

[ASSIGNMENT]

[C PROGRAMMING]



Graphic Era

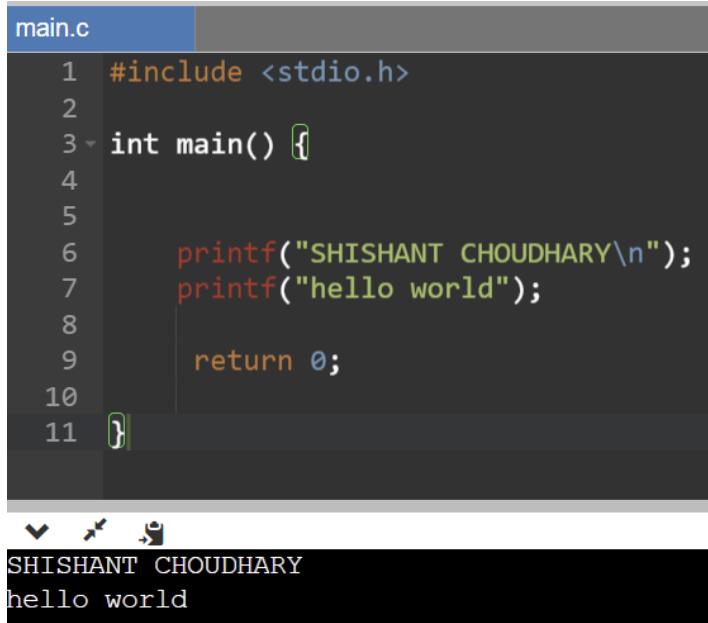
Deemed to be University
Accredited by NAAC with Grade A
NBA Accredited Programs in ECE, CSE & ME
Approved by AICTE, Ministry of HRD, Govt. of India

SUBMITTED BY:
SHISHANT CHOUDHARY

SUBMITTED TO:
MR RISHI KUMAR

1.WAP for hello world or this is my first C Program.

ANS :



The screenshot shows a code editor with a dark theme and a terminal window below it. The code editor has a tab labeled "main.c" and contains the following C code:

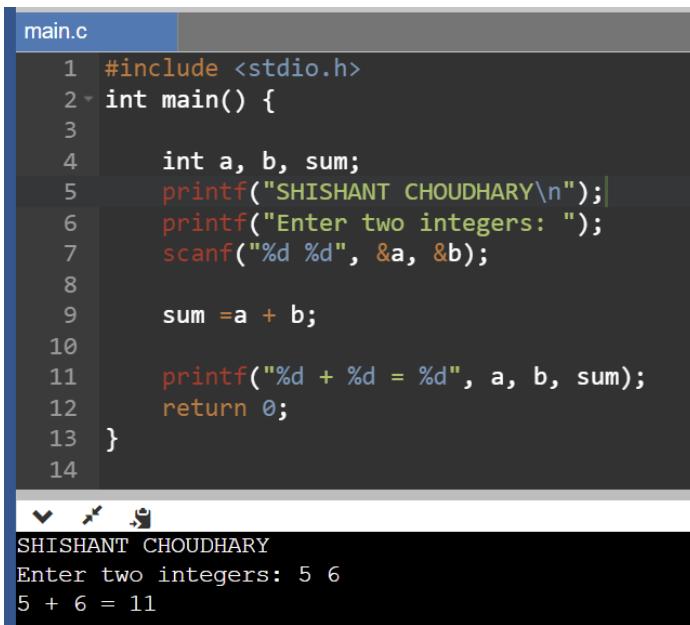
```
1 #include <stdio.h>
2
3 int main() {
4
5     printf("SHISHANT CHOURHARY\n");
6     printf("hello world");
7
8     return 0;
9
10 }
```

The terminal window displays the output of the program:

```
SHISHANT CHOURHARY
hello world
```

2.WAP to add two numbers

.ANS:



The screenshot shows a code editor with a dark theme and a terminal window below it. The code editor has a tab labeled "main.c" and contains the following C code:

```
1 #include <stdio.h>
2
3 int main() {
4
5     int a, b, sum;
6     printf("SHISHANT CHOURHARY\n");
7     printf("Enter two integers: ");
8     scanf("%d %d", &a, &b);
9
10    sum = a + b;
11
12    printf("%d + %d = %d", a, b, sum);
13
14 }
```

The terminal window displays the output of the program:

```
SHISHANT CHOURHARY
Enter two integers: 5 6
5 + 6 = 11
```


3.WAP to find area of circle.

ANS:

The screenshot shows a C IDE interface with a dark theme. The top bar includes buttons for Run, Debug, Stop, Share, Save, Beautify, and Language (set to C). The code editor window contains a file named 'main.c' with the following content:

```
1 #include<stdio.h>
2 int main(){
3     float radius,area;
4     const float pi = 3.14;
5
6     printf("SHISHANT CHOURHARY ");
7     printf("Enter the radius of the circle:");
8     scanf("%f",&radius);
9
10    area = pi* radius * radius;
11
12    printf("Area of the circle is: %.2f\n",area);
13
14    return 0;
15
16 }
17
```

Below the code editor is a terminal window showing the program's output:

```
SHISHANT CHOURHARY Enter the radius of the circle:20
Area of the circle is: 1256.00

...Program finished with exit code 0
Press ENTER to exit console.
```

4.WAP to divide two numbers.

ANS:

The screenshot shows a C IDE interface with a dark theme. The top bar includes buttons for Run, Debug, Stop, Share, Save, and Language (set to C). The code editor window contains a file named 'main.c' with the following content:

```
1 #include <stdio.h>
2 int main() {
3
4     int a, b, divide;
5     printf("SHISHANT CHOURHARY\n");
6     printf("Enter two integers: ");
7     scanf("%d %d", &a, &b);
8
9     divide =a/b;
10
11    printf("%d/%d = %d", a, b, divide);
12    return 0;
13 }
```

Below the code editor is a terminal window showing the program's output:

```
SHISHANT CHOURHARY
Enter two integers: 4 8
4/8 = 0
```

5. WAP to print ASCII value.

ANS:

The screenshot shows a C IDE interface with the following details:

- Toolbar:** Run, Debug, Stop, Share, Save, Beautify, Download.
- Language:** C
- Code Editor:** File name: main.c. The code prints "SHISHANT CHOURHARY", prompts for a character input, and then prints its ASCII value.

```
1 #include<stdio.h>
2 int main(){
3     char ch;
4
5     printf("SHISHANT CHOURHARY ");
6     printf("enter the character:");
7     scanf("%c",&ch);
8
9     printf("The ASCII value of '%c' is: %d\n",ch,ch);
10
11    return 0;
12
13 }
```
- Output Window:** Shows the program's execution. It prints "SHISHANT CHOURHARY", asks for a character input ("enter the character:"), receives "S", prints its ASCII value (83), and then exits.

```
SHISHANT CHOURHARY enter the character:S
The ASCII value of 'S' is: 83

...Program finished with exit code 0
Press ENTER to exit console.
```

6. WAP to multiply floating point numbers.

ANS:

The screenshot shows a C IDE interface with the following details:

- Toolbar:** Run, Debug, Stop, Share, Save, Beautify, Download.
- Language:** C
- Code Editor:** File name: main.c. The code multiplies two floating-point numbers entered by the user and prints the result.

```
1 #include<stdio.h>
2 int main(){
3     float num1,num2,result;
4
5     printf("SHISHANT CHOURHARY ");
6     printf("Enter the first floating-point number:");
7     scanf("%f",&num1);
8
9     printf("Enter the second floating-point number:");
10    scanf("%f",&num2);
11
12    result = num1 * num2;
13    printf("The multiplication result is: %.2f\n",result);
14
15    return 0;
16
17 }
```
- Output Window:** Shows the program's execution. It asks for two floating-point numbers (4 and 6) and prints their multiplication result (24.00).

```
SHISHANT CHOURHARY Enter the first floating-point number:4
Enter the second floating-point number:6
The multiplication result is: 24.00

...Program finished with exit code 0
```

7. WAP to SWAP two variables number by using third variable.

ANS:

The screenshot shows a C IDE interface with a code editor and a terminal window. The code editor displays a file named 'main.c' containing the following C program:

```
1 #include<stdio.h>
2 int main(){
3     int num1,num2,temp;
4
5     printf("SHISHANT CHOUDHARY");
6     printf("Enter the first number:");
7     scanf("%d",&num1);
8
9     printf("Enter the second number:");
10    scanf("%d",&num2);
11
12    printf("Before swapping: num1 = %d,num2 = %d\n",num1,num2);
13
14    //Swapping using third variable
15    temp = num1;
16    num1 = num2;
17    num2 = temp;
18
19    printf("After swapping: num1 = %d,num2 = %d\n",num1,num2);
20    return 0;
21
22 }
```

The terminal window below the code editor shows the execution of the program. It prompts the user for two numbers, performs the swap using a third variable, and then prints the swapped values. The output is as follows:

```
SHISHANT CHOUDHARY
Enter the first number:2
Enter the second number:4
Before swapping: num1 = 2,num2 = 4
After swapping: num1 = 4,num2 = 2

...Program finished with exit code 0
Press ENTER to exit console.
```

8. WAP to SWAP two variables number without using third Variables.

The screenshot shows a C IDE interface with the following details:

- Code Area:** The code is named "main.c". It includes the standard input-output library and defines a main function. Inside, it prompts the user for two numbers, performs a swap using arithmetic operations (temporarily storing the sum in num1), and then prints the swapped values.
- Output Area:** The output shows the program's execution. It starts with the author's name, then asks for two numbers (4 and 6). It then displays the numbers before and after the swap, showing that they have been interchanged.
- Bottom Panel:** A message indicates the program has finished with exit code 0 and prompts the user to press Enter to exit.

ANS:

9. WAP to SWAP three variable numbers without using third variables.

ANS:

The screenshot shows a C IDE interface with the following details:

- Code Area:** The code is named "main.c". It includes the standard input-output library and defines a main function. Inside, it prompts the user for three numbers and performs a swap using arithmetic operations (temporarily storing the sum of all three in num1).
- Output Area:** The output shows the program's execution. It starts with the author's name, then asks for three numbers (2, 4, and 6). It then displays the numbers before and after the swap, showing that they have been interchanged.

10. Wap to find the area of rectangle.

ANS:

The screenshot shows a C IDE interface with a dark theme. The top bar includes buttons for Run, Debug, Stop, Share, Save, Beautify, and a language selector set to C. The main code editor window contains the following C program:

```
main.c
1 #include<stdio.h>
2 int main(){
3     int lenth,width,area;
4
5     printf("SHISHANT CHOURHARY ");
6     printf("Enter the lenth of the rectangle:");
7     scanf("%d",&lenth);
8
9     printf("Enter the width of the rectangle:");
10    scanf("%d",&width);
11
12    area = lenth * width;
13
14    printf("The area of rectangle is: %d\n",area);
15
16    return 0;
17
18 }
19
```

Below the code editor is a terminal window showing the program's execution:

```
SHISHANT CHOURHARY Enter the lenth of the rectangle:8
Enter the width of the rectangle:10
The area of rectangle is: 80

...Program finished with exit code 0
Press ENTER to exit console.
```

11. WAP to find area of square

ANS:

The screenshot shows a C IDE interface with a dark theme. The top bar includes buttons for Run, Debug, Stop, Share, Save, Beautify, and a language selector set to C. The main code editor window contains the following C program:

```
main.c
1 #include<stdio.h>
2 int main(){
3     int side,area;
4
5     printf("SHISHANT CHOURHARY ");
6     printf("Enter the lenth of a side of the square:");
7     scanf("%d",&side);
8
9     area = side * side;
10
11    printf("The area of the square is: %d\n",area);
12
13    return 0;
14
15 }
16
```

Below the code editor is a terminal window showing the program's execution:

```
SHISHANT CHOURHARY Enter the lenth of a side of the square:5
The area of the square is: 25

...Program finished with exit code 0
Press ENTER to exit console.
```

12. wap to find Area and Volume of Cube.

ANS;

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     float side, area, volume;
5
6     printf("SHISHANT CHOURHARY\n");
7     printf("Enter the side length of the cube: ");
8     scanf("%f", &side);
9
10    area = 6 * side * side;
11
12    volume = side * side * side;
13
14    printf("The area of the cube is: %.f\n", area);
15    printf("The volume of the cube is: %.f\n", volume);
16
17    return 0;
18 }
19
20
```

SHISHANT CHOURHARY
Enter the side length of the cube: 4
The area of the cube is: 96
The volume of the cube is: 64

14. wap to find area and volume of cuboid

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     float l,b,h, area, volume;
5
6     printf("SHISHANT CHOURHARY\n");
7     printf("Enter the l of the cuboid: ");
8     scanf("%f", &l);
9     printf("enter the b of cuboid");
10    scanf("%f",&b);
11    printf("enter the h of the cuboid");
12    scanf("%f",&h);
13
14
15    area = 2*(l*b+l*h+b*h);
16
17    volume = l * b * h;
18
19    printf("The area of the cuboid is: %.f\n", area);
20    printf("The volume of the cuboid is: %.f\n", volume);
21
22    return 0;
23 }
```

```
SHISHANT CHOURHARY
Enter the l of the cuboid: 4
enter the b of cuboid6
enter the h of the cuboid2
The area of the cuboid is: 88
The volume of the cuboid is: 48

...Program finished with exit code 0
Press ENTER to exit console.[]
```

15. WAP to find the largest number using the Logical AND operator.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int num1, num2, num3, largest;
5     printf("SHISHANT CHAUDHARY\n");
6     printf("Enter three numbers: ");
7     scanf("%d %d %d", &num1, &num2, &num3);
8
9     largest = num1;
10
11    if (num2 > largest && num2 > num3) {
12        largest = num2;
13    }
14    if (num3 > largest && num3 > num2) {
15        largest = num3;
16    }
17    printf("The largest number is: %d\n", largest);
18
19    return 0;
20 }
21
```

SHISHANT CHAUDHARY
Enter three numbers: 3 4 5
The largest number is: 5

16. WAP to validate the username and password entered by the user is correct or not using the predefined username and password.

ANS:

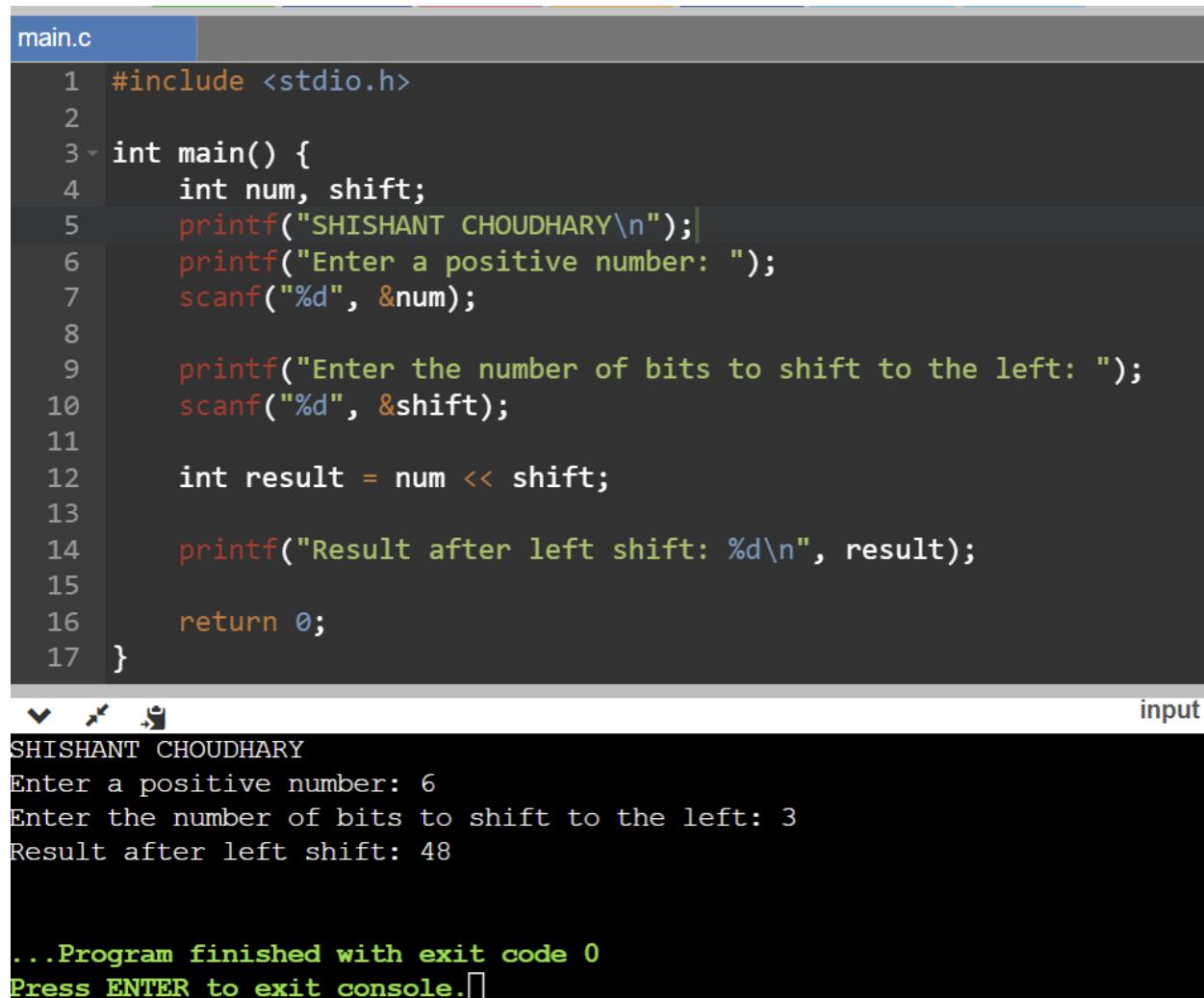
```
main.c
1 #include <stdio.h>
2 #include <string.h>
3
4 int main() {
5     char username[20];
6     char password[20];
7
8     char correctUsername[] = "shishant";
9     char correctPassword[] = "123";
10    printf("SHISHANT CHOUDHARY\n");
11    printf("Enter your username: ");
12    scanf("%s", username);
13    printf("Enter your password: ");
14    scanf("%s", password);
15
16    if (strcmp(username, correctUsername) == 0 && strcmp(password, correctPassword) == 0) {
17        printf("Login successful!\n");
18    } else {
19        printf("Login failed. Invalid username or password.\n");
20    }
21
22    return 0;
23 }
```

SHISHANT CHOUDHARY
Enter your username: shishant
Enter your password: 123
Login successful!

...Program finished with exit code 0
Press ENTER to exit console.█

17. WAP to input the positive number from the user to perform the Left shift operator.

ANS:



```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int num, shift;
5     printf("SHISHANT CHOURHARY\n");
6     printf("Enter a positive number: ");
7     scanf("%d", &num);
8
9     printf("Enter the number of bits to shift to the left: ");
10    scanf("%d", &shift);
11
12    int result = num << shift;
13
14    printf("Result after left shift: %d\n", result);
15
16    return 0;
17 }
```

SHISHANT CHOURHARY
Enter a positive number: 6
Enter the number of bits to shift to the left: 3
Result after left shift: 48

...Program finished with exit code 0
Press ENTER to exit console.[]

18. WAP to input the positive number from the user to perform the Right shift operator.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int num, shift;
5     printf("SHISHANT CHOURDARY\n");
6     printf("Enter a positive number: ");
7     scanf("%d", &num);
8
9     printf("Enter the number of bits to shift to the right: ");
10    scanf("%d", &shift);
11
12    int result = num >> shift;
13
14    printf("Result after right shift: %d\n", result);
15
16    return 0;
17 }
18
```

SHISHANT CHOURDARY
Enter a positive number: 5
Enter the number of bits to shift to the right: 1
Result after right shift: 2

19. WAP to perform the pre increment and pre decrement operator on two integers and print both original value and updated value.

ANS:

The screenshot shows a terminal window with the following content:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int a = 10, b = 5;
5
6     // Pre-increment a and pre-decrement b
7     int originalA = a;
8     int originalB = b;
9     ++a;
10    --b;
11    /* Print the original and updated values
12    printf("SHISHANT CHOUDHARY\n");
13    printf("Original value of a: %d\n", originalA);
14    printf("Updated value of a (after pre-increment): %d\n", a);
15    printf("Original value of b: %d\n", originalB);
16    printf("Updated value of b (after pre-decrement): %d\n", b);
17
18    return 0;
19 }
20
```

SHISHANT CHOUDHARY
Original value of a: 10
Updated value of a (after pre-increment): 11
Original value of b: 5
Updated value of b (after pre-decrement): 4

20. WAP to perform the post increment and post decrement operator on two integers and print both original value and updated value.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int num1 = 5;
5     int num2 = 7;
6
7     // Post-increment operator (num++)
8     printf("SHISHANT CHOUDHARY\n");
9     printf("Post-increment operator on num1:\n");
10    printf("Original value of num1: %d\n", num1);
11    int updatedNum1 = num1++;
12    printf("Updated value of num1: %d\n\n", updatedNum1);
13
14     // Post-decrement operator (num--)
15     printf("Post-decrement operator on num2:\n");
16     printf("Original value of num2: %d\n", num2);
17     int updatedNum2 = num2--;
18     printf("Updated value of num2: %d\n", updatedNum2);
19
20     return 0;
21 }
22
```

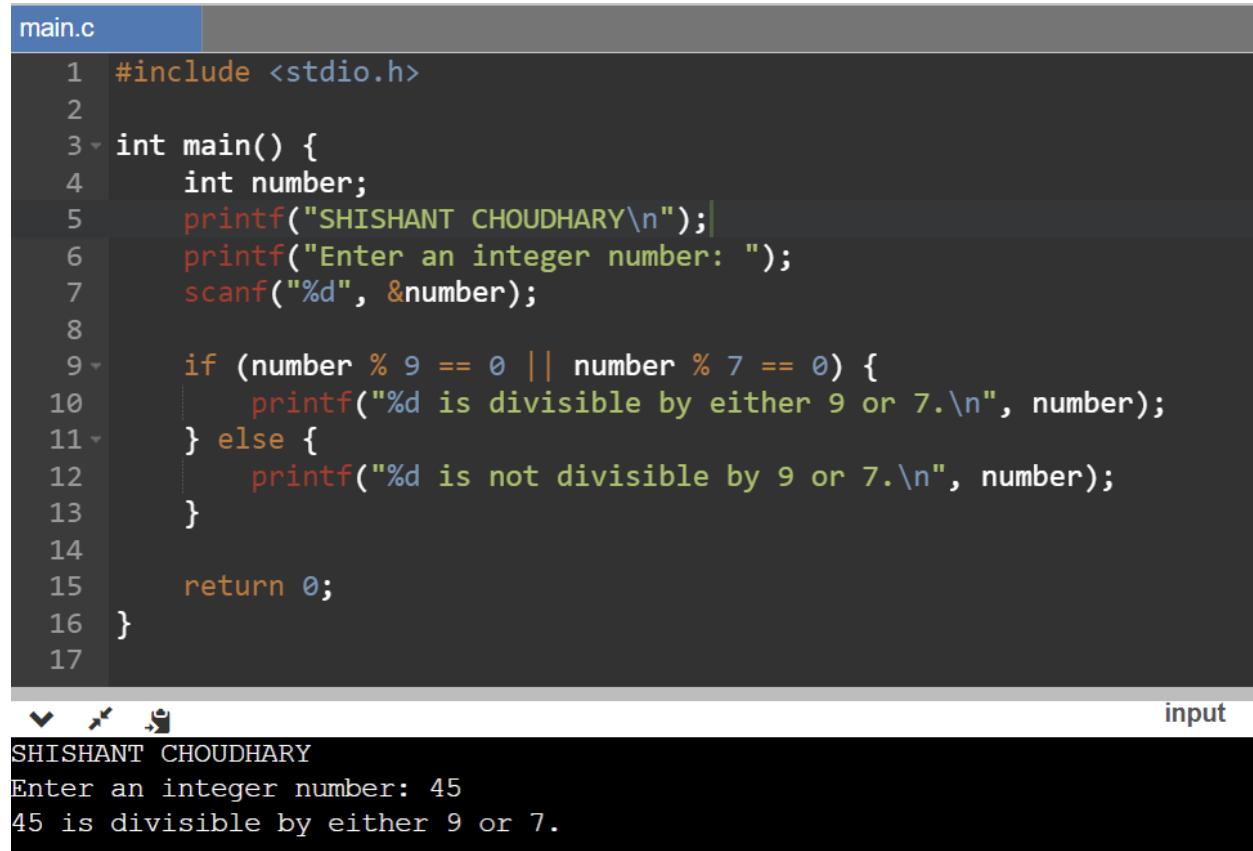
```
▼ ✎ ⌂
SHISHANT CHOUDHARY
Post-increment operator on num1:
Original value of num1: 5
Updated value of num1: 5

Post-decrement operator on num2:
Original value of num2: 7
Updated value of num2: 7

...Program finished with exit code 0
Press ENTER to exit console.█
```

21. WAP for an integer number and to check whether it is divisible by 9 or 7 using OR logical operator.

ANS:

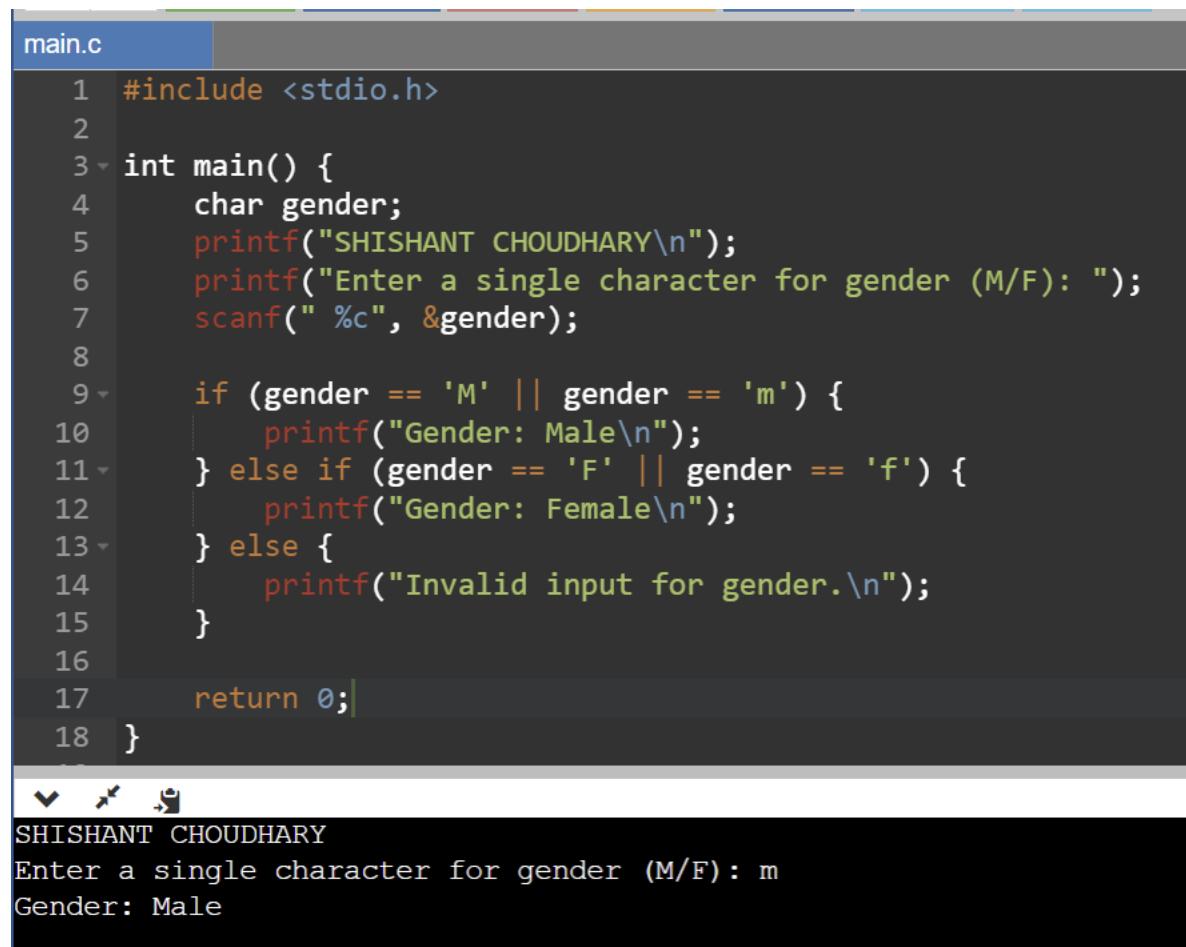


```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int number;
5     printf("SHISHANT CHAUDHARY\n");
6     printf("Enter an integer number: ");
7     scanf("%d", &number);
8
9     if (number % 9 == 0 || number % 7 == 0) {
10         printf("%d is divisible by either 9 or 7.\n", number);
11     } else {
12         printf("%d is not divisible by 9 or 7.\n", number);
13     }
14
15     return 0;
16 }
17
```

SHISHANT CHAUDHARY
Enter an integer number: 45
45 is divisible by either 9 or 7.

**22. WAP to identify gender in single character and print full gender
(Ex: if input is 'M' or 'm' – it should print "Male").**

ANS:

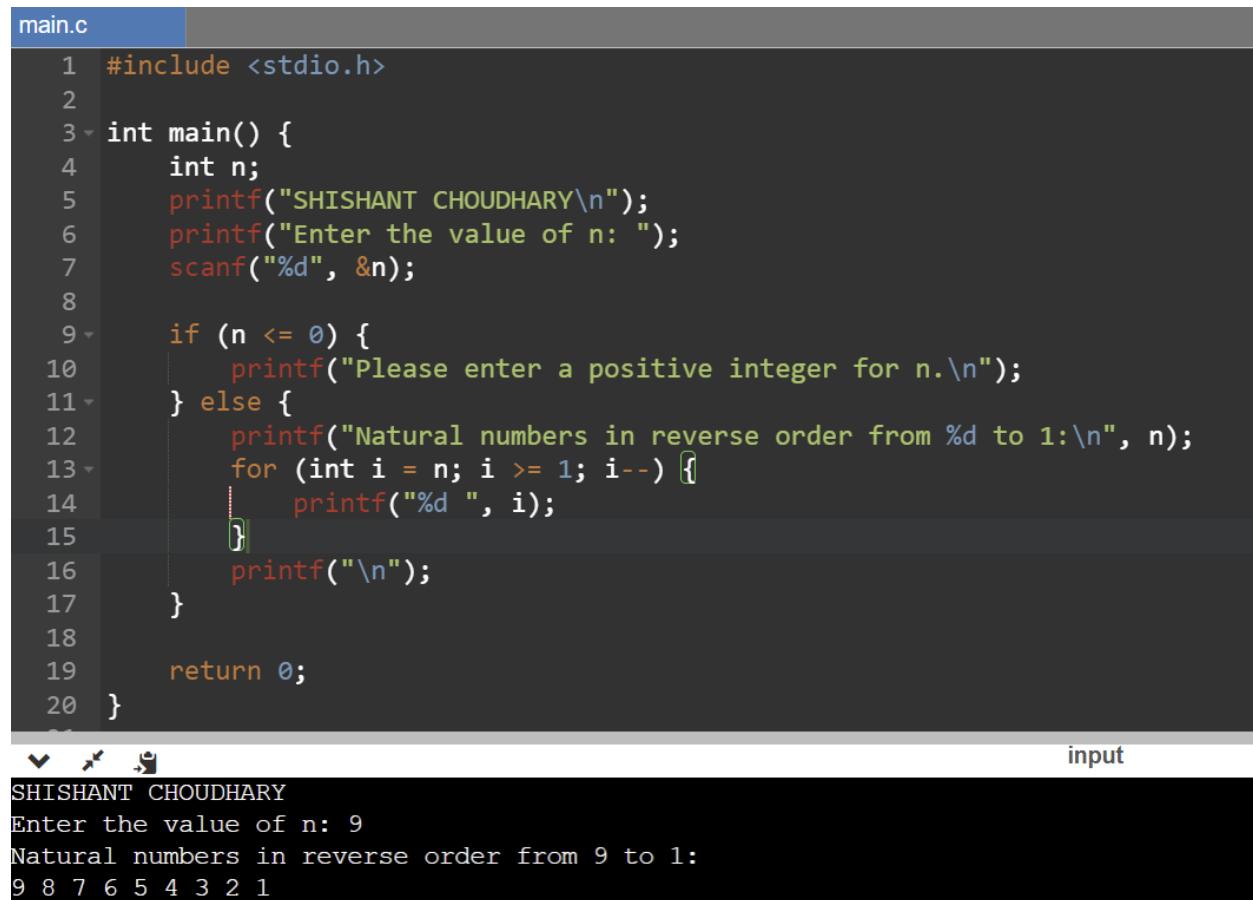


```
main.c
1 #include <stdio.h>
2
3 int main() {
4     char gender;
5     printf("SHISHANT CHOUDHARY\n");
6     printf("Enter a single character for gender (M/F): ");
7     scanf(" %c", &gender);
8
9     if (gender == 'M' || gender == 'm') {
10         printf("Gender: Male\n");
11     } else if (gender == 'F' || gender == 'f') {
12         printf("Gender: Female\n");
13     } else {
14         printf("Invalid input for gender.\n");
15     }
16
17     return 0;
18 }
```

SHISHANT CHOUDHARY
Enter a single character for gender (M/F): m
Gender: Male

23. Write a C program to print all natural numbers in reverse (from n to 1).

ANS:



```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int n;
5     printf("SHISHANT CHOUDHARY\n");
6     printf("Enter the value of n: ");
7     scanf("%d", &n);
8
9     if (n <= 0) {
10         printf("Please enter a positive integer for n.\n");
11     } else {
12         printf("Natural numbers in reverse order from %d to 1:\n", n);
13         for (int i = n; i >= 1; i--) {
14             printf("%d ", i);
15         }
16         printf("\n");
17     }
18
19     return 0;
20 }
```

input

```
SHISHANT CHOUDHARY
Enter the value of n: 9
Natural numbers in reverse order from 9 to 1:
9 8 7 6 5 4 3 2 1
```

24. Write a C program to print all alphabets from a to z.

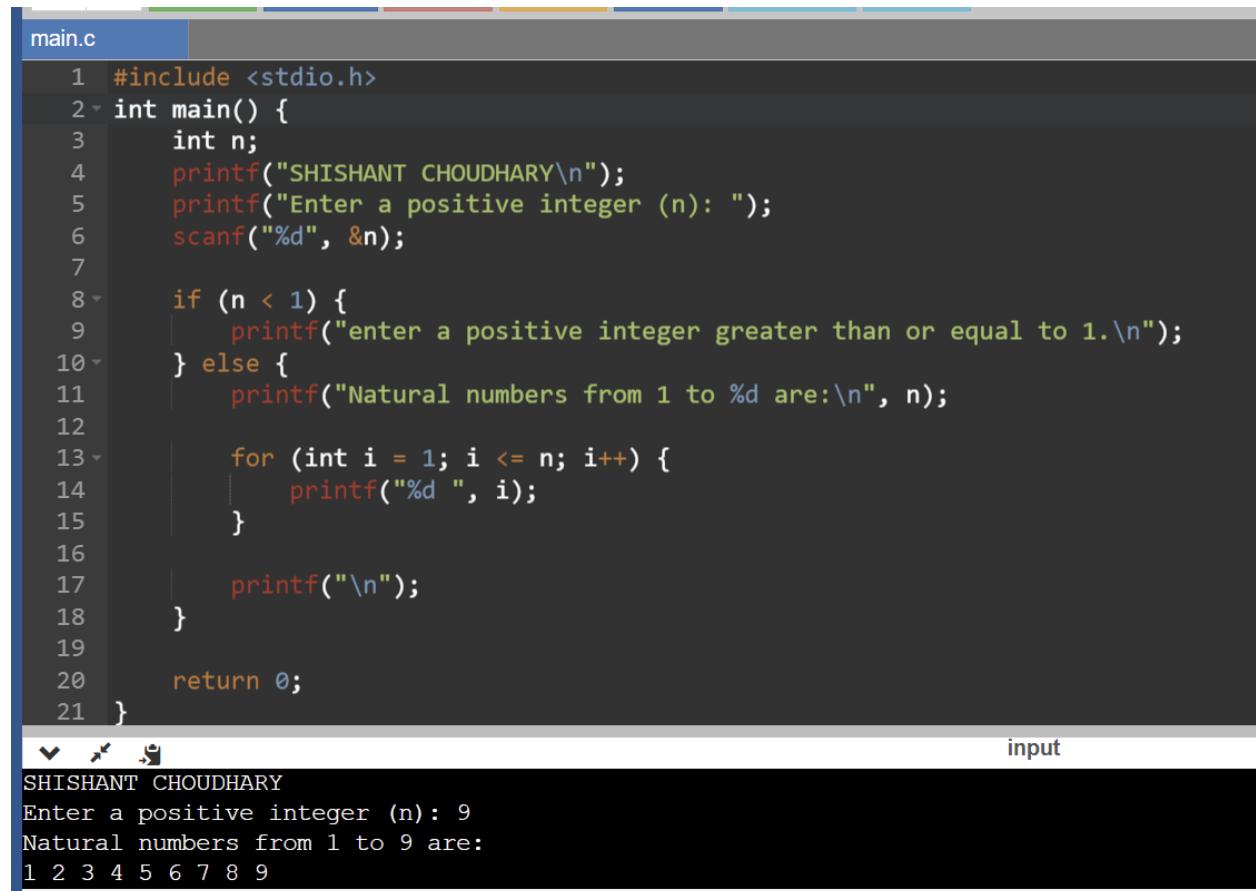
ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     char alphabet = 'a';
5     printf("SHISHANT CHAUDHARY\n");
6     printf("Alphabets from a to z: \n");
7
8     while (alphabet <= 'z') {
9         printf("%c ", alphabet);
10        alphabet++;
11    }
12
13    printf("\n");
14
15    return 0;
16 }
17
```

SHISHANT CHAUDHARY
Alphabets from a to z:
a b c d e f g h i j k l m n o p q r s t u v w x y z

25. Write a C program to print all natural numbers from 1 to n.

ANS:



```
main.c
1 #include <stdio.h>
2 int main() {
3     int n;
4     printf("SHISHANT CHAUDHARY\n");
5     printf("Enter a positive integer (n): ");
6     scanf("%d", &n);
7
8     if (n < 1) {
9         printf("enter a positive integer greater than or equal to 1.\n");
10    } else {
11        printf("Natural numbers from 1 to %d are:\n", n);
12
13        for (int i = 1; i <= n; i++) {
14            printf("%d ", i);
15        }
16
17        printf("\n");
18    }
19
20    return 0;
21 }
```

SHISHANT CHAUDHARY
Enter a positive integer (n): 9
Natural numbers from 1 to 9 are:
1 2 3 4 5 6 7 8 9

26. program to print all even numbers between 1 to 100.

ANS ;

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     printf("SHISHANT CHOURHARY\n");
5     printf("Even numbers from 1 to 100:\n");
6
7     for (int i = 2; i <= 100; i += 2) {
8         printf("%d ", i);
9     }
10
11    printf("\n");
12
13    return 0;
14 }
15
```

SHISHANT CHOURHARY
Even numbers from 1 to 100:
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94 96
98 100

27. Write a C program to print all odd number between 1 to 100.

ANS:

```
ma Upload File #include <stdio.h>
2
3 int main() {
4     printf("SHISHANT CHOURHARY\n");
5     printf("odd numbers from 1 to 100:\n");
6
7     for (int i = 1; i <= 100; i += 2) {
8         printf("%d ", i);
9     }
10
11    printf("\n");
12
13    return 0;
14 }
15
```

SHISHANT CHOURHARY
odd numbers from 1 to 100:
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65 67 69 71 73 75 77 79 81 83 85 87 89 91 93 95 97 99

