INONEST Software Assignment #3 Programming Fundamentals & Problem Solving

Name:gozel ashyralyyeva

Date:28/12/2025

Q1. Problem Solving & Programming Mindset

- **What problem solving means:** In programming, problem-solving means breaking down a complex task into smaller, manageable steps and finding a logical path to a solution using code.
- **Why plan before coding:** Thinking about the solution first is crucial because it helps structure the logic, prevents logical errors, and saves time by avoiding unnecessary rewrites.
- **Real-life example:** Making a cup of coffee. It has specific steps: boil water, put coffee in the cup, pour water, stir. If you miss a step (like boiling water), the result fails.

Q2. Variables & Input/Output

- **Variable:** A variable is a named storage location in the computer's memory used to hold data (like numbers or text) that can change during the program's execution.
- **Input vs. Output:** Input is data given to the program by the user (e.g., typing your age on a keyboard). Output is the result the program displays to the user (e.g., showing "Access Granted" on the screen).

Q3. Conditional Logic (Decision Making)

- **Usage of conditional statements:** Conditional statements (if, else) allow the program to make decisions and execute different blocks of code based on whether a specific condition is true or false.
- **Example:** A grading system. If a student's score is 50 or above, the program decides to print "Pass". Else (if it's below 50), it prints "Fail".

Q4. Loops - Repetition in Programs

- **Usage of loops:** Loops are used to repeat a block of code multiple times until a specific condition is met, which is useful for tasks like counting or processing lists of items.
- **Difference from manual code:** Writing repeated code manually is tedious, prone to errors, and makes the program huge. A loop writes the instruction once and repeats it efficiently as many times as needed.