Subject: PRF192 - Programming Fundamental with C
Workshop 1

Objectives:

In this workshop, you will:

- Understand how to analyze problems and propose appropriate implementation methods.
- Proficient in techniques for declaring and using variables effectively in programs.
- Perform basic input and output operations efficiently.
- Understand and apply fundamental arithmetic operations to process data.
- Know how to use logical control structures (e.g., if-else, switch-case, loops) to handle program requirements.

Problem: Class Score Management and Statistics

Situation Description:

1. A teacher wants to input and manage the scores of students in a class.
2. The teacher needs to calculate and display:
    - The total score of the class.
    - The average score of the class.
    - The number of students who passed and failed (passing score is >= 5).
3. The program must validate the input to ensure that scores are within the range of 0 to 10.
4. Data should be processed by iterating through the list of students.

Syntax Use in the Problem:

1. **if and else**:
    - To check if the scores are valid (in the range 0–10).
    - To classify students as “passed” or “failed” based on their scores.
2. **for**:
    - To loop through the list of students and input their scores.
3. **while**:

- To handle repetitive actions, such as input validation for the number of students and their scores.

Specific Requirements:

1. Requirement 1: Input Data

- Input the number of students.
- Input each student's score, validating the input using **if-else**.

2. Requirement 2: Calculation

- Use **for** to calculate the total score and count the number of students who passed or failed.

3. Requirement 3: Statistics

- Display:
  - The total score of the class.
  - The average score of the class.
  - The number of students who passed and failed.

4. Requirement 4: Validation

- Ensure that the input is an integer and scores are in the valid range (0–10).

Hint: Code Design

```c
#include <stdio.h>
#include <stdlib.h>

int main() {
    // Step 1: Initialize variables used in the program


    // Step 2: Use a while loop to input the number of students


    // Step 3: Use a for loop to input scores and process each student


    // Step 4: Calculate the average score


    // Step 5: Display the statistics


    system("pause");
    return 0;
}
```

Output Sample: