CISP 360: Programming Assignment #6

Write a program that simulates playing 5000 games of the dice game Craps.

The game of Craps is played like this: you start by rolling two six-sided dice, each side with the numbers 1 through 6, and add both die numbers. If the first number rolled is a 7 or 11, you win and the game is over. Otherwise if the first number rolled is a 2, 3 or 12, you lose and the game is over. Otherwise, the number you rolled is called your “point”. You keep rolling the dice until you either roll your point again(you win), or roll a 7(you lose). Any other number doesn’t matter--you keep rolling until you roll your point or a 7.

Here is a table of some common slang terms for the various dice rolls:

|  |  |
| --- | --- |
| **Dice Rolls** | **Slang Description** |
| 1-1 | Snake Eyes |
| 1-2, 2-1 | Ace Deuce |
| 1-3, 3-1 | Easy Four |
| 2-2 | Hard Four |
| 1-5, 2-4, 4-2, 5-1 | Easy Six |
| 3-3 | Hard Six |
| 2-6, 3-5, 5-3, 6-2 | Easy Eight |
| 4-4 | Hard Eight |
| 4-6, 6-4 | Easy Ten |
| 5-5 | Hard Ten |
| 5-6, 6-5 | Yo |
| 6-6 | Boxcars |

For each roll, your program should generate:

* The craps roll number of the game prior to the dice roll.
* The dice roll expressed as two numbers from 1 to 6.
* The slang description of the roll taken from the table above, if there is one.

For a single game of craps, your program should output each roll of the game followed by a message stating whether or not there was a win or a loss for the player.

You **must** implement the following three functions in your program:

string getRollDescription(short die1, short die2);

The function **getRollDescription** takes two die numbers and returns the slang description for the corresponding roll if one exists. If no such description exists, it returns an empty string("").

short rollDice(ofstream& out);

The function **rollDice** takes an output stream reference variable, generates a random dice roll, sends the roll expressed as two numbers 1 to 6 and the slang description of the roll(if it exists) to the output stream, and returns the dice roll total as a single number. This function should call **getRollDescription**. Sample output of this function(sent to the argument out):

2-4

Easy Six

The above function call would return a result of 6, since that's the die roll total.

bool playGame(ofstream& out);

The function **playGame** takes an output stream reference variable, plays a single game of craps, sends all the output of the game to the output stream, and returns whether or not the player won the game. This function should call **rollDice** multiple times. Sample output of this function(sent to the argument out):

Roll #1

2-2

Hard Four

Roll #2

4-5

Roll #3

1-3

Easy Four

Player Win

The above function call would return a result of true, since the game was a win for the player.

The program should call **playGame** 5000 times to play 5000 games of craps, sending the output for all games to an output file with the name craps.out. Then it should display the winning percentage for those 5000 games to the screen. The winning percentage is the total number of games the player won divided by the total number of games played(5000).

Save this program in a file named simcraps.cpp and submit it.

**SAMPLE CRAPS GAME OUTPUT:**

Roll #1

2-4

Easy Six

Roll #2

6-3

Roll #3

6-6

Boxcars

Roll #4

2-5

Player Lose

Roll #1

4-3

Player Win

Roll #1

2-2

Hard Four

Roll #2

4-5

Roll #3

1-3

Easy Four

Player Win

Roll #1

1-1

Snake Eyes

Player Lose

Roll #1

3-2

Roll #2

3-3

Hard Six

Roll #3

1-2

Ace Deuce

Roll #4

1-1

Snake Eyes

Roll #5

1-4

Player Win