# CSC 232: Data Structures and Algorithms

**Assignment 2: Dice Race!**

**Due: See Blackboard**

*Submit through BB by midnight on the due date. Email your programs to me as a last resort if you experience problems with BB.*

**Requirements**

* Language features and style
  + This assignment is solvable using only language features discussed in class or presented in the book up to the date the assignment is due. Using advanced features beyond what has been covered or utilizing any code outside of that provided in lecture or from the book will result in a lower grade.
  + Include the comment template at the top of your program.
  + Use good coding style. Insert spaces before and after punctuation and variable names, blank lines between blocks of code, 1-line comments where appropriate, and variable names that describe what they are representing. *Disorganized, cluttered code is poor code.* Do not delete any debugging statements you use, just comment them out. This helps me understand your thinking process.
  + Submit only what is requested.
* Write a game program called Dice Race! It has two players, Jack and Jill, and a board with 20 squares. The players advance by rolling a 6-sided die and moving forward the number of squares shown on the die. If a player lands on the same square as his or her opponent, the opponent tumbles back a random number of 1 – 3 squares. The first player to reach the top of the hill (square 20) wins. Use random numbers to simulate throws of the die. Use the variables **jack** and **jill** to store player positions. Use the pseudocode provided to structure your program. Mimic the sample output as closely as possible.
* Use tabs to lineup the output columns.
* To generate a random number for a 6-sided die:
  1. First, initialize random number generator: **srand(time(NULL));**
  2. Declare an integer variable called **roll**
  3. Roll a 6-sided die: **roll = rand() % 6 + 1**
  4. See <http://www.cplusplus.com/reference/cstdlib/rand/> for more info

**Pseudocode**

// Add any other needed includes

#include <time.h> //for seeding the random number generator

Initialize random number generator

Set finished to false

Do {

// Jack’s turn.

Roll die for Jack and add to Jack’s position

If Jack’s position is the same as Jill’s position

Move Jill back a random 1-3 squares

Print result of Jack’s turn plus Jill’s tumble

Otherwise, print result of Jack’s turn

If Jack reached the top of the hill

Set finished to true

Set winner to “Jack”

// Jill’s turn.

Skip if Jack already won

Otherwise same logic as Jack’s turn

} while not finished

Print winner

**Sample Output**

Roll Jack Jill

-------------------------------

5 5

5 2 5 Tumble Jack!

6 8

2 7

4 12

5 10 12 Tumble Jack!

2 12 11 Tumble Jill!

5 16

1 13

5 21

Jill wins!

**Comment Template (Insert at the top of your program)**

/\*\*\*\*\*\*\*\*\*

Name:

Date:

Assignment:

Platform / IDE:

Description: Insert a description using plain English words about what your program does that is understandable to a non-Computer Science person. It should be a few to several lines long depending on program complexity.

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