MIDDLE EAST TECHNICAL UNIVERSITY, NORTHERN CYPRUS CAMPUS
CNG140 C Programming – Programming Assignment 2

Date handed out: **5 March 2020, Thursday**
Date submission due: **19 March 2020, Thursday, 23:55**

Programming Assignment 2: Big Pig

Purpose:

The main purpose of this programming assignment is to revise the topics that we have covered in the first six weeks including fundamentals of C programming, conditional statements, repetitive statements, and functions.

Description:

You will write a program for playing a Big Pig game between a player and computer. Big Pig is a dice game which is the variation of Two-Dice Pig game. This will give you practice with all three control constructs (sequence, selection and repetition). We are including some design constraints in the "programming task" section, so you will also need to use functions. This will give you the experience of decomposing a problem into parts, and then implementing each part in one highly cohesive, loosely coupled function.

Don't try to compile your entire program in one "**big bang**". Compile it piece by piece. Test each piece that you have compiled to make sure it works correctly before you add the next piece.

Big Pig Rules:

Equipment: 2 dices and a scoresheet
Number of Players: 2 players

How to play: At the beginning to decide who is going to start the game, each player rolls one die. Highest roll goes first and play proceeds with the other player. The game consists of 6 rounds – each player will play 6 turns each. The first player rolls two dice to start his turn. If neither shows a 1, their sum is added to the turn total. If a single 1 is rolled, the player scores nothing from that turn and the turn ends, and then the next player takes a turn. If double 1s are rolled, then 25 points are added to their score. If player rolls any other doubles, he adds a double score to his total. For example, double 3s, would score 12 (*because you are doubling 3+3*). After rolling a double, player must roll again before the turn moves to the next player. When a player doesn't roll a 1, s/he can decide to continue rolling and adding the points from each roll to his total score for that turn. Or s/he can hold onto his points and pass the die to the next player.

Scoresheet: A Scoresheet looks as follows:

Player 1	**Player 2**
59	0
65	25
110	75

As you can see scores are accumalted from the previous round.

How to Play Big Pig?

You will write the program that will allow a player play the Big Pig game against the computer. The game consists of 6 rounds. At the end of 6 rounds, whoever has the highest score will win the game.

Your game will start with rolling the dice for the computer player and then asking the other player if they are ready to play. If the other player answers N (no), then the computer player rolls the dice again for itself and asks other player if they are ready to play.

A sample run is as follows:

```
Welcome to the Big Pig game.
Lets get started!

I have rolled the dice and got 3!
Shall I roll the dice for you (Y/N)? Y
I have rolled the dice for you and you got 1!

Round 1-- My Turn:
I got → [Dice 1]: 5  [Dice 2]: 6
Score: 11
Do you want to continue (Y/N)? Y
I got → [Dice 1]: 4 [Dice 2]: 4
Score: 16
Doubles! Roll again!
I got → [Dice 1]: 1 [Dice 2]: 1
Score: 25
Doubles! Roll again!
I got → [Dice 1]: 3 [Dice 2]: 4
Score: 7
Do you want to continue (Y/N)? N

My score: 59

Round 1 -- Your Turn:
Shall I roll them for you (Y/N)? Y
You got → [Dice 1]:5 [Dice 2]: 5
Score: 20
Doubles! Roll again!
You got → [Dice 4]: 1 [Dice 5]: 2
You got a single one! End of your turn !
Your score: 20

Our scoresheet:
====================
My score        Your score
59              20



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Round 4 -- My Turn:
I got → [Dice 1]: 1  [Dice 2]: 2
You got a single one! End of your turn !
My score: 0

Round 4 -- Your Turn:
You got → [Dice 1]:3 [Dice 2]: 4
Score: 7
Do you want to continue (Y/N)? Y
You got → [Dice 4]:1 [Dice 5]: 1
Score: 25
Doubles! Roll again!
You got → [Dice 4]:5 [Dice 5]: 6
Your score:  11
Your score: 43
```

```
...........


Our scoresheet:
====================

My score        Your score
110             75

I AM THE WINNER!
```

Programming Requirements:

In order to implement this game you will need to write at least the following functions, but if you need more functions you can add them.

roll-a-dice () – This function will roll a dice and return the result. The rolling action will give random values.

play_computer() – This function will mainly be responsible from making the computer play the game.

computer_strategy_decider() –The computer uses the same scoring strategy but its turn stops when a single 1 is rolled.

play-user() – This function will manily be used to get the player play a turn.

scoresheet() – This function will be used to display the scoresheet on the screen.

Grading Schema:

Your program will be graded as follows:

Grading Point	**Mark (100)**
Maintaining the number of rounds requested by the user and also maintaining the total scores	10
roll-a-dice() function	10
play_computer() function	20
computer_strategy_decider() function	20
play_user() function	20
scoresheet() function	10
Code quality (e.g., variable names, formulation of selection statements and loops, etc)	10

Rules:

Please make sure that you follow the restrictions for the assignment as follows.

- **Strictly obey the input output format. Do not print extra things.**
- **You are not allowed to use global variables.**
- **You are not allowed to use data structures such as arrays to store values as we have not covered them in the class yet.**
- **Add your name/surname and ID at the top of your code as comments and name your source file "CNG140-P2.c"**
- **Upload only source file. Do not compress it (zip, rar, …)**