Faculty of Technology and Engineering
U & P U. Patel Department of Computer Engineering

Practical – 1 Lab Manual

INPUTS

Student ID (alphanumeric of length 6 to 7), Student name (string without space), Semester (number between 1 to 8), 3 Subject names (string with space), Theory and practical marks of all subject (number between 0 to 100)

EXPECTED OUTPUT

```
Student ID      :   23CE120
Student name  :   Arav
Semester       :   4
                        Theory      Practical
Computer Programming        AB          BB
Basics of Electronics       BB          AB
Professional Communication  AA          AA

SGPA          :  9.20
```

CALCULATIONS

Grade calculation from the marks

Range of Marks	≥80	≥73 <80	≥66 <73	≥60 <66	≥55 <60	≥50 <55	≥45 <50	<45
Letter Grade	AA	AB	BB	BC	CC	CD	DD	FF
Grade Point	10	9	8	7	6	5	4	0

SGPA calculation from grades

$$SGPA = \sum C_i G_i / \sum C_i$$

where C_i is the number of credits of course i
G_i is the Grade Point for the course i
and i = 1 to n, n = number of courses in the semester

Consider credit of courses as 3.

PRACTICE PROGRAMS

1. Create a C++ program for a basic calculator. The program should prompt the user to enter two numbers and select an operation (addition, subtraction, multiplication, or division). Perform the operation and display the result. Include error handling for division by zero.

   Expected output

   ```
       100
   +    20
   ------------
       120
   ```

2. Develop a C++ program that takes a paragraph of text as input. The program should prompt the user to choose between left-align, right-align, or center-align for the text. Additionally, the user should specify the width for alignment. The program should display the formatted text according to the chosen alignment and width.

   Expected Output

   ```
   Video provides a powerful way to help you
      prove your point. When you click Online
    Video, you can paste in the embed code for
   the video you want to add. You can also type
    a keyword to search online for the video that
                  best fits your document.
   ```

3. Create an advanced C++ program for tracking daily expenses. The program should allow the user to input details of expenses. It should display a running total of expenses.

   Expected Output

   ```
   Petrol          1000
   Grocery        12740
   Chocolates       100
   ---------------------------
                  13840
   ```