

Assignment – 10

Problem Statement:

Write a program in C to simulate a simple calculator that performs basic arithmetic operations such as addition, subtraction, multiplication, and division. The calculator should also perform special operations like computing x^y (power) and $x!$ (factorial).

Code:

```
1 #include <stdio.h>
2
3 int main()
4 {
5     int choice;
6     float a, b, result;
7     int i, n, fact = 1;
8     int base, exp, power = 1;
9
10    printf("\n--- Simple Calculator ---\n");
11    printf("1. Addition\n");
12    printf("2. Subtraction\n");
13    printf("3. Multiplication\n");
14    printf("4. Division\n");
15    printf("5. Power (x^y)\n");
16    printf("6. Factorial (x!)\n");
17    printf("Enter your choice: ");
18    scanf_s("%d", &choice);
19
20    switch (choice)
21    {
22        case 1:
23            scanf_s("%f %f", &a, &b);
24            result = a + b;
25            printf("Result = %.2f", result);
26            break;
27
28        case 2:
29            scanf_s("%f %f", &a, &b);
30            result = a - b;
31            printf("Result = %.2f", result);
32            break;
33
34        case 3:
35            scanf_s("%f %f", &a, &b);
36            result = a * b;
37            printf("Result = %.2f", result);
38            break;
39
40    }
41 }
```

```
40     case 4:
41         scanf_s("%f %f", &a, &b);
42         if (b == 0)
43             printf("Error: Division by zero not allowed");
44         else
45         {
46             result = a / b;
47             printf("Result = %.2f", result);
48         }
49         break;
50
51     case 5:
52         scanf_s("%d %d", &base, &exp);
53         for (i = 1; i <= exp; i++)
54             power = power * base;
55         printf("Result = %d", power);
56         break;
57
58     case 6:
59         scanf_s("%d", &n);
60         for (i = 1; i <= n; i++)
61             fact = fact * i;
62         printf("Result = %d", fact);
63         break;
64
65     default:
66         printf("Invalid choice");
67     }
68
69     return 0;
70 }
71 }
```

Input & Output:

```
-- Simple Calculator ---
1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Power (x^y)
6. Factorial (x!)
Enter your choice: 1
10 20
Result = 30.00
D:\MIT\Sem2\FOP\Leap Year\x64\Debug\Leap Year.exe (process 5076) exited with code 0 (0x0).
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .|
```