Project

1. A game of chance

Write a C program that simulates a game of chance. The rules of the game are straightforward:

You roll two dice. Each die has six faces, which contain one, two, three, four, five and six spots, respectively. After the dice have come to rest, the sum of the spots on the two upward faces is calculated. If the sum is 7 or 11 on the first throw, you win. If the sum is 2, 3 or 12 on the first throw, you lose (i.e., the "house" wins). If the sum is 4, 5, 6, 8, 9 or 10 on the first throw, that sum becomes your "point." To win, you must continue rolling the dice until you "make your point" (i.e., roll that same point value). You lose by rolling a 7 before making your point.

Four example screenshots of the program:

```
Player rolled 5 + 6 = 11
Player wins
```

```
Player rolled 5 + 4 = 9
Point is 9
Player rolled 4 + 2 = 6
Player rolled 3 + 6 = 9
Player wins
```

```
Player rolled 1 + 2 = 3
Player loses
```

```
Player rolled 2 + 6 = 8
Point is 8
Player rolled 5 + 1 = 6
Player rolled 2 + 1 = 3
Player rolled 1 + 6 = 7
Player loses
```

2. Solving the mathematical equation

Write a C program that solves the following equation. You must get the "N", "R" and "S" values from the user. These values must be all positive.(If the user enters a negative value warn him and get the value again). According to these values, your program must print the result to the screen.

$$\sum_{i=1}^{N} \frac{\prod_{k=1}^{R} \frac{3k^3+5}{k^2}}{\sum_{j=1}^{S} \frac{\sqrt{3j^3+j+2}}{2j}}$$

3. Finding the second smallest element

Write a C program that that asks positive numbers from the user. The sentinel value is -1 for this program (i.e when the user enters -1 the data entry job finishes). When the user enters -1 and press "Enter" key, your program should print the value of the second smallest element of the sequence. For example if the sequence is {17, 2, 37, 5, 13, 12}, your program has to print the number 5 to the screen.

P.S.: You can prepare your project yourself (single person) or as **at most two** people groups. You have to submit a **report (very important !)**, and C code files (three .c files) of your program. Please upload your compressed(zip/rar) file(that includes your report and C code files) to the **moodle** page of the course to the appropriate area before **30 November 2016 Wednesday**, **17:00.**