Task on Essential Programming Concept

Calculate a Student’s Cumulative Score

1. Dry Run (step-by-step Execution)

The given code:

public static void CumulativeScore()

{

int[] scores = { 85, 90, 78, 88, 76, 105 };

int totalScore = 0;

for (int i = 0; i < 5; i++)

{

totalScore = totalScore + scores[i];

}

Console.WriteLine("Cumulative Score: " + totalScore);

}

1. Spot the bugs and explain what is wrong

• Bug: for (int i = 0; i < 5; i++) → This loop only runs for 5 elements, but the array has 6 elements. It skips the last score (105).

• Bug: The array contains 105, which exceeds the maximum possible score of 100 per subject. This should be flagged as an error.

1. List all possible edges cases

* If all scores are 0.
* If all scores are 100 (max boundary).
* If there are negative values in the array.
* If there are values greater than 100 (like 105 in the given data).
* If the array is empty.
* If the array contains less than 6 scores.
* If the array contains non-integer values (not possible in this case since it’s an int[]).

1. Corrected Code

public static void CumulativeScore()

{

int[] scores = { 85, 90, 78, 88, 76, 105 };

int totalScore = 0;

for (int i = 0; i < scores.Length; i++)

{

if (scores[i] < 0 || scores[i] > 100)

{

Console.WriteLine("Error: Invalid score detected (" + scores[i] + "). Scores should be between 0 and 100.");

return;

}

totalScore += scores[i];

}

Console.WriteLine("Cumulative Score: " + totalScore);

}