CSE 1112

Title: Fundamental of C Programming.

Objective:

The main objectives of this lab are to

- Learn about Input output (Integer, float, double, char)
- Learn about Operators (Arithmetic, Relational, Logical, Bitwise, Assignment)

Theory:

C is a general-purpose computer programming language. It was created in the 1970s by Dennis Ritchie, and remains very widely used and influential. By design, C's features cleanly reflect the capabilities of the targeted CPUs. It has found lasting use in operating systems, device drivers, protocol stacks, though decreasingly for application software, and is common in computer architectures that range from the largest supercomputers to the smallest microcontrollers and embedded systems.

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Source Code:

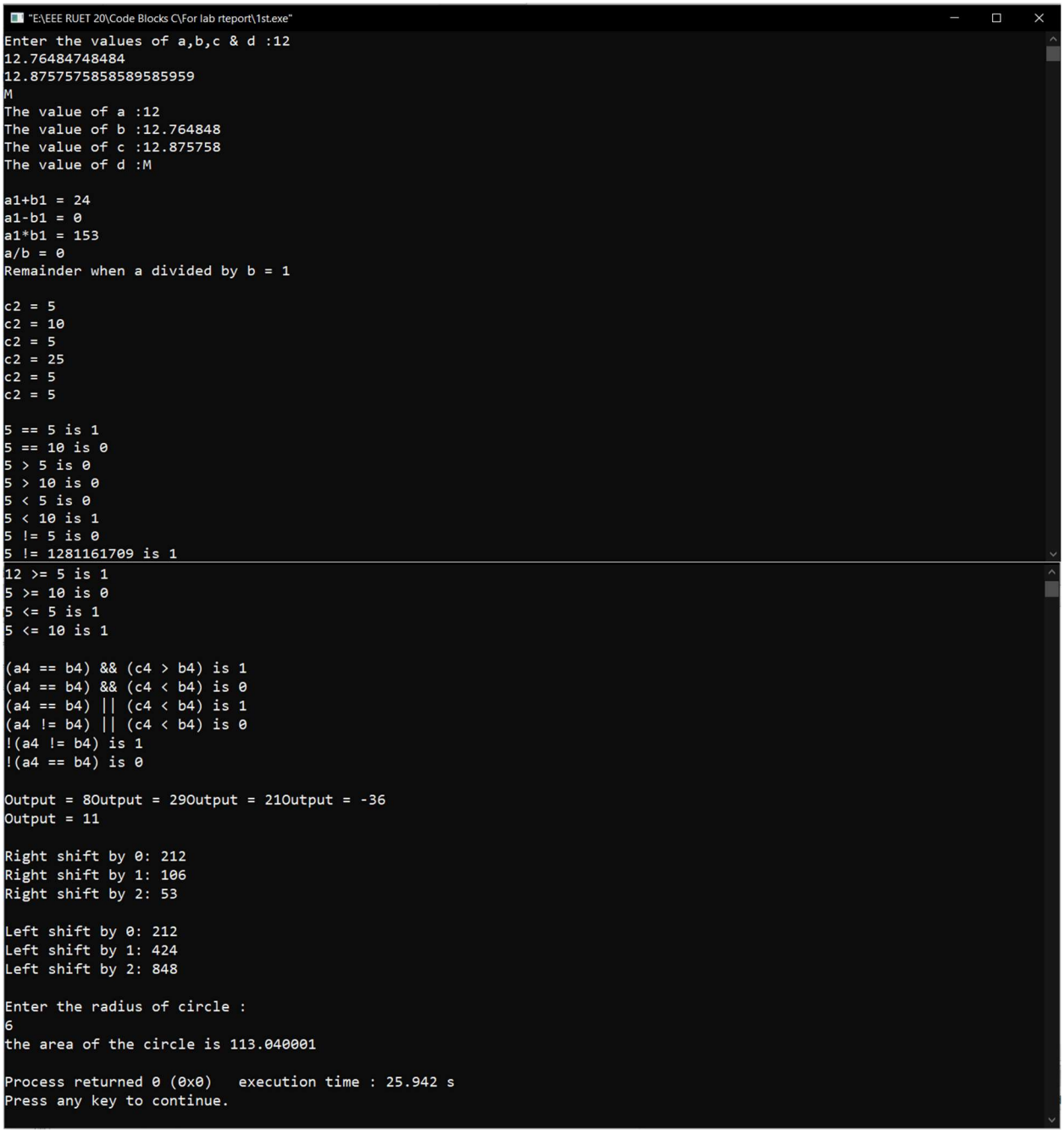
```
1. /// Input output (Integar, float,double,char)
2.
3. #include<stdio.h>
4. int main ()
5. {
6.     ///Input
7.
8.     int a;
9.     float b;
10.          double c;
11.          char d;
12.
13.          printf("Enter the values of a,b,c & d :");
14.          scanf("%d\n%f\n%lf\n%c",&a,&b,&c,&d);
15.
16.          ///Output
17.
18.          printf("The value of a :%d\n",a);
19.          printf("The value of b :%f\n",b);
20.          printf("The value of c :%lf\n",c);
21.          printf("The value of d :%c\n",d);
22.
23.          printf("\n");
24.
25.     /// Operators (Arithmetic,Relational,Logical,Bitwise,
   Assignment)
26.
27.          /// Arithmetic operators
28.
29.          int a1 = 9,b1 = 4, c1;
30.
31.          c1 = a+b;
32.          printf("a1+b1 = %d \n",c1);
33.          c1 = a-b;
34.          printf("a1-b1 = %d \n",c1);
35.          c1 = a*b;
36.          printf("a1*b1 = %d \n",c1);
37.          c1 = a/b;
38.          printf("a/b = %d \n",c1);
39.          c1 = a1%b1;
```

```
40.         printf("Remainder when a divided by b = %d \n",c1);
41.
42.         printf("\n");
43.
44.         /// Assignment Operators
45.
46.         int a2 = 5, c2;
47.
48.         c2 = a2;       // c2 is 5
49.         printf("c2 = %d\n", c2);
50.         c2 += a2;      // c2 is 10
51.         printf("c2 = %d\n", c2);
52.         c2 -= a2;      // c2 is 5
53.         printf("c2 = %d\n", c2);
54.         c2 *= a2;      // c2 is 25
55.         printf("c2 = %d\n", c2);
56.         c2 /= a2;      // c2 is 5
57.         printf("c2 = %d\n", c2);
58.         c2 %= a;      // c2 = 0
59.         printf("c2 = %d\n", c2);
60.
61.         printf("\n");
62.
63.         /// Relational operators
64.
65.         int a3 = 5, b3 = 5, c3 = 10;
66.
67.         printf("%d == %d is %d \n", a3, b3, a3 == b3);
68.         printf("%d == %d is %d \n", a3, c3, a3 == c3);
69.         printf("%d > %d is %d \n", a3, b3, a3 > b3);
70.         printf("%d > %d is %d \n", a3, c3, a3 > c3);
71.         printf("%d < %d is %d \n", a3, b3, a3 < b3);
72.         printf("%d < %d is %d \n", a3, c3, a3 < c3);
73.         printf("%d != %d is %d \n", a3, b3, a3 != b3);
74.         printf("%d != %d is %d \n", a3, c, a != c);
75.         printf("%d >= %d is %d \n", a, b3, a3 >= b3);
76.         printf("%d >= %d is %d \n", a3, c3, a3 >= c3);
77.         printf("%d <= %d is %d \n", a3, b3, a3 <= b3);
78.         printf("%d <= %d is %d \n", a3, c3, a3 <= c3);
79.
80.         printf("\n");
81.
82.
83.         /// Logical operators
84.
```

```
85.         int a4 = 5, b4 = 5, c4 = 10, result;
86.
87.         result = (a4 == b4) && (c4 > b4);
88.         printf("(a4 == b4) && (c4 > b4) is %d \n", result);
89.
90.         result = (a4 == b4) && (c4 < b4);
91.         printf("(a4 == b4) && (c4 < b4) is %d \n", result);
92.
93.         result = (a4 == b4) || (c4 < b4);
94.         printf("(a4 == b4) || (c4 < b4) is %d \n", result);
95.
96.         result = (a4 != b4) || (c4 < b4);
97.         printf("(a4 != b4) || (c4 < b4) is %d \n", result);
98.
99.         result = !(a4 != b4);
100.        printf("!(a4 != b4) is %d \n", result);
101.
102.        result = !(a4 == b4);
103.        printf("!(a4 == b4) is %d \n", result);
104.
105.        printf("\n");
106.
107.        /// Bitwise Operators
108.
109.        // AND
110.
111.        int a5 = 12, b5 = 25;
112.        printf("Output = %d", a5&b5);
113.
114.        // OR
115.
116.        int a6 = 12, b6 = 25;
117.        printf("Output = %d", a6|b6);
118.
119.        // XOR
120.
121.        int a7 = 12, b7 = 25;
122.        printf("Output = %d", a7^b7);
123.
124.        // Complement
125.
126.        printf("Output = %d\n",~35);
127.        printf("Output = %d\n",~-12);
128.
129.        printf("\n");
```

```
130.
131.        // Shift operator
132.
133.        int num=212, i;
134.        for (i=0; i<=2; ++i)
135.            printf("Right shift by %d: %d\n", i, num>>i);
136.
137.         printf("\n");
138.
139.         for (i=0; i<=2; ++i)
140.            printf("Left shift by %d: %d\n", i, num<<i);
141.
142.            printf("\n");
143.
144.         return 0;
145.    }
```

