

Experiment - 7 (Structures and Union)

1.) Write a C program that uses functions to perform the following operations:-

- a) Reading a Complex Number
- b) Writing a Complex number
- c) Addition and Subtraction of two Complex numbers.

→

```
#include <stdio.h>
Struct Complex {
    float real;
    float imag;
};
```

```
struct Complex read Complex() {
    struct Complex c;
    print f("Enter real part : ");
    Scan f("%f", &c.real);
    print f("Enter imaginary part : ");
    Scan f("%f", &c.imag);
    return c;
```

}

```
void write Complex (Struct Complex c) {
    if (c.imag >= 0)
        print f("% .2f + % .2fi\n", c.real, c.imag);
    else
        print f("% .2f - % .2fi\n", c.real, -c.imag);
```

Remarks:

Teacher's Signature

```
struct Complex add Complex (struct Complex c1,
                           struct Complex c2) {
    struct Complex result;
```

```
    result.real = c1.real + c2.real;
    result.imag = c1.imag + c2.imag;
    return result;
}
```

```
struct Complex sub Complex (struct Complex c1, struct
                           Complex c2)
```

```
struct Complex result;
    result.real = c1.real - c2.real;
    result.imag = c1.imag - c2.imag;
```

```
return result;
}
```

```
int main () {
    struct Complex num1, num2, sum, diff;
    printf ("Enter first Complex number: \n");
    num1 = read Complex ();
    printf ("Enter second Complex number: \n");
    num2 = read Complex ();
    sum = add Complex (num1, num2);
    diff = sub Complex (num1, num2);
    printf ("\n First Complex number: ");
    write Complex (num1);
    printf ("Second Complex number: ");
}
```

Remarks:

Teacher's Signature _____

```
    Write Complex (num2);  
    print { "In Sum: " } ;  
    Write Complex (sum);  
    print { "Difference: " } ;  
    Write Complex (diff);  
    return 0;  
}
```

main.c

```
36 }
37
38 int main() {
39     struct Complex num1, num2, sum, diff;
40
41     printf("Enter First Complex number:\n");
42     num1 = read_Complex();
43
44     printf("Enter Second Complex number:\n");
45     num2 = read_Complex();
46
47     sum = add_Complex(num1, num2);
48     diff = sub_Complex(num1, num2);
49
50     printf("\nFirst Complex number: ");
51     write_Complex(num1);
52     printf("Second Complex number: ");
53     write_Complex(num2);
54
55     printf("\nSum: ");
56     write_Complex(sum);
57     printf("Difference: ");
58     write_Complex(diff);
59 }
```

Run

Output

```
Enter First complex number:
Enter real part: 5.5
Enter imaginary part: 3.2
Enter Second Complex number:
Enter real part: 2
Enter imaginary part: -7.1

First Complex number: 5.50 + 3.20i
Second Complex number: 2.00 - 7.10i

Sum: 7.50 - 3.90i
Difference: 3.50 + 10.30i

== Code Execution Successful ==
```

The image shows a screenshot of a C online compiler interface. On the left, the code for 'main.c' is displayed, which performs arithmetic operations on complex numbers. The code includes functions for reading, adding, subtracting, and writing complex numbers. In the center, there are icons for copy, paste, and share. On the right, the 'Run' button is highlighted in blue. Below the code, the 'Output' section shows the execution results. It prompts for the first complex number (real part 5.5, imaginary part 3.2), the second complex number (real part 2, imaginary part -7.1), and then displays the sum (7.50 - 3.90i) and difference (3.50 + 10.30i). At the bottom, it concludes with '== Code Execution Successful =='. The background of the interface is dark.