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Expt. No. 4 Programs for I/O operations with Different Data Types

Spot Question #1:

The academic section of CEG wants to develop a simple student performance classification system. The system receives a student's internal assessment mark, laboratory mark, and end-semester examination mark. The student is first evaluated based on the end-semester examination mark:

- If the examination mark is less than 50, the student is classified as “Not Qualified”.
- If the examination mark is 50 or above, the laboratory performance must be examined.

For students who have qualified in the examination:

- Laboratory mark ≥ 80 → evaluate the internal assessment:
  - Internal mark ≥ 80 → “Outstanding”
  - Otherwise → “Very Good”
- Laboratory mark ≥ 60 but < 80 → evaluate the internal assessment:
  - Internal mark ≥ 70 → “Good”
  - Otherwise → “Satisfactory”
- Laboratory mark < 60 → “Needs Improvement”

Design and implement a C program using nested if–else statements to classify the student's performance. The program should display the student's three marks and the final performance category.

Spot Question #2:

A common utility program is being developed for first-year engineering laboratories. Instead of creating separate programs for frequently used calculations, the department wants a menu-driven C application.

The application should provide the following operations:

‘@’ – Calculate Area of Circle

‘#’ – Calculate Area of Rectangle

‘^’ – Calculate Area of Triangle

‘$’ – Calculate Perimeter of Rectangle

‘&’ – Calculate Simple Interest

The user first selects an operation and then enters the required input values for that operation. Design and implement a C program using a switch–case statement that:

1. Displays the available operations.
2. Accepts the user's choice.
3. Accepts only the input values required for the selected operation.
4. Performs the corresponding calculation.
5. Displays the result with appropriate formatting.
6. Displays “Invalid Choice” for any unsupported option.