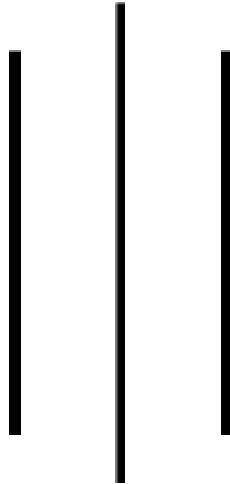


PATAN MULTIPLE CAMPUS

Patan Dokha, Lalitpur



Assignment on : C Programming (CSC115)
Assignment No. : 2

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Semester : I (2082 Batch)

Submitted to :
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Date : 2082/11/

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Note : To write code, "**Font-family: JetBrains Mono**" has been used. In this font family:

== : = , >= : ≥

!= : ≠ , <= : ≤