28. Write a C program to find sum of all natural numbers between 1 to n.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int n, sum = 0;
5     printf("SHISHANT CHAUDHARY\n");
6     printf("Enter a positive integer n: ");
7     scanf("%d", &n);
8
9 if (n <= 0) {
10     printf("Please enter a positive integer.\n");
11 } else {
12     for (int i = 1; i <= n; i++) {
13         sum += i;
14     }
15     printf("The sum of natural numbers from 1 to %d is: %d\n", n, sum);
16 }
17
18 return 0;
19 }
```

SHISHANT CHAUDHARY
Enter a positive integer n: 9
The sum of natural numbers from 1 to 9 is: 45

29. Write a C program to find sum of all even numbers between 1 to n.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int n, sum = 0;
5     printf("SHISHANT CHOURHARY\n");
6     printf("Enter a positive integer n: ");
7     scanf("%d", &n);
8
9     if (n <= 0) {
10         printf("Please enter a positive integer.\n");
11     } else {
12         for (int i = 2; i <= n; i+=2) {
13             sum += i;
14         }
15         printf("The sum of even numbers from 1 to %d is: %d\n", n, sum);
16     }
17
18     return 0;
19 }
```

SHISHANT CHOURHARY
Enter a positive integer n: 8
The sum of even numbers from 1 to 8 is: 20

30. Write a C program to find sum of all odd numbers between 1 to n.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int n, sum = 0;
5     printf("SHISHANT CHOURHARY\n");
6     printf("Enter a positive integer n: ");
7     scanf("%d", &n);
8
9     if (n <= 0) {
10         printf("Please enter a positive integer.\n");
11     } else {
12         for (int i = 1; i <= n; i+=2) {
13             sum += i;
14         }
15         printf("The sum of odd numbers from 1 to %d is: %d\n", n, sum);
16     }
17
18     return 0;
19 }
```

SHISHANT CHOURHARY
Enter a positive integer n: 9
The sum of odd numbers from 1 to 9 is: 25

31. Write a C program to print multiplication table of any number.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int number, i;
5     printf("SHISHANT CHOUDHARY\n");
6     printf("Enter a number to print to a table: ");
7     scanf("%d", &number);
8
9     printf("table for %d:\n", number);
10
11
12 for (i = 1; i <= 10; i++) {
13     printf("%d x %d = %d\n", number, i, number * i);
14 }
15
16 return 0;
17 }
```

```
SHISHANT CHOUDHARY
Enter a number to print to a table: 5
table for 5:
5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
5 x 9 = 45
5 x 10 = 50
```

32. Write a C program to count number of digits in a number.

ANS:

The screenshot shows a terminal window with two panes. The top pane displays the source code for a C program named 'main.c'. The bottom pane shows the output of running the program, including the user's input '5'.

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int num, count = 0;
5
6     printf("SHISHANT CHOUDHARY\n");
7     printf("Enter a number: ");
8     scanf("%d", &num);
9
10    if (num == 0) {
11        count = 1;
12    } else {
13        while (num != 0) {
14            count++;
15            num /= 10;
16        }
17    }
18    printf("The number of digits in a number is: %d\n", count);
19
20    return 0;
21 }
```

SHISHANT CHOUDHARY
Enter a number: 5
The number of digits in a number is: 1

33. Write a C program to find first and last digit of a number.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int number, firstDigit, lastDigit;
5     printf("SHISHANT CHOUDHARY\n");
6     printf("Enter an integer number: ");
7     scanf("%d", &number);
8
9     lastDigit = number % 10;
10
11    while (number >= 10) {
12        number /= 10;
13    }
14    firstDigit = number;
15
16    printf("First digit: %d\n", firstDigit);
17    printf("Last digit: %d\n", lastDigit);
18
19    return 0;
20}
21
```

```
SHISHANT CHOUDHARY
Enter an integer number: 6
First digit: 6
Last digit: 6
```

34. Write a C program to find sum of first and last digit of a number.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int number, firstDigit, lastDigit, sum;
5     printf("SHISHANT CHOURHARY\n");
6     printf("Enter an integer number: ");
7     scanf("%d", &number);
8     lastDigit = number % 10;
9
10    while (number >= 10) {
11        number /= 10;
12    }
13    firstDigit = number;
14
15    sum = firstDigit + lastDigit;
16
17    printf("The sum of the first and last digits is: %d\n", sum);
18
19    return 0;
20 }
21
```

SHISHANT CHOURHARY
Enter an integer number: 23
The sum of the first and last digits is: 5

35. Write a C program to swap first and last digits of a number.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int number, originalNumber, swappedNumber;
5     int lastDigit, firstDigit, digitsCount = 0, multiplier = 1;
6
7     printf("SHISHANT CHOUDHARY\n");
8     printf("Enter an integer: ");
9     scanf("%d", &number);
10
11    originalNumber = number;
12
13    while (number != 0) {
14        number /= 10;
15        digitsCount++;
16        multiplier *= 10;
17    }
18
19    number = originalNumber;
20
21    lastDigit = number % 10;
22
23    firstDigit = originalNumber / (multiplier / 10);
24
25    // Swap the first and last digits
26    swappedNumber = lastDigit;
27    swappedNumber = swappedNumber * (multiplier / 10) + (originalNumber % (multiplier / 10));
28    swappedNumber = swappedNumber - lastDigit + firstDigit;
29
30    printf("Original number: %d\n", originalNumber);
31    printf("Number after swapping first and last digits: %d\n", swappedNumber);
32
33    return 0;
34 }
```

```
SHISHANT CHOUDHARY
Enter an integer: 48
Original number: 48
Number after swapping first and last digits: 84
```

36. Write a C program to calculate sum of digits of a number.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int number, firstDigit, lastDigit, sum;
5     printf("SHISHANT CHOUDHARY\n");
6     printf("Enter an integer number: ");
7     scanf("%d", &number);
8     lastDigit = number % 10;
9
10    while (number >= 10) {
11        number /= 10;
12    }
13    firstDigit = number;
14
15    sum = firstDigit + lastDigit;
16
17    printf("The sum of the first and last digits is: %d\n", sum);
18
19    return 0;
20 }
21
```

SHISHANT CHOUDHARY
Enter an integer number: 23
The sum of the first and last digits is: 5

37. Write a C program to calculate product of digits of a number.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int number, digit, product = 1;
5
6     printf("SHISHANT CHOUDHARY\n");
7     printf("Enter an integer: ");
8     scanf("%d", &number);
9
10    while (number != 0) {
11        digit = number % 10;
12        product *= digit;
13        number /= 10;
14    }
15    printf("The product of the digits in %d\n", product);
16
17    return 0;
18 }
19
```

input

```
SHISHANT CHOUDHARY
Enter an integer: 35
The product of the digits in 15
```

38. Write a C program to enter a number and print its reverse.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int number, reverse = 0, remainder;
5     printf("SHISHANTCHOUDHARY\n");
6     printf("Enter a number: ");
7     scanf("%d", &number);
8
9     while (number > 0) {
10         remainder = number % 10;
11         reverse = reverse * 10 + remainder;
12         number /= 10;
13     }
14     printf("The reverse of the number is: %d\n", reverse);
15
16     return 0;
17 }
18
```

SHISHANTCHOUDHARY
Enter a number: 67
The reverse of the number is: 76

39. Write a C program to check whether a number is palindrome or not.

ANS:

The screenshot shows a terminal window with two panes. The top pane contains the source code for a C program named 'main.c'. The bottom pane shows the output of running the program, including the user input '232' and the program's response '232 is a palindrome number.'

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int number, reversedNumber = 0, originalNumber, remainder;
5     printf("SHISHANT CHAUDHARY\n");
6     printf("Enter an integer: ");
7     scanf("%d", &number);
8
9     originalNumber = number;
10
11    while (number > 0) {
12        remainder = number % 10;
13        reversedNumber = reversedNumber * 10 + remainder;
14        number /= 10;
15    }
16    if (originalNumber == reversedNumber) {
17        printf("%d is a palindrome number.\n", originalNumber);
18    } else {
19        printf("%d is not a palindrome number.\n", originalNumber);
20    }
21
22    return 0;
}
SHISHANT CHAUDHARY
Enter an integer: 232
232 is a palindrome number.
```

40. Write a C program to find frequency of each digit in a given integer.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int number;
5     int digitFrequency[10] = {0}; |
6     printf("SHISHNAT CHPOUDHARY\n");
7     printf("Enter an integer: ");
8     scanf("%d", &number);
9
10    while (number != 0) {
11        int digit = number % 10;
12        digitFrequency[digit]++;
13        number /= 10;
14    }
15    printf("Digit frequencies in the integer:\n");
16    for (int i = 0; i < 10; i++) {
17        if (digitFrequency[i] > 0) {
18            printf("Digit %d: %d times\n", i, digitFrequency[i]);
19        }
20    }
21
22    return 0;
23 }
24
```

```
SHISHNAT CHPOUDHARY
Enter an integer: 45
Digit frequencies in the integer:
Digit 4: 1 times
Digit 5: 1 times
```

42. Write a C program to print all ASCII character with their values.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     printf("SHISHANT CHOUDHARY\n");
5     printf("ASCII Characters and Their Values:");
6
7     for (int i = 32; i < 128; i++) {
8         printf("Character: %c\tValue: %d\n", i, i);
9     }
10
11    return 0;
12 }
13
```

SHISHANT CHOUDHARY	
ASCII Characters and Their Values	
Character: :	Value: 58
Character: ;	Value: 59
Character: <	Value: 60
Character: =	Value: 61
Character: >	Value: 62
Character: ?	Value: 63
Character: @	Value: 64
Character: A	Value: 65
Character: B	Value: 66
Character: C	Value: 67
Character: D	Value: 68
Character: E	Value: 69
Character: F	Value: 70
Character: G	Value: 71
Character: H	Value: 72
Character: I	Value: 73
Character: J	Value: 74
Character: K	Value: 75
Character: L	Value: 76
Character: M	Value: 77
Character: N	Value: 78
Character: O	Value: 79
Character: P	Value: 80
Character: Q	Value: 81
Character: R	Value: 82
Character: S	Value: 83
Character: T	Value: 84
Character: U	Value: 85
Character: V	Value: 86
Character: W	Value: 87
Character: X	Value: 88
Character: Y	Value: 89
Character: Z	Value: 90
Character: [Value: 91
Character: \	Value: 92
Character:]	Value: 93
Character: ^	Value: 94
Character:_=	Value: 95
Character: `	Value: 96
Character: a	Value: 97
Character: b	Value: 98
Character: c	Value: 99
Character: d	Value: 100
Character: e	Value: 101
Character: f	Value: 102
Character: g	Value: 103
Character: h	Value: 104
Character: i	Value: 105
Character: j	Value: 106
Character: k	Value: 107
Character: l	Value: 108
Character: m	Value: 109
Character: n	Value: 110
Character: o	Value: 111
Character: p	Value: 112
Character: q	Value: 113
Character: r	Value: 114

43. Write a C program to find power of a number using for loop.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     float base, exponent, result = 1;
5     printf("SHISHANT CHOUDHARY\n");
6     printf("Enter the base: ");
7     scanf("%f", &base);
8
9     printf("Enter the exponent: ");
10    scanf("%f", &exponent);
11
12    for (int i = 1; i <= exponent; i++) {
13        result *= base;
14    }
15
16    // Display the result
17    printf("%f ^ %.f = %f\n", base, exponent, result);
18
19    return 0;
20 }
```

SHISHANT CHOUDHARY
Enter the base: 4
Enter the exponent: 6
4.000000 ^ 6 = 4096.000000

44. Write a C program to find all factors of a number.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int number;
5
6     printf("SHISHANT CHOURDARY\n");
7     printf("Enter a positive integer: ");
8     scanf("%d", &number);
9
10    printf("Factors of %d are: ", number);
11
12    for (int i = 1; i <= number; i++) {
13        if (number % i == 0) {
14            printf("%d ", i);
15        }
16    }
17    printf("\n");
18
19    return 0;
20 }
21
```

input

SHISHANT CHOURDARY

Enter a positive integer: 24

Factors of 24 are: 1 2 3 4 6 8 12 24

45. Write a C program to calculate factorial of a number

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int number;
5     unsigned long long factorial = 1;
6     printf("SHISHANT CHOUDHARY\n");
7     printf("Enter a non-negative integer: ");
8     scanf("%d", &number);
9
10    if (number < 0) {
11        printf("Factorial is not defined for negative numbers.\n");
12    } else {
13        for (int i = 1; i <= number; i++) {
14            factorial *= i;
15        }
16
17        printf("Factorial of %d = %llu\n", number, factorial);
18    }
19
20    return 0;
21 }
22
```

```
input
SHISHANT CHOUDHARY
Enter a non-negative integer: 24
Factorial of 24 = 10611558092380307456
```

46. Write a C program to find HCF (GCD) of two numbers.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int calculateHCF(int num1, int num2) {
4     while (num1 != num2) {
5         if (num1 > num2)
6             num1 -= num2;
7         else
8             num2 -= num1;
9     }
10    return num1;
11 }
12 int main() {
13     int number1, number2;
14     printf("SHISHANT CHOURDARY\n");
15     printf("Enter the first number: ");
16     scanf("%d", &number1);
17
18     printf("Enter the second number: ");
19     scanf("%d", &number2);
20
21     int hcf = calculateHCF(number1, number2);
22     printf("The HCF/GCD of %d and %d is %d\n", number1, number2, hcf);
23
24     return 0;
25 }
26
```

```
15      PRINTC Enter the first
      SHISHANT CHOURDARY
Enter the first number: 8
Enter the second number: 9
The HCF/GCD of 8 and 9 is 1
```

47. Write a C program to find LCM of two numbers.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int gcd(int a, int b) {
4     if (b == 0) {
5         return a;
6     }
7     return gcd(b, a % b);
8 }
9 int lcm(int a, int b) {
10     return (a * b) / gcd(a, b);
11 }
12
13 int main() {
14     int num1, num2;
15     printf("SHISHANT CHOUDHARY\n");
16     printf("Enter the first number: ");
17     scanf("%d", &num1);
18     printf("Enter the second number: ");
19     scanf("%d", &num2);
20
21     int result = lcm(num1, num2);
22     printf("LCM of %d and %d is %d\n", num1, num2, result);
23
24     return 0;
25 }
```

