Lab Skill 3

INSTRUCTION

- COMPLETE ALL QUESTIONS BY PASTING SCREENSHOTS OF C++ SOUCE CODE AND OUTPUT FOR EACH QUESTIONS.
- STUDENT IS ALLOWED TO DISCUSS THIS TOPIC, BUT THIS TASK IS INDIVIDUAL SUBMISSION
- SAVE THE FILE AS PDF FORMAT AND SUBMIT THE PDF FILE

Question 1: While Loop and Fibonacci Sequence (8 marks)

- **Objective:** Assess understanding of while loops and sequence generation.
- **Task:**

1. Write a program that generates the first 10 numbers of the Fibonacci sequence.
2. Use a while loop to control the sequence generation.
3. Print each number of the sequence on the same line, separated by spaces.

Question 2: Do-While Loop and User Input (10 marks)

- **Objective:** Evaluate comprehension of do-while loops and conditional statements.
- **Task:**

1. Create a number guessing game for numbers between 1 and 100.
2. Use a do-while loop to repeatedly ask the user for guesses.
3. Provide "Too high" or "Too low" hints after each incorrect guess.
4. End the loop when the user guesses correctly and display a success message.

Question 3: Nested For Loops and Pattern Printing (8 marks)

- **Objective:** Test ability to use nested loops for pattern generation.

- **Task:**

    1. Write a program that prints the following pattern:

```
*****
****
***
**
*
```

    2. Use nested for loops to generate the pattern.
    3. The pattern should have exactly 5 rows.

Question 4: Loop Control Statements (8 marks)

- **Objective:** Assess understanding of break and continue statements.
- **Task:**

    1. Write a program that prints numbers from 1 to 20.
    2. Use a continue statement to skip printing even numbers.
    3. Use a break statement to stop the loop if the number is greater than 15.

Question 5: Sentinel-Controlled Loop (8 marks)

- **Objective:** Evaluate ability to implement a sentinel-controlled loop and perform calculations.
- **Task:**

    1. Create a program that allows users to enter student grades.
    2. Use a sentinel value of -1 to indicate the end of grade input.
    3. Calculate and print the average of all entered grades.
    4. Handle the case where no grades are entered.

Question 6: Flag-Controlled Loop and Random Number Generation (8 marks)

- **Objective:** Assess understanding of flag-controlled loops and random number generation.
- **Task:**

    1. Write a program that generates random numbers between 1 and 100.
    2. Use a flag-controlled loop to continue generating numbers until a prime number is found.
    3. Print all generated numbers.
    4. Clearly indicate which number is the prime number that ended the loop.
    5. Implement a function to check if a number is prime.

Total Marks: 50
