Assignment 1-A

Q1. Write a C program to calculate the area of a rectangle using user input for length and width.Use appropriate arithmetic operators and expressions.

Ans:

```
#include <stdio.h>
int main() {
    float len, wid, area;
    printf("Enter the length of the rectangle: ");
    scanf("%f", &len);
    printf("Enter the width of the rectangle: ");
    scanf("%f", &wid);

    area = len * wid;

    printf(“ Area of the rectangle is: %.2f\n", area);
    return 0;
}
```

Q2. Explore the associativity of various operators in C programming by creating a program that involves multiple operators with different associativity. Explain the results.

Ans:

```
#include <stdio.h>
int main() {
      int result;
       result = 10 - 5 * 2;
    printf("Result 1: %d\n", result);
             result = (10 - 5) * 2;
    printf("Result 2: %d\n", result);
      int a, b;
    a = b = 5;
    printf("Result 3: a = %d, b = %d\n", a, b);
             result = 8 & 12 | 2;    //bit-wise operator
    printf("Result 4: %d\n", result);
    int x = 5, y = 10;
            result = (x > y) ? x : y;  //ternary operator
    printf("Result 5: %d\n", result);
    return 0;
}
```

1. **Example 1** demonstrates how parentheses can change the precedence of operations. Without parentheses, multiplication has higher precedence than subtraction, but with parentheses, subtraction is performed first.

2. **Example 2** shows the right-to-left associativity of assignment operators. Here, b is assigned the value 5 first, then a is assigned the value of b.

3. **Example 3** illustrates the precedence and associativity of bitwise operators. Bitwise AND (&) has higher precedence than bitwise OR (|), so 8 & 12 is calculated first, then 2 | (8 & 12).

4. **Example 4** showcases the associativity of the ternary operator ?:, which is right-to-left. (x > y) ? x : y is evaluated first, and depending on the condition, either x or y is selected.