```
SHISHANT CHOUDHARY
Enter the first number: 4
Enter the second number: 6
LCM of 4 and 6 is 12
```

48. Write a C program to check whether a number is Prime number or not.

ANS:

```
main.c
1 #include <stdio.h>
2 #include <stdbool.h>
3
4 bool isPrime(int number) {
5     if (number <= 1) {
6         return false;
7     }
8     for (int i = 2; i * i <= number; i++) {
9         if (number % i == 0) {
10            return false;
11        }
12    }
13    return true;
14 }
15 int main() {
16     int num;
17     printf("Enter a positive integer: ");
18     scanf("%d", &num);
19
20     if (isPrime(num)) {
21         printf("%d is a prime number.\n");
22     } else {
23         printf("%d is not a prime number.\n");
24     }
25
26     return 0;
}
```

50. Write a C program to find sum of all prime numbers between 1 to n.

ANS:

```
main.c
1 #include <stdio.h>
2 #include <stdbool.h>
3
4 bool isPrime(int num) {
5     if (num <= 1) {
6         return false;
7     }
8     for (int i = 2; i * i <= num; i++) {
9         if (num % i == 0) {
10            return false;
11        }
12    }
13    return true;
14 }
15
16 int main() {
17     int n, sum = 0;
18
19     printf("SHISHANT CHOUDHARY\n");
20     printf("Enter a positive integer (n): ");
21     scanf("%d", &n);
22
23     for (int i = 2; i <= n; i++) {
24         if (isPrime(i)) {
25             sum += i;
26         }
27     }
28     printf("Sum of prime numbers from 1 to %d is %d\n", n, sum);
29
30     return 0;
31 }
32
input
SHISHANT CHOUDHARY
Enter a positive integer (n): 5
Sum of prime numbers from 1 to 5 is 10
```

51. Write a C program to find all prime factors of a number.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int num;
5     printf("SHISHANT CHOURHARY\n");
6     printf("Enter a prime number: ");
7     scanf("%d", &num);
8     if (num < 2) {
9         printf("Prime numbers must be greater than or equal to 2");
10    } else {
11        printf("Factors of %d are:", num);
12        for (int i = 1; i <= num; i++) {
13            if (num % i == 0) {
14                printf("%d", i);
15            }
16        }
17    }
18
19    return 0;
20 }
```

SHISHANT CHOURHARY
Enter a prime number: 8
Factors of 8 are:1248

52. Write a C program to check whether a number is Armstrong number or not.

ANS:

```
main.c
1 #include <stdio.h>
2 #include <math.h>
3
4 int main() {
5     int number, originalNumber, remainder, result = 0;
6     int n = 0;
7
8     printf("SHISHANT CHOUDHARY\n");
9     printf("Enter an integer: ");
10    scanf("%d", &number);
11
12    originalNumber = number;
13
14    while (originalNumber != 0) {
15        originalNumber /= 10;
16        n++;
17    }
```

```
18     originalNumber = number;
19
20     while (originalNumber != 0) {
21         remainder = originalNumber % 10;
22         result += pow(remainder, n);
23         originalNumber /= 10;
24     }
25     if (result == number) {
26         printf("%d is an Armstrong number.\n", number);
27     } else {
28         printf("%d is not an Armstrong number.\n", number);
29     }
30 }
31
32     return 0;
33 }
34 }
```

SHISHANT CHOURHARY input

Enter an integer: 153

153 is an Armstrong number.

53. Write a C program to print all Armstrong numbers between 1 to n.

ANS:

```
main.c
1 #include <stdio.h>
2 #include <math.h>
3
4 int countDigits(int num) {
5     int count = 0;
6     while (num > 0) {
7         num /= 10;
8         count++;
9     }
10    return count;
11 }
12
13 int isArmstrong(int num) {
14     int originalNum, remainder, n, result = 0;
15     originalNum = num;
16     n = countDigits(num);
17
18     while (originalNum != 0) {
19         remainder = originalNum % 10;
20         result += pow(remainder, n);
21         originalNum /= 10;
22     }
23
24     return (result == num);
25 }
```

```
26
27 int main() {
28     int n;
29     printf("SHISHANT CHOUDHARY\n");
30     printf("Enter the value of n: ");
31     scanf("%d", &n);
32
33     printf("Armstrong numbers from 1 to %d are:\n", n);
34
35     for (int i = 1; i <= n; i++) {
36         if (isArmstrong(i)) {
37             printf("%d\n", i);
38         }
39     }
40
41     return 0;
42 }
```

```
SHISHANT CHOUDHARY
Enter the value of n: 1000
Armstrong numbers from 1 to 1000 are:
1
2
3
4
5
6
7
8
9
153
370
371
407
```

54. Write a C program to check whether a number is Perfect number or not.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int isPerfect(int num) {
4     int sum = 1;
5
6     for (int i = 2; i * i <= num; i++) {
7         if (num % i == 0) {
8             sum += i;
9             if (i != num / i) {
10                 sum += num / i;
11             }
12         }
13     }
14
15     return (sum == num);
16 }
17
main.c
18 int main() {
19     int number;
20
21     printf("SHISHANT CHOUDHARY\n");
22     printf("Enter a positive integer: ");
23     scanf("%d", &number);
24
25     if (number <= 0) {
26         printf("Please enter a positive integer.\n");
27     } else {
28         if (isPerfect(number)) {
29             printf("%d is a perfect number.\n", number);
30         } else {
31             printf("%d is not a perfect number.\n", number);
32         }
33     }
34
35     return 0;
36 }
37
```

input

```
SHISHANT CHOUDHARY
Enter a positive integer: 28
28 is a perfect number.
```

55. Write a C program to print all Perfect numbers between 1 to n.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int isPerfect(int num) {
4     int sum = 1;
5
6     for (int i = 2; i * i <= num; i++) {
7         if (num % i == 0) {
8             if (i * i != num) {
9                 sum = sum + i + (num / i);
10            } else {
11                sum = sum + i;
12            }
13        }
14    }
15
16    return sum == num;
17 }

18
19 int main() {
20     int n;
21
22     printf("SHISHANT CHOUDHARY\n");
23     printf("Enter the value of 'n': ");
24     scanf("%d", &n);
25
26     printf("Perfect numbers from 1 to %d are:\n", n);
27
28     for (int i = 1; i <= n; i++) {
29         if (isPerfect(i)) {
30             printf("%d\n", i);
31         }
32     }
33
34     return 0;
35 }
```

```
SHISHANT CHOUDHARY
Enter the value of 'n': 50
Perfect numbers from 1 to 50 are:
1
6
28
```

56. Write a C program to check whether a number is Strong number or not.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int factorial(int n) {
4     int result = 1;
5     for (int i = 2; i <= n; i++) {
6         result *= i;
7     }
8     return result;
9 }
10 int isStrongNumber(int num) {
11     int originalNum = num;
12     int sum = 0;
13
14     while (num > 0) {
15         int digit = num % 10;
16         sum += factorial(digit);
17         num /= 10;
18     }
19
20     return (sum == originalNum);
21 }
22 }
```

```
22
23 int main() {
24     int number;
25
26     printf("SHISHANT CHOURHARY\n");
27     printf("Enter a number: ");
28     scanf("%d", &number);
29
30     if (isStrongNumber(number)) {
31         printf("%d is a strong number.\n", number);
32     } else {
33         printf("%d is not a strong number.\n", number);
34     }
35
36     return 0;
37 }
38
```

The screenshot shows a terminal window with the following content:

SHISHANT CHOURHARY
Enter a number: 145
145 is a strong number.

The window has a title bar labeled "input" and standard window controls (minimize, maximize, close).

57. Write a C program to print all Strong numbers between 1 to n.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int factorial(int num) {
4     int fact = 1;
5     for (int i = 1; i <= num; i++) {
6         fact *= i;
7     }
8     return fact;
9 }
10 int isStrongNumber(int num) {
11     int originalNum = num;
12     int sum = 0;
13
14     while (num > 0) {
15         int digit = num % 10;
16         sum += factorial(digit);
17         num /= 10;
18     }
19
20     return sum == originalNum;
21 }

main.c
22
23 int main() {
24     int n;
25
26     printf("SHISHANT CHOUDHARY\n");
27     printf("Enter the value of n: ");
28     scanf("%d", &n);
29
30     printf("Strong numbers from 1 to %d are:\n", n);
31
32     for (int i = 1; i <= n; i++) {
33         if (isStrongNumber(i)) {
34             printf("%d\n", i);
35         }
36     }
37
38     return 0;
39 }
40
```

input

```
Enter the value of n: 50
Strong numbers from 1 to 50 are:
1
2
```

58. Write a C program to print Fibonacci series up to n terms.

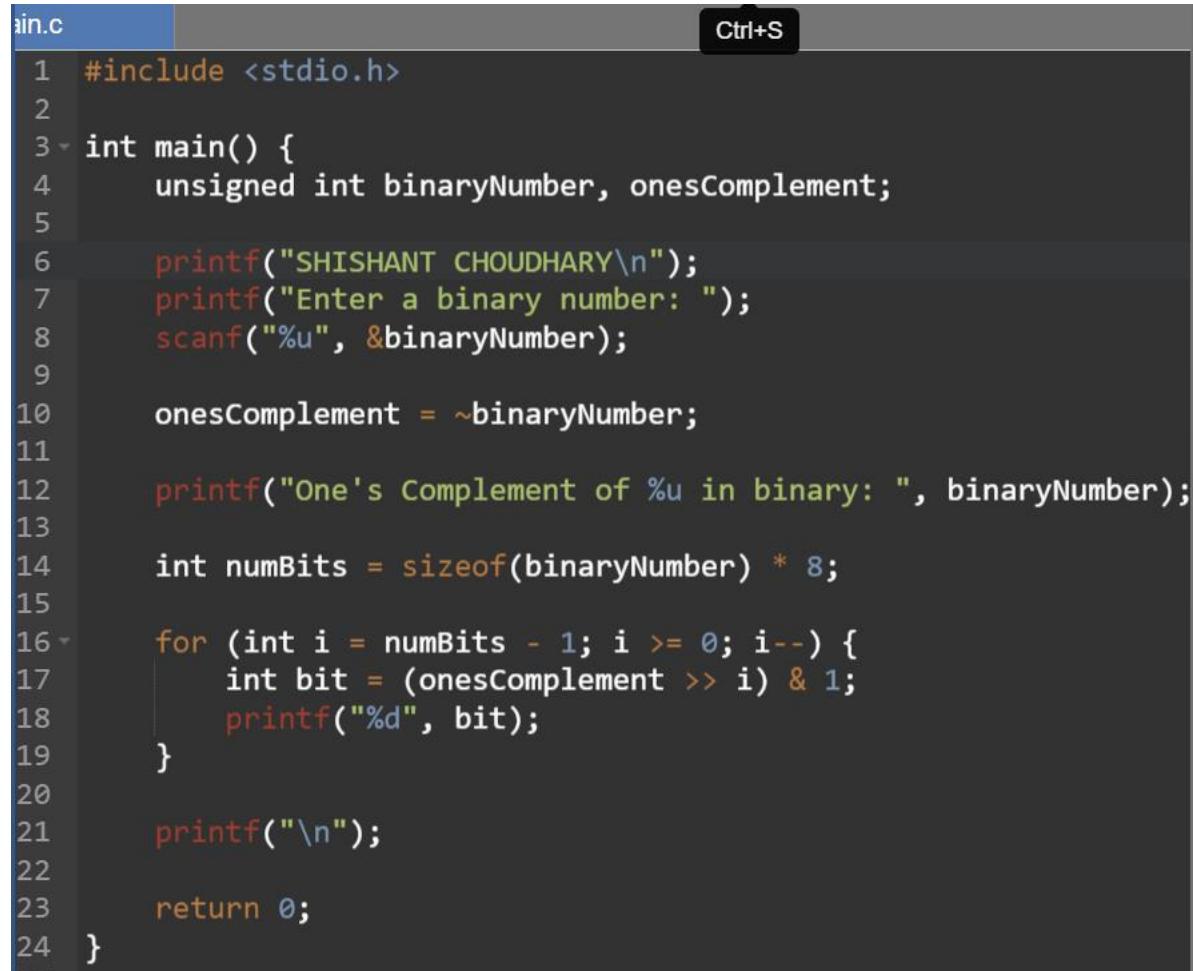
ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int n, first = 0, second = 1, next;
5     printf("SHISHANT CHOURDARY\n");
6     printf("Enter the number of terms: ");
7     scanf("%d", &n);
8
9     printf("Fibonacci Series up to %d terms: \n", n);
10
11    for (int i = 0; i < n; i++) {
12        if (i <= 1) {
13            next = i;
14        } else {
15            next = first + second;
16            first = second;
17            second = next;
18        }
19        printf("%d ", next);
20    }
21
22    printf("\n");
23
24    return 0;
25 }
```

```
SHISHANT CHOURDARY
Enter the number of terms: 4
Fibonacci Series up to 4 terms:
0 1 1 2
```

59. Write a C program to find one's complement of a binary number.

ANS:



The screenshot shows a code editor window with a dark theme. The file tab at the top left is labeled '1in.c'. A black button in the top right corner has the text 'Ctrl+S' on it. The code itself is a C program. It includes the standard input-output library with '#include <stdio.h>'. The main function declares two unsigned integers: 'binaryNumber' and 'onesComplement'. It prints the developer's name 'SHISHANT CHAUDHARY\n' and prompts the user to enter a binary number. The user input is stored in 'binaryNumber'. The ones complement of 'binaryNumber' is calculated and stored in 'onesComplement'. The program then prints the one's complement of the input binary number. It calculates the number of bits in 'binaryNumber' (which is the size of the integer times 8) and iterates through each bit from the most significant to the least significant. For each bit, it performs a right shift on 'onesComplement' by the current index 'i', and then uses a bitwise AND operation with 1 to get the individual bit value. This value is then printed. Finally, a new line character is printed. The program concludes with a return statement 'return 0;'.

