CSC 260.002 Programming assignment 4 Due: Tuesday, September 20

In this assignment, you will enhance the simple/stupid game from slide 24 of the chapter 5 power point notes to be a more creative game. The game works as follows:

There are two players, the human and the computer, on a grid of 250 spots. The goal is to be the first player to reach or go past spot 250. You move based on rolling dice and selecting cards. For each turn, the player decides what to roll:

- 1. A single 24-sided die
- 2. Two 10-sided dice
- 3. Three 6-sided dice

Upon rolling, the player moves the number of spaces based on the sum of the dice. For the two 10-sided dice, if the dice are the same, the player gets to roll another 10-sided die. For instance, if the player rolls a 7 and a 7, the player not only moves 14 but also rolls a 10-sided die again and moves ahead that many more spaces. For the three 6-sided dice, if all three dice are the same the player doubles the roll (5, 5, 5 would be a move of 30, not 15). The user will be asked to input which of the three types of rolls to use, data verify that the user has entered a legal value. The computer's choice is strictly random of 1, 2 or 3 (or 0, 1, 2 if you prefer).

There are two rivers and a muddy field. If a player lands in a river, the player is moved back to the left shore of the river. The rivers are from spot 83 to 89 and from spot 152 to 155. So for instance if a player lands on spot 85, the player is moved back to 82. The muddy field stretches from 201 to 233 and causes the player to move twice as slow, so while in the muddy field, if the player is to move 15 then the player only moves 7 (divide by 2 using integer division). Note that if a move takes the player into the muddy field, the initial move is not divided by 2. For instance, if the user is at 199 and moves 12, the player winds up at 211, not 205. But each successive move is halved until after the player clears the field. If the player is at 230 and moves 10, the player ends at 235. Note that the muddy field has no impact on a card drawn (see below). If the player rolls a double or triple while in the muddy field, the player does not get any benefit (no additional roll or doubling of the move).

Every 10 spaces on the board is a "take a card" spot, determined by player1/player2 % 10 == 0. There are 12 different cards that a player could get as follows (use a random number from 1-12 or 0-11):

1-4: player moves ahead a random amount from 1-6

- 5: player moves ahead a random amount from 4-11 (random 8+4)
- 6: player moves to where the other player is (see below)
- 7: player moves back to the beginning (moves to location 0)
- 8-9: player moves back a random amount from 1-6
- 10-11: player moves back a random amount from 4-11
- 12: player loses a turn*

* - losing a turn can be tricky to implement and so this feature is for extra credit. If you are unable to figure out how to do this, then a random value of 12 will do nothing at all.

Note that a player moving forward or backward because of a card could land in the river and so has to move back again to the left shore. This will require testing for the river twice, once after rolling the dice and moving, and once after selecting a card and moving (if the player selects a card).

Make sure you have output statements that

- 1. state which player is taking their turn
- 2. state what the player has rolled including number of dice rolled, where the player has landed and if the player has rolled doubles or triples and what the result was
- 3. if a player is in the muddy field, state this
- 4. if a player selects a card, indicate what the card results in and where the player winds up

- 5. if the player lands in the river, state this and output where the player has been moved to
- 6. who won the game or if it was a tie

Both players start at spot 0. Use a while loop to iterate while neither player has won the game. Upon leaving the loop, indicate who wins. Note that this is not which player reaches 250 first, both players could reach/exceed 250 in the same turn, so it is the player that has gone furthest (a tie occurs if both players land on the same spot ≥ 250).

There is no input data to run this program on. Instead, run the program several times to make sure 1. there are no logical errors and 2. the output looks good. Capture one game's worth of output and either add it to your source code in comments at the bottom of the program or store it in a separate text file. You can reduce the output's font size to be 8 point to save space if desired. Print out and hand in your *well-commented* source code and the output of 1 run. A partial output from my program is shown below.

Current board position: Player 1:0 Player 2:0 Do you want to roll 1 24-sided die (1), 2 10-sided die (2) or 3 6-sided die (3)? 3 You rolled 5, 3 and 5 and are now at 13 I decided to roll three 6-sided dice. I rolled 2, 4 and 2 and am now at 8 Current board position: Player 1: 13 Player 2:8 Do you want to roll 1 24-sided die (1), 2 10-sided die (2) or 3 6-sided die (3)? 2 You rolled 5 and 7 and are now at 25 I decided to roll three 6-sided dice. I rolled 5, 2 and 4 and am now at 19 Current board position: Player 1: 25 Player 2: 19 Do you want to roll 1 24-sided die (1), 2 10-sided die (2) or 3 6-sided die (3)? 2 You rolled 10 and 1 and are now at 36 I decided to roll three 6-sided dice. I rolled 2, 2 and 2 and am now at 25 For rolling triples, I move ahead twice as far and am now at 31 Current board position: Player 1: 36 Player 2: 31 Do you want to roll 1 24-sided die (1), 2 10-sided die (2) or 3 6-sided die (3)? 3 You rolled 1, 5 and 4 and are now at 46 I decided to roll three 6-sided dice. I rolled 5, 6 and 2 and am now at 44 Current board position: Player 1: 46 Player 2:44 Do you want to roll 1 24-sided die (1), 2 10-sided die (2) or 3 6-sided die (3)? 2 You rolled 8 and 8 and are now at 62 For rolling doubles, you move ahead 8 and are now at 70 You take a card! and move ahead 1 spots you are now at 71 I decided to roll two 10-sided dice. I rolled 6 and 4 and am now at 54 Current board position: Player 1: 71 Player 2: 54 Do you want to roll 1 24-sided die (1), 2 10-sided die (2) or 3 6-sided die (3)? 3 You rolled 5, 6 and 2 and are now at 84 You are stuck by river 1 at 82 I decided to roll two 10-sided dice. I rolled 3 and 7 and am now at 64

Current board position: Player 1: 82 Player 2: 64