**Assignment 2 (due date: 10/16/2022)**

In this assignment you will ask to do coding in C using function, iteration and logic (compile and run).

Please submit your assignment into Canvas. Please submit the codes as .c files or copy them all into a single word file but make sure that they are ready to be compiled. Write these codes in terms of functions. It will be an excellent practice for your midterm.

1: The use of computers in education is referred to as computer-assisted instruction (CAI). Write a program that will help an elementary school student learn multiplication. Use the rand function to produce two positive two-digit integers. The program should then prompt the user with a question, such as:

How much is 11 times 25?

The student then inputs the answer. Next, the program checks the student’s answer. If it’s correct, display the message "Very good!" and ask another multiplication question. If the answer is wrong,

display the message "No. Please try again." and let the student try the same question repeatedly until the student finally gets it right. A separate function should be used to generate each new question. This function should be called once when the application begins execution and each time the user answers the question correctly (20 points).

2: Modify the craps program of Fig. 5.14 to allow wagering. Package as a function the portion of the program that runs one game of craps. Initialize variable bank-Balance to 2000 dollars. Prompt the player to enter a wager. Use a while loop to check that wager is less than or equal to bankBalance, and if not, prompt the user to reenter wager until a valid wager is entered. After a correct wager is entered, run one game of craps. If the player wins, increase bankBalance by wager and print the new bankBalance. If the player loses, decrease bankBalance by wager, print the new bankBalance, check whether bankBalance has become zero, and if so print the message, "Sorry. You busted!" As the game progresses, print various messages to create some “chatter” such as, "You will be broke!" or "Take a chance!" or "You're up. Now's the time to cash in your chips!" (35 points)

3: Write a recursive function multiply(first number, second number) that when invoked returns:

First number \* Second number

For example, multiply(3, 4) = 3 + 3 + 3 + 3. Assume that the numbers are integer greater than or equal to 1.

*Hint:* The recursion step would use the relationship

First number \* Second number = First number + First number, Second number - 1

first number + Multiply(first number, second number -1)

and the terminating condition occurs when the second number is equal to 0 because the first number is summed to itself equal to the second number (25 points).

4: Write a program that simulates coin tossing. For each toss of the coin the program should record Heads or Tails. Let the program toss the coin 50,000 times and count the number of times each side of the coin appears and then print the results (number of times that are head and number of times that are tail). It also should print the percentage of how many times we had the head and how many times we had the tail (for example: Head for 48% of the times and Tail for 52% of the times). (20 points)