```
1in.c Ctrl+S
1 #include <stdio.h>
2
3 int main() {
4     unsigned int binaryNumber, onesComplement;
5
6     printf("SHISHANT CHAUDHARY\n");
7     printf("Enter a binary number: ");
8     scanf("%u", &binaryNumber);
9
10    onesComplement = ~binaryNumber;
11
12    printf("One's Complement of %u in binary: ", binaryNumber);
13
14    int numBits = sizeof(binaryNumber) * 8;
15
16    for (int i = numBits - 1; i >= 0; i--) {
17        int bit = (onesComplement >> i) & 1;
18        printf("%d", bit);
19    }
20
21    printf("\n");
22
23    return 0;
24 }
```

61. Write a C program to convert Binary to Octal number system.

ANS:

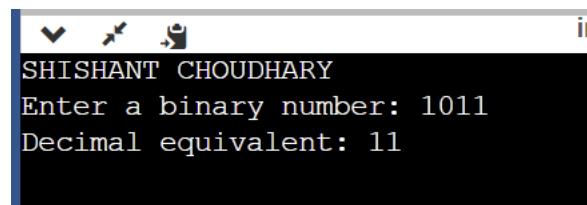
```
main.c
1 #include <stdio.h>
2
3 int binaryToOctal(long long binaryNumber) {
4     int octalNumber = 0, decimalNumber = 0, base = 1;
5
6     while (binaryNumber > 0) {
7         int lastDigit = binaryNumber % 10;
8         decimalNumber += lastDigit * base;
9         binaryNumber /= 10;
10        base *= 2;
11    }
12
13    base = 1;
14
15    while (decimalNumber > 0) {
16        int lastDigit = decimalNumber % 8;
17        octalNumber += lastDigit * base;
18        decimalNumber /= 8;
19        base *= 10;
20    }
21
22    return octalNumber;
23 }
24
25
main.c
22     return octalNumber;
23 }
24
25 int main() {
26     long long binaryNumber;
27
28     printf("SHISHANT CHOUDHARY\n");
29     printf("Enter a binary number: ");
30     scanf("%lld", &binaryNumber);
31
32     if (binaryNumber < 0) {
33         printf("Invalid input. Please enter a non-negative binary number.\n");
34     } else {
35         int octalNumber = binaryToOctal(binaryNumber);
36         printf("Octal equivalent: %d\n", octalNumber);
37     }
38
39     return 0;
40 }
41
```

SHISHANT CHOUDHARY
Enter a binary number: 0101
Octal equivalent: 5

62. Write a C program to convert Binary to Decimal number system.

ANS:

```
main.c
1 #include <stdio.h>
2 #include <math.h>
3
4 int main() {
5     unsigned long long binaryNumber;
6     int decimalNumber = 0, digit, bitPosition = 0;
7
8     printf("SHISHANT CHOURHARY\n");
9     printf("Enter a binary number: ");
10    scanf("%llu", &binaryNumber);
11
12    while (binaryNumber > 0) {
13        digit = binaryNumber % 10; /
14        decimalNumber += digit * pow(2, bitPosition);
15        binaryNumber /= 10;
16        bitPosition++;
17    }
18
19    printf("Decimal equivalent: %d\n", decimalNumber);
20
21    return 0;
22 }
```



```
SHISHANT CHOURHARY
Enter a binary number: 1011
Decimal equivalent: 11
```

63. Write a C program to convert Binary to Hexadecimal number system.

ANS:

```
main.c
1 #include <stdio.h>
2 #include <stdlib.h>
3 #include <string.h>
4 |
5 char* binaryToHexadecimal(const char* binary) {
6
7     int length = strlen(binary);
8     int pad = 4 - (length % 4);
9     char paddedBinary[4 * ((length + pad) / 4) + 1];
10    strcpy(paddedBinary, "");
11    while (pad > 0) {
12        strcat(paddedBinary, "0");
13        pad--;
14    }
15    strcat(paddedBinary, binary);
16
17    const char* binaryLookup[16] = {
18        "0000", "0001", "0010", "0011",
19        "0100", "0101", "0110", "0111",
20        "1000", "1001", "1010", "1011",
21        "1100", "1101", "1110", "1111"
22    };
23
24    char* hexadecimal = (char*)malloc(strlen(paddedBinary))
25    strcpy(hexadecimal, "");
```

```
25     strcpy(hexadecimal, "0");
26
27     for (int i = 0; i < strlen(paddedBinary); i += 4) {
28         char nibble[5];
29         strncpy(nibble, paddedBinary + i, 4);
30         nibble[4] = '\0';
31
32         for (int j = 0; j < 16; j++) {
33             if (strcmp(nibble, binaryLookup[j]) == 0) {
34                 char hexChar = (j < 10) ? ('0' + j) : ('A' +
35                     strncat(hexadecimal, &hexChar, 1));
36                 break;
37             }
38         }
39     }
40
41     return hexadecimal;
42 }
43
44 int main() {
45     char binary[100];
46
47     printf("SHISHANT CHOURDARY\n");
48     printf("Enter a binary number: ");
49     scanf("%s", binary);
50
51     char* hexadecimal = binaryToHexadecimal(binary);
52
53     printf("Hexadecimal representation: %s\n", hexadecimal);
54
55     free(hexadecimal);
56
57     return 0;
58 }
```

▼ ↺ ↻ ⌂ input
SHISHANT CHOURDARY
Enter a binary number: 1100
Hexadecimal representation: 0C

64. Write a C program to convert Octal to Binary number system.

ANS:

```
main.c
1 #include <stdio.h>
2
3 void octalToBinary(char octalDigit) {
4     int octalValue = octalDigit - '0';
5     int binary[3];
6
7     for (int i = 2; i >= 0; i--) {
8         binary[i] = octalValue % 2;
9         octalValue /= 2;
10    }
11    for (int i = 0; i < 3; i++) {
12        printf("%d", binary[i]);
13    }
14 }
15
16 int main() {
17     char octal[10];
18     printf("SHISHANT CHOURHARY\n");
19     printf("Enter an octal number: ");
20     scanf("%s", octal);
21
22     printf("Binary equivalent: ");
23     for (int i = 0; octal[i] != '\0'; i++) {
24         octalToBinary(octal[i]);
25     }
26
27     printf("\n");
28
29     return 0;
30 }
31
```

input

```
SHISHANT CHOURHARY
Enter an octal number: 7
Binary equivalent: 111
```

65. Write a C program to convert Octal to Decimal number system.

ANS:

```
nain.c
1 #include <stdio.h>
2 #include <math.h>
3
4 int octalToDecimal(int octalNumber) {
5     int decimalNumber = 0, i = 0;
6
7     while (octalNumber != 0) {
8         int remainder = octalNumber % 10;
9         decimalNumber += remainder * pow(8, i);
10        ++i;
11        octalNumber /= 10;
12    }
13
14    return decimalNumber;
15 }

16
17 int main() {
18     int octalNumber;
19     printf("SHISHANT CHOUDHARY\n");
20     printf("Enter an octal number: ");
21     scanf("%o", &octalNumber);
22
23     int decimalNumber = octalToDecimal(octalNumber);
24
25     printf("Decimal equivalent: %d\n", decimalNumber);
26
27     return 0;
28 }
29
```

SHISHANT CHOUDHARY
Enter an octal number: 6
Decimal equivalent: 6

66. Write a C program to convert Octal to Hexadecimal number system.

ANS:

```
main.c
1 #include <stdio.h>
2 #include <math.h>
3
4 int octalToDecimal(int octal) {
5     int decimal = 0, i = 0;
6
7     while (octal != 0) {
8         int remainder = octal % 10;
9         decimal += remainder * pow(8, i);
10        i++;
11        octal /= 10;
12    }
13
14    return decimal;
15 }
16 void decimalToHexadecimal(int decimal) {
17     char hexadecimal[100];
18     int i = 0;
19
20     while (decimal != 0) {
21         int remainder = decimal % 16;
22         if (remainder < 10) {
23             hexadecimal[i] = remainder + '0';
24         } else {
25             hexadecimal[i] = remainder - 10 + 'A';
```

```
26     }
27     i++;
28     decimal /= 16;
29 }
30
31     printf("Hexadecimal: ");
32     for (int j = i - 1; j >= 0; j--) {
33         printf("%c", hexadecimal[j]);
34     }
35     printf("\n");
36 }
37
38 int main() {
39     int octal;
40     printf("SHISHANT CHOURDARY\n");
41     printf("Enter an octal number: ");
42     scanf("%o", &octal);
43
44     int decimal = octalToDecimal(octal);
45
46     decimalToHexadecimal(decimal);
47
48     return 0;
49 }
```

```
SHISHANT CHOURDARY
Enter an octal number: 6
Hexadecimal: 6
```

67. Write a C program to convert Decimal to Binary number system.

ANS

```
main.c
1 #include <stdio.h>
2
3 void decimalToBinary(int decimal) {
4     if (decimal == 0) {
5         printf("SHISHANT CHOURHARY\n");
6         printf("Binary: 0\n");
7         return;
8     }
9
10    int binary[32];
11    int i = 0;
12
13    while (decimal > 0) {
14        binary[i] = decimal % 2;
15        decimal /= 2;
16        i++;
17    }
18
19    printf("Binary: ");
20    for (int j = i - 1; j >= 0; j--) {
21        printf("%d", binary[j]);
22    }
23    printf("\n");
24 }

25
26 int main() {
27     int decimalNumber;
28     printf("SHISHANT CHOURHARY\n");
29     printf("Enter a decimal number: ");
30     scanf("%d", &decimalNumber);
31
32     decimalToBinary(decimalNumber);
33
34     return 0;
35 }
36
```

input

Enter a decimal number: 6

Binary: 110

68. Write a C program to convert Decimal to Octal number system.

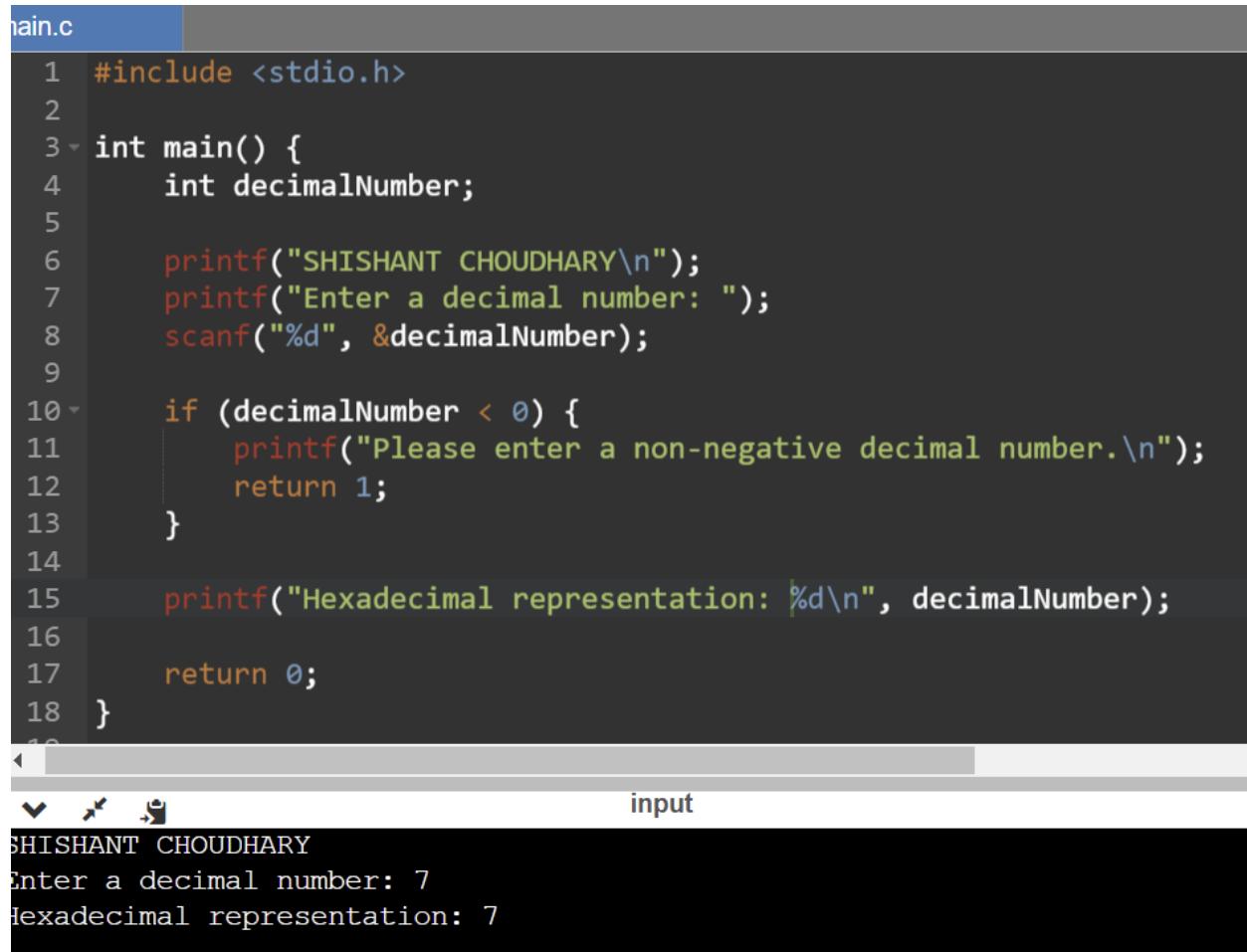
ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int decimalNumber;
5     printf("SHISHANT CHOURHARY\n");
6     printf("Enter a decimal number: ");
7     scanf("%d", &decimalNumber);
8
9     int octalNumber = 0;
10    int placeValue = 1;
11
12    while (decimalNumber > 0) {
13        int remainder = decimalNumber % 8;
14        octalNumber += remainder * placeValue;
15        placeValue *= 10;
16        decimalNumber /= 8;
17    }
18
19    printf("Octal equivalent: %d\n", octalNumber);
20
21    return 0;
22 }
```

```
SHISHANT CHOURHARY
Enter a decimal number: 7
Octal equivalent: 7
```