Output:


"E:\EEE RUET 20\Code Blocks C\For lab rteport\1st.exe"
Enter the values of a,b,c & d :12
12.76484748484
12.8757575858589585959
M
The value of a :12
The value of b :12.764848
The value of c :12.875758
The value of d :M
a1+b1 = 24
a1-b1 = 0
a1*b1 = 153
a/b = 0
Remainder when a divided by b = 1
c2 = 5
c2 = 10
c2 = 5
c2 = 25
c2 = 5
c2 = 5
5 == 5 is 1
5 == 10 is 0
5 > 5 is 0
5 > 10 is 0
5 < 5 is 0
5 < 10 is 1
5 != 5 is 0
5 != 1281161709 is 1
12 >= 5 is 1
5 >= 10 is 0
5 <= 5 is 1
5 <= 10 is 1
(a4 == b4) && (c4 > b4) is 1
(a4 == b4) && (c4 < b4) is 0
(a4 == b4) || (c4 < b4) is 1
(a4 != b4) || (c4 < b4) is 0
!(a4 != b4) is 1
!(a4 == b4) is 0
Output = 8Output = 29Output = 21Output = -36
Output = 11
Right shift by 0: 212
Right shift by 1: 106
Right shift by 2: 53
Left shift by 0: 212
Left shift by 1: 424
Left shift by 2: 848
Enter the radius of circle :
6
the area of the circle is 113.040001
Process returned 0 (0x0) execution time : 25.942 s
Press any key to continue.

Discussion and Conclusion:

In the very first of this program, it prints int, char, double & float type data by taking from the user. Then I work on operators. At first of all I made a C code on arithmetic operators then assignment operators after that relational operators and then logical operators and lastly on bitwise operators. The final task was to find the area of a circle. For this I made a code where it takes the radius of circle from the user and print the area of the circle.