0343

CS1002 Programming Fundamentals

ppSerial No:

Mid I Exam

Total Time: 1 Hour

Total Marks: 60

Tuesday, Sep 26, 2023

Course Instructors

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Signature of Invigilator

Roll No _____ Section _____ Signature _____

DO NOT OPEN THE QUESTION BOOK OR START UNTIL INSTRUCTED.

Instructions:

1. Verify at the start of the exam that you have a total of Three (3) questions printed on Seven (07) pages including this title page.
2. Attempt all questions on the question book and in the given order.
3. The exam is closed books, and closed notes. Please see that the area in your threshold is free of any material classified as 'useful in the paper' or else there may a charge of cheating.
4. Read the questions carefully for clarity of context and understanding of the meaning and make assumptions wherever required, for neither the invigilator will address your queries, nor the teacher/examiner will come to the examination hall for any assistance.
5. Fit in all your answers in the provided space. You may use extra space on the last page if required. If you do so, clearly mark the question/part number on that page to avoid confusion.
6. **Calculators are not Allowed.**
7. Use only your own stationery.
8. Use only permanent ink-pens. Only the questions attempted with permanent ink-pens will be considered. Any part of the paper done in lead pencil cannot be claimed for checking/rechecking.

	Q-1	Q-2	Q-3	Total
C.L.O	CLO1	CLO3	CLO1	-
Total Marks	20	20	20	**60**
Marks Obtained				

National University of Computer and Emerging Sciences

Department of Computer Science **Chiniot-Faisalabad Campus**

Q1	20

A person has three coins with two possible outcomes for each, a 'head' or a 'tail'. The person will toss each coin one after the other, that is, Coin1, Coin2, Coin3. We assume that the person will enter a value of 1 for a 'head' and 0 (zero) value for a 'tail'.

Your task is to **write pseudocode and draw flowchart** for an application which displays "You Won!" if the person gets two heads on any two consecutive coins and display "You Lose" otherwise. You cannot use logical AND/OR for any purpose.

Example1: (bold values are inputs)	Example2: (bold values are inputs)
Enter Coin1 value: **1** Enter Coin2 value: **1** Enter Coin3 value: **0** You Won!	Enter Coin1 value: **0** Enter Coin2 value: **1** Enter Coin3 value: **0** You Lose

Q2	20

A person will toss one coin N number of times and will enter a value of 1 for a 'head' and 0 (zero) value for a 'tail'. Your task is to **write pseudocode** for an application which finds a combination of *head-tail-tail* followed by its reverse, *tail-tail-head*. It is not necessary that both combinations are placed consecutively, however, the *head-tail-tail* must comes first. Also, display the starting and ending position of each combination (see the examples below). Display a message, "Double combo found!" if both combinations are found and display "No combo found" otherwise. We assume that the person will always enter the value of N greater than 5. You cannot use logical AND/OR for any purpose.

Example1: (bold values are inputs)	Example2: (bold values are inputs)
Enter the value of N: 6 Enter Coin value: **1** Enter Coin value: **0** Enter Coin value: **0** Enter Coin value: **0** Enter Coin value: **0** Enter Coin value: **1** Head-Tail-Tail appeared: starting position = 1, ending position = 3 Tail-Tail-Head appeared: starting position = 4, ending position = 6 Double combo found!	Enter the value of N: **11** Enter Coin value: **1** Enter Coin value: **0** Enter Coin value: **1** Enter Coin value: **0** Enter Coin value: **0** Enter Coin value: **1** Enter Coin value: **1** Enter Coin value: **0** Enter Coin value: **0** Enter Coin value: **0** Enter Coin value: **1** Head-Tail-Tail appeared: starting position = 3, ending position = 5 Tail-Tail-Head appeared: starting position = 9, ending position = 11 Double combo found!

Q3	20

Create a flowchart for a simple number guessing game using the provided pseudocode as a guide. The game begins by generating a random number between 1 and 100 and then asks the player to guess. Following each guess, the player is informed whether their guess was too high or too low. The game continues until the player correctly guesses the secret number, at which time a congratulatory message with the number of attempts is displayed.

Step 1: Initialize the Game
1.1. Predefine a secret number between 1 and 100.
1.2. Initialize a variable to keep track of the number of attempts (attempts = 0).
1.3. Display a welcome message to the player.
Step 2: Game Loop
2.1. Start a loop until the player guesses the correct number.
2.1.1. Ask the player to guess the number.
2.1.2. Increment the attempts counter by 1.
2.1.3. If the player's guess is equal to the secret number, go to Step 3.
2.1.4. If the player's guess is less than the secret number, display "Too low. Try again."
2.1.5. If the player's guess is greater than the secret number, display "Too high. Try again."
Step 3: Game Over
3.1. Display a congratulatory message, including the number of attempts.
3.2. End the game.

Please build a flowchart that depicts the logic of the game and the interconnections between different steps. Include choice points, loops, and the game's beginning and ending points.