69. Write a C program to convert Decimal to Hexadecimal number system.

ANS:



The screenshot shows a terminal window with the following content:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int decimalNumber;
5
6     printf("SHISHANT CHOURHARY\n");
7     printf("Enter a decimal number: ");
8     scanf("%d", &decimalNumber);
9
10 if (decimalNumber < 0) {
11     printf("Please enter a non-negative decimal number.\n");
12     return 1;
13 }
14
15 printf("Hexadecimal representation: %d\n", decimalNumber);
16
17 return 0;
18 }
```

input

```
SHISHANT CHOURHARY
Enter a decimal number: 7
Hexadecimal representation: 7
```

70. Write a C program to convert Hexadecimal to Binary number system.

ANS:

```
main.c
1 #include <stdio.h>
2 #include <string.h>
3
4
5 const char* hexToBin(char c) {
6     switch(c) {
7         case '0': return "0000";
8         case '1': return "0001";
9         case '2': return "0010";
10        case '3': return "0011";
11        case '4': return "0100";
12        case '5': return "0101";
13        case '6': return "0110";
14        case '7': return "0111";
15        case '8': return "1000";
16        case '9': return "1001";
17        case 'A': case 'a': return "1010";
18        case 'B': case 'b': return "1011";
19        case 'C': case 'c': return "1100";
20        case 'D': case 'd': return "1101";
21        case 'E': case 'e': return "1110";
22        case 'F': case 'f': return "1111";
23        default: return "Invalid Hex Digit";
24    }
}
```

```
main.c
25 }
26
27 int main() {
28     char hex[20];
29     char binary[80];
30
31     printf("Enter a hexadecimal number: ");
32     scanf("%s", hex);
33
34     int len = strlen(hex);
35     int binaryIndex = 0;
36
37     for (int i = 0; i < len; i++) {
38         const char* bin = hexToBin(hex[i]);
39
40         if (strcmp(bin, "Invalid Hex Digit") == 0) {
41             printf("Invalid hexadecimal digit: %c\n", hex[i]);
42             return 1;
43         }
44
45         for (int j = 0; j < 4; j++) {
46             binary[binaryIndex++] = bin[j];
47         }
48
49     }
50
51     binary[binaryIndex] = '\0';
52     printf("Binary representation: %s\n", binary);
53
54     return 0;
55 }
```

input
SHISHANT CHOUDHARY
Enter a hexadecimal number: 2a
Binary representation: 00101010

71. Write a C program to convert Hexadecimal to Octal number system.

ANS:

```
main.c
1 #include <stdio.h>
2 #include <math.h>
3
4 int hexToDecimal(char hexDigit) {
5     if (hexDigit >= '0' && hexDigit <= '9') {
6         return hexDigit - '0';
7     } else if (hexDigit >= 'A' && hexDigit <= 'F') {
8         return hexDigit - 'A' + 10;
9     } else if (hexDigit >= 'a' && hexDigit <= 'f') {
10        return hexDigit - 'a' + 10;
11    }
12    return -1;
13 }
14 void decimalToOctal(int decimalNumber) {
15     int octalNumber = 0, i = 1;
16
17     while (decimalNumber > 0) {
18         octalNumber += (decimalNumber % 8) * i;
19         decimalNumber /= 8;
20         i *= 10;
21     }
22
23     printf("Equivalent octal number: %d\n", octalNumber);
24 }
25 }
```

main.c

```
26 int main() {  
27     char hexValue[20];  
28     int decimalValue = 0;  
29     printf("SHISHANT CHOURHARY\\n");  
30     printf("Enter a hexadecimal number: ");  
31     scanf("%s", hexValue);  
32  
33     for (int i = 0; hexValue[i] != '\\0'; i++) {  
34         int decimalDigit = hexToDecimal(hexValue[i]);  
35         if (decimalDigit == -1) {  
36             printf("Invalid hexadecimal digit: %c\\n", hexValue[i]);  
37             return 1;  
38         }  
39         decimalValue = decimalValue * 16 + decimalDigit;  
40     }  
41     decimalToOctal(decimalValue);  
42  
43     return 0;  
44 }  
45
```

input

```
SHISHANT CHOURHARY  
Enter a hexadecimal number: 2e  
Equivalent octal number: 56
```

If else exercise

1. Write a C program to find maximum between two numbers.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     float num1, num2, max;
5     printf("SHISHANT CHOURHARY\n");
6     printf("Enter the first number: ");
7     scanf("%f", &num1);
8
9     printf("Enter the second number: ");
10    scanf("%f", &num2);
11
12    if (num1 > num2) {
13        max = num1;
14    } else {
15        max = num2;
16    }
17    printf("The maximum number is: %.f\n", max);
18
19    return 0;
20 }
```

SHISHANT CHOURHARY
Enter the first number: 4
Enter the second number: 6
The maximum number is: 6

2. Write a C program to find maximum between three numbers.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int num1, num2, num3, max;
5     printf("SHISHANT CHOURHARY\n");
6     printf("Enter the first number: ");
7     scanf("%d", &num1);
8
9     printf("Enter the second number: ");
10    scanf("%d", &num2);
11
12    printf("Enter the third number: ");
13    scanf("%d", &num3);
14
15    max = num1;
16    if (num2 > max) {
17        max = num2;
18    }
19    if (num3 > max) {
20        max = num3;
21    }
22    printf("The maximum number is: %d\n", max);
23
24    return 0;
25 }
```

```
SHISHANT CHOURHARY
Enter the first number: 4
Enter the second number: 6
Enter the third number: 8
The maximum number is: 8
```

3. Write a C program to check whether a number is negative, positive or zero.

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int number;
5     printf("SHISHANT CHOURHARY\n");
6     printf("Enter a number: ");
7     scanf("%d", &number);
8
9     if (number > 0) {
10         printf("The number is positive.\n");
11     } else if (number < 0) {
12         printf("The number is negative.\n");
13     } else {
14         printf("The number is zero.\n");
15     }
16
17     return 0;
18 }
```

SHISHANT CHOURHARY

Enter a number: 6

The number is positive.

4. Write a C program to check whether a number is divisible by 5 and 11 or not.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int number;
5     printf("SHISHANT CHOURHARY\n");
6     printf("Enter a number: ");
7     scanf("%d", &number);
8
9     if (number % 5 == 0 && number % 11 == 0) {
10         printf("%d is divisible by both 5 and 11.\n", number);
11     } else {
12         printf("%d is not divisible by both 5 and 11.\n", number);
13     }
14
15     return 0;
16 }
17
```

SHISHANT CHOURHARY
Enter a number: 55
55 is divisible by both 5 and 11.

1. Write a C program to check whether a number is even or odd.

ANS:

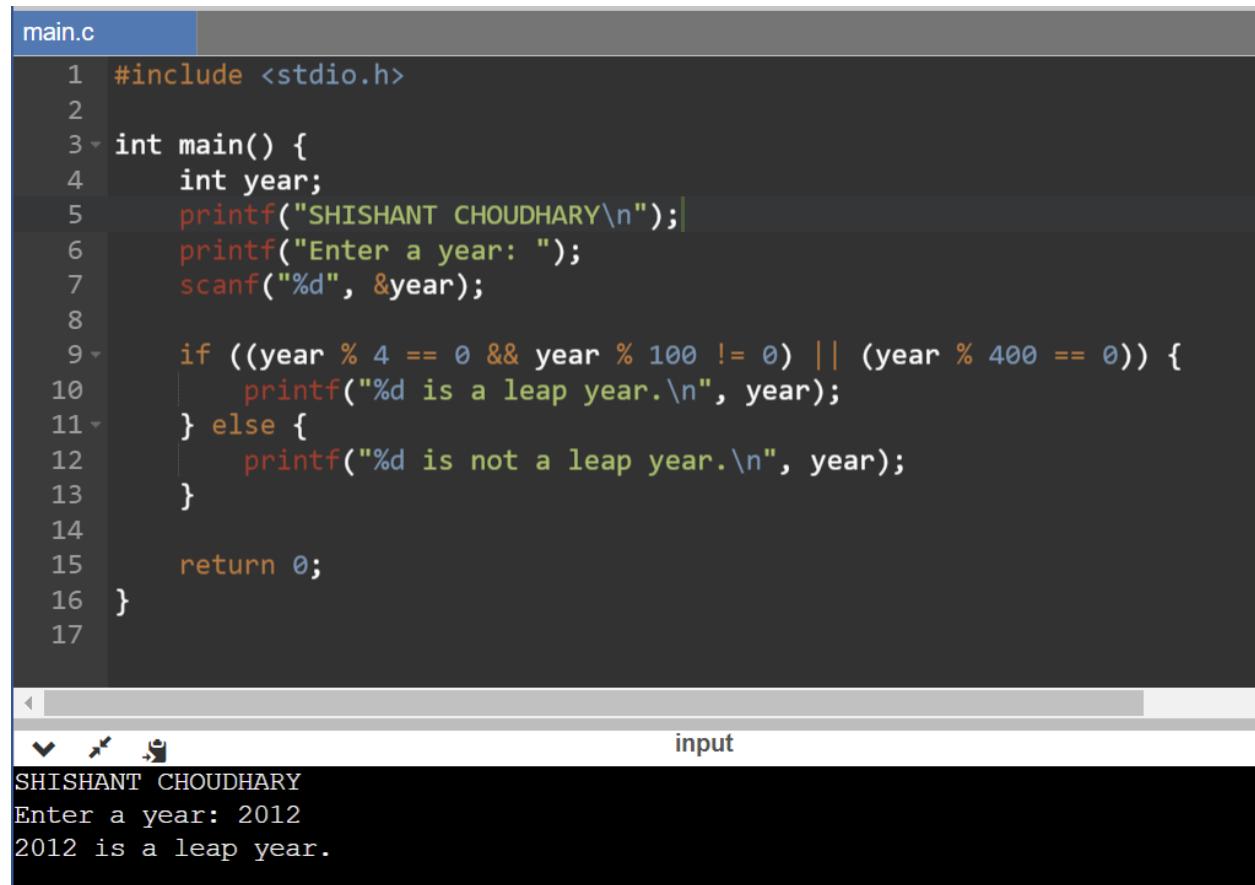
```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int number;
5     printf("SHISHANTCHOUDHARY\n");
6     printf("Enter an integer: ");
7     scanf("%d", &number);
8
9     if (number % 2 == 0) {
10         printf("%d is an even number.\n", number);
11     } else {
12         printf("%d is an odd number.\n", number);
13     }
14
15     return 0;
16 }
17
```

input

```
SHISHANTCHOUDHARY
Enter an integer: 6
6 is an even number.
```

2. Write a C program to check whether a year is leap year or not.

ANS:



```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int year;
5     printf("SHISHANT CHAUDHARY\n");
6     printf("Enter a year: ");
7     scanf("%d", &year);
8
9     if ((year % 4 == 0 && year % 100 != 0) || (year % 400 == 0)) {
10         printf("%d is a leap year.\n", year);
11     } else {
12         printf("%d is not a leap year.\n", year);
13     }
14
15     return 0;
16 }
17
```

SHISHANT CHAUDHARY
Enter a year: 2012
2012 is a leap year.

3. Write a C program to check whether a character is alphabet or not.

ANS:

```
main.c
1 #include <stdio.h>
2 #include <ctype.h>
3
4 int main() {
5     char ch;
6     printf("SHISHANT CHOUDHARY\n");
7     printf("Enter a character: ");
8     scanf(" %c", &ch);
9
10    if (isalpha(ch)) {
11        printf("%c is an alphabet.\n", ch);
12    } else {
13        printf("%c is not an alphabet.\n", ch);
14    }
15
16    return 0;
17 }
18
```

SHISHANT CHOUDHARY
Enter a character: t
t is an alphabet.

4. Write a C program to input any alphabet and check whether it is vowel or consonant.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     char ch;
5     printf("SHISHANT CHOURDARY\n");
6     printf("Enter a single alphabet character: ");
7     scanf(" %c", &ch);
8
9     if ((ch >= 'a' && ch <= 'z') || (ch >= 'A' && ch <= 'Z')) {
10        if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u' ||
11            ch == 'A' || ch == 'E' || ch == 'I' || ch == 'O' || ch == 'U') {
12            printf("%c is a vowel.\n", ch);
13        } else {
14            printf("%c is a consonant.\n", ch);
15        }
16    } else {
17        printf("Invalid input. Please enter a single alphabet character.\n");
18    }
19
20    return 0;
21 }
```

SHISHANT CHOURDARY
Enter a single alphabet character: a
a is a vowel.

