

CS 157 Lab 11 November 5, 2009

Random numbers

Create a new class called **Lab11**. Add each method below to this class. When you finish each one, call one of us over to check it off. Turn in this sheet. There is nothing to copy to the shared drive for this lab.

1. Write a method `randomWalk` that performs a random one-dimensional walk, reporting each position reached and the maximum position reached during the walk. The random walk should begin at position 0. On each step, you should either increase or decrease the position by 1 (with equal probability). The walk stops when 3 or -3 is hit. The output should look something like this, but it should be different each time you run it:

```
position = 0
position = 1
position = 0
position = -1
position = -2
position = -1
position = -2
position = -3
max position = 1
```

2. Write a method called `printXXX` that prints a random number of lines between 2 and 10 lines inclusive, where each line contains a random number of 'x' characters between 5 and 20 inclusive. For example:

```
xxxxxxx
xxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxx
xxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxx
```

3. Write an interactive method called `rollSum` that prompts for a desired sum, then repeatedly rolls two six-sided dice until their sum is the desired sum. Here is a sample dialogue with the user:

```
Desired dice sum: 9
4 and 3 = 7
3 and 5 = 8
5 and 6 = 11
5 and 6 = 11
1 and 5 = 6
6 and 3 = 9
```

4. Write an interactive method called `guessSum` that plays a guessing game with the user. The user must pick a maximum number, and then the game repeatedly asks the user for a number from 1 up to the maximum until the user guesses it. Each time the user guesses incorrectly, the program reports whether the guess was high or low. After you get this much to work, add another loop around most of the code so that the user is asked if they would like to play again, and continue playing as long as the user says something beginning with the letter 'y'. Here is a sample of the output:

```
How big do you want to go?
10
Guess a number from 1 to 10
5
Sorry, wrong answer. You guessed low
Guess a number from 1 to 10
7
Sorry, wrong answer. You guessed low
Guess a number from 1 to 10
9
Sorry, wrong answer. You guessed low
Guess a number from 1 to 10
10
Congratulations! You guessed it!
Do you want to play again?
Y
How big do you want to go?
5
Guess a number from 1 to 5
3
Sorry, wrong answer. You guessed high
Guess a number from 1 to 5
3
Sorry, wrong answer. You guessed high
Guess a number from 1 to 5
2
Sorry, wrong answer. You guessed high
Guess a number from 1 to 5
1
Congratulations! You guessed it!
Do you want to play again?
n
```

Feel free to add embellishments if you have time, such as, telling the user how many tries it took. Or add a random comment based on how well they're doing (or how poorly). Thank them for playing, and summarize how many games they played and their average guess percentage for all the games (number of guesses divided by the maximum number for the game). Tell them how many guesses it should take if they were intelligent (ceiling of log base 2 of the maximum).