5. Write a C program to input any character and check whether it is alphabet, digit or special character.

ANS:

```
main.c
1 #include <stdio.h>
2 #include <ctype.h>
3
4 int main() {
5     char character;
6     printf("SHISHANT CHOURDARY\n");
7     printf("Enter a character: ");
8     scanf(" %c", &character);
9
10    if (isalpha(character)) {
11        printf("%c is an alphabet.\n", character);
12    } else if (isdigit(character)) {
13        printf("%c is a digit.\n", character);
14    } else {
15        printf("%c is a special symbol.\n", character);
16    }
17
18    return 0;
19 }
```

input

SHISHANT CHOURDARY

Enter a character: &

& is a special symbol.

6. Write a C program to check whether a character is uppercase or lowercase alphabet.

ANS:

```
main.c
1 #include <stdio.h>
2 #include <ctype.h>
3
4 int main() {
5     char ch;
6     printf("SHISHNAT CHOUDHARY\n");
7     printf("Enter a character: ");
8     scanf(" %c", &ch);
9
10    if (isupper(ch)) {
11        printf("%c is an uppercase letter.\n", ch);
12    } else if (islower(ch)) {
13        printf("%c is a lowercase letter.\n", ch);
14    } else {
15        printf("%c is not an alphabet character.\n", ch);
16    }
17
18    return 0;
19 }
20
```

input

```
SHISHNAT CHOUDHARY
Enter a character: A
A is an uppercase letter.
```

7. Write a C program to input week number and print week day.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int weekNumber;
5     printf("SHISHANT CHOUDHARY\n");
6     printf("Enter a week number (1-7): ");
7     scanf("%d", &weekNumber);
8
9     switch (weekNumber) {
10         case 1:
11             printf("Day of the week: Sunday\n");
12             break;
13         case 2:
14             printf("Day of the week: Monday\n");
15             break;
16         case 3:
17             printf("Day of the week: Tuesday\n");
18             break;
19         case 4:
20             printf("Day of the week: Wednesday\n");
21             break;
22         case 5:
23             printf("Day of the week: Thursday\n");
24             break;
25         case 6:
26             printf("Day of the week: Friday\n");
27             break;
28         case 7:
29             printf("Day of the week: Saturday\n");
30             break;
31         default:
32             printf("Invalid week number. Please enter a number between 1 and 7.\n");
33     }
34
35     return 0;
36 }
37
```

SHISHANT CHOUDHARY
Enter a week number (1-7): 4
Day of the week: Wednesday

8. Write a C program to input month number and print number of days in that month.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int month;
5     printf("SHISHANT CHOURHARY\n");
6     printf("Enter a month number (1-12): ");
7     scanf("%d", &month);
8
9     switch (month) {
10         case 1: case 3: case 5: case 7: case 8: case 10: case 12:
11             printf("Number of days: 31\n");
12             break;
13         case 4: case 6: case 9: case 11:
14             printf("Number of days: 30\n");
15             break;
16         case 2:
17             printf("Number of days: 28 or 29 (leap year)\n");
18             break;
19         default:
20             printf("Invalid month number. Please enter a number between 1 and 12.\n");
21     }
22
23     return 0;
24 }
25
```

```
SHISHANT CHOURHARY
Enter a month number (1-12): 11
Number of days: 30
```

9. Write a C program to count total number of notes in given amount.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int amount, notes;
5
6     printf("SHISHNAT CHOURHARY\n");
7     printf("Enter the amount: ");
8     scanf("%d", &amount);
9
10    if (amount <= 0) {
11        printf("Invalid amount. Please enter a positive amount.\n");
12    } else {
13        printf("Total number of notes for amount %d:\n", amount);
14
15        notes = amount / 100;
16        if (notes > 0) {
17            printf("100-rupee notes: %d\n", notes);
18            amount = amount % 100;
19        }
20        notes = amount / 50;
21        if (notes > 0) {
22            printf("50-rupee notes: %d\n", notes);
23            amount = amount % 50;
24        }
25        notes = amount / 20;
26        if (notes > 0) {
27            printf("20-rupee notes: %d\n", notes);
28            amount = amount % 20;
29        }
30        notes = amount / 10;
31        if (notes > 0) {
32            printf("10-rupee notes: %d\n", notes);
33            amount = amount % 10;
34        }
35        notes = amount / 5;
36        if (notes > 0) {
37            printf("5-rupee notes: %d\n", notes);
38            amount = amount % 5;
39        }
40        printf("1-rupee notes: %d\n", amount);
41    }
42
43    return 0;
44 }
```

16. Write a C program to input angles of a triangle and check whether triangle is valid or not.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     float angle1, angle2, angle3;
5     printf("SHISHANT CHAUDHARY\n");
6     printf("Enter the three angles of the triangle: ");
7     scanf("%f %f %f", &angle1, &angle2, &angle3);
8
9     if (angle1 + angle2 + angle3 == 180 && angle1 > 0 && angle2 > 0 && angle3 > 0) {
10         printf("The angles form a valid triangle.\n");
11     } else {
12         printf("The angles do not form a valid triangle.\n");
13     }
14
15     return 0;
16 }
17
```

SHISHANT CHAUDHARY
Enter the three angles of the triangle: 30 70 80
The angles form a valid triangle.

17. Write a C program to input all sides of a triangle and check whether triangle is valid or not.

ANS:

The screenshot shows a terminal window with two panes. The top pane displays the source code for a C program named 'main.c'. The bottom pane shows the terminal output with the user's input and the program's response.

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     double side1, side2, side3;
5     printf("SHISHANT CHOUDHARY\n");
6     printf("Enter the length of the first side: ");
7     scanf("%lf", &side1);
8     printf("Enter the length of the second side: ");
9     scanf("%lf", &side2);
10    printf("Enter the length of the third side: ");
11    scanf("%lf", &side3);
12
13    if (side1 + side2 > side3 && side1 + side3 > side2 && side2 + side3 > side1) {
14        printf("It is a valid triangle.\n");
15    } else {
16        printf("It is not a valid triangle.\n");
17    }
18
19    return 0;
20 }
```

SHISHANT CHOUDHARY
Enter the length of the first side: 12
Enter the length of the second side: 6
Enter the length of the third side: 9
It is a valid triangle.

19. Write a C program to find all roots of a quadratic equation.

ANS:

```
main.c
1 #include <stdio.h>
2 #include <math.h>
3
4 int main() {
5     double a, b, c;
6     double discriminant, root1, root2;
7
8     printf("SHISHANT CHOUHARY\n");
9     printf("Enter the coefficient a: ");
10    scanf("%lf", &a);
11    printf("Enter the coefficient b: ");
12    scanf("%lf", &b);
13    printf("Enter the coefficient c: ");
14    scanf("%lf", &c);
15
16
17    discriminant = (b * b) - (4 * a * c);
18
19    if (discriminant > 0) {
20        root1 = (-b + sqrt(discriminant)) / (2 * a);
21        root2 = (-b - sqrt(discriminant)) / (2 * a);
22        printf("Root 1 = %.2lf\n", root1);
23        printf("Root 2 = %.2lf\n", root2);
24    } else if (discriminant == 0) {
25        root1 = -b / (2 * a);
26        printf("Root 1 = Root 2 = %.2lf\n", root1);
27
28    } else if (discriminant == 0) {
29        root1 = -b / (2 * a);
30        printf("Root 1 = Root 2 = %.2lf\n", root1);
31    } else {
32        // Complex roots
33        double realPart = -b / (2 * a);
34        double imaginaryPart = sqrt(-discriminant) / (2 * a);
35        printf("Root 1 = %.2lf + %.2lfi\n", realPart, imaginaryPart);
36        printf("Root 2 = %.2lf - %.2lfi\n", realPart, imaginaryPart);
37    }
38
39    return 0;
40}
41
```

SHISHANT CHOUHARY
Enter the coefficient a: 4
Enter the coefficient b: 7
Enter the coefficient c: 9
Root 1 = -0.88 + 1.22i
Root 2 = -0.88 - 1.22i

20. Write a C program to calculate profit or loss.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     float costPrice, sellingPrice, profitLoss;
5
6     printf("SHISHANT CHOURHARY\n");
7     printf("Enter the cost price: $");
8     scanf("%f", &costPrice);
9
10    printf("Enter the selling price: $");
11    scanf("%f", &sellingPrice);
12
13    profitLoss = sellingPrice - costPrice;
14
15    if (profitLoss > 0) {
16        printf("You made a profit of $%.2f.\n", profitLoss);
17    } else if (profitLoss < 0) {
18        printf("You incurred a loss of $%.2f.\n", -profitLoss);
19    } else {
20        printf("No profit, no loss.\n");
21    }
22
23    return 0;
24}
25
```

```
SHISHANT CHOURHARY
Enter the cost price: $300
Enter the selling price: $400
You made a profit of $100.00.
```

21. Write a C program to input marks of five subjects Physics, Chemistry, Biology, Mathematics and Computer. Calculate percentage and grade according to following

: Percentage >= 90% : Grade A

Percentage >= 80% : Grade B

Percentage >= 70% : Grade C

Percentage >= 60% : Grade D

Percentage >= 40% : Grade E

Percentage < 40% : Grade F

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     float physics, chemistry, biology, mathematics, computer;
5     float total_marks, percentage;
6     char grade;
7     printf("SHISHANT CHOUDHARY\n");
8     printf("Enter marks for Physics: ");
9     scanf("%f", &physics);
10
11    printf("Enter marks for Chemistry: ");
12    scanf("%f", &chemistry);
13
14    printf("Enter marks for Biology: ");
15    scanf("%f", &biology);
16
17    printf("Enter marks for Mathematics: ");
18    scanf("%f", &mathematics);
19
20    printf("Enter marks for Computer: ");
21    scanf("%f", &computer);
22
23    total_marks = physics + chemistry + biology + mathematics + computer;
24    percentage = (total_marks / 500) * 100;
```

```
25
26     if (percentage >= 90) {
27         grade = 'A';
28     } else if (percentage >= 80) {
29         grade = 'B';
30     } else if (percentage >= 70) {
31         grade = 'C';
32     } else if (percentage >= 60) {
33         grade = 'D';
34     } else if (percentage >= 40) {
35         grade = 'E';
36     } else {
37         grade = 'F';
38     }
39
40     printf("Total Marks: %.2f\n", total_marks);
41     printf("Percentage: %.2f%%\n", percentage);
42     printf("Grade: %c\n", grade);
43
44     return 0;
45 }
46
```

```
SHISHANT CHOUDHARY
Enter marks for Physics: 45
Enter marks for Chemistry: 90
Enter marks for Biology: 78
Enter marks for Mathematics: 90
Enter marks for Computer: 88
Total Marks: 391.00
Percentage: 78.20%
Grade: C
```

22. Write a C program to input basic salary of an employee and calculate its Gross salary according to following:

Basic Salary <= 10000 : HRA = 20%, DA = 80%

Basic Salary <= 20000 : HRA = 25%, DA = 90%

Basic Salary > 20000 : HRA = 30%, DA = 95%

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     float basicSalary, grossSalary;
5     float hra, da;
6     printf("SHISHANT CHOUDHARY\n");
7     printf("Enter the basic salary: ");
8     scanf("%f", &basicSalary);
9
10    if (basicSalary <= 10000) {
11        hra = 0.2 * basicSalary;
12        da = 0.8 * basicSalary;
13    } else if (basicSalary <= 20000) {
14        hra = 0.25 * basicSalary;
15        da = 0.9 * basicSalary;
16    } else {
17        hra = 0.3 * basicSalary;
18        da = 0.95 * basicSalary;
19    }
20
21    grossSalary = basicSalary + hra + da;
22
23    printf("Gross Salary: %.2f\n", grossSalary);
24
25    return 0;
26 }
```

```
SHISHANT CHOUDHARY
Enter the basic salary: 4500
Gross Salary: 9000.00
```

23. Write a C program to input electricity unit charges and calculate total electricity bill according to the given condition

: For first 50 units Rs. 0.50/unit

For next 100 units Rs. 0.75/unit

For next 100 units Rs. 1.20/unit

For unit above 250 Rs. 1.50/unit

An additional surcharge of 20% is added to the bill

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     float units, totalBill;
5     printf("SHISHANT CHOUDHARY\n");
6     printf("Enter the electricity units: ");
7     scanf("%f", &units);
8
9     if (units <= 50) {
10         totalBill = units * 0.50;
11     } else if (units <= 150) {
12         totalBill = 50 * 0.50 + (units - 50) * 0.75;
13     } else if (units <= 250) {
14         totalBill = 50 * 0.50 + 100 * 0.75 + (units - 150) * 1.20;
15     } else {
16         totalBill = 50 * 0.50 + 100 * 0.75 + 100 * 1.20 + (units - 250) * 1.50;
17     }
18
19     totalBill = totalBill + (0.20 * totalBill);
20
21     printf("Total electricity bill: Rs. %.2f\n", totalBill);
22
23     return 0;
24 }
25
```

```
SHISHANT CHOUDHARY
Enter the electricity units: 300
Total electricity bill: Rs. 354.00
```

24. Write a C program to convert specified days into years, weeks and days.

ANS:

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int days, years, weeks, remainingDays;
5
6     printf("SHISHANT CHOUDHARY\n");
7     printf("Enter the number of days: ");
8     scanf("%d", &days);
9
10    years = days / 365;
11    days = days % 365;
12
13    weeks = days / 7;
14    days = days % 7;
15
16    remainingDays = days;
17
18    printf("Years: %d\n", years);
19    printf("Weeks: %d\n", weeks);
20    printf("Days: %d\n", remainingDays);
21
22    return 0;
23 }
24
```

```
SHISHANT CHOUDHARY
Enter the number of days: 560
Years: 1
Weeks: 27
Days: 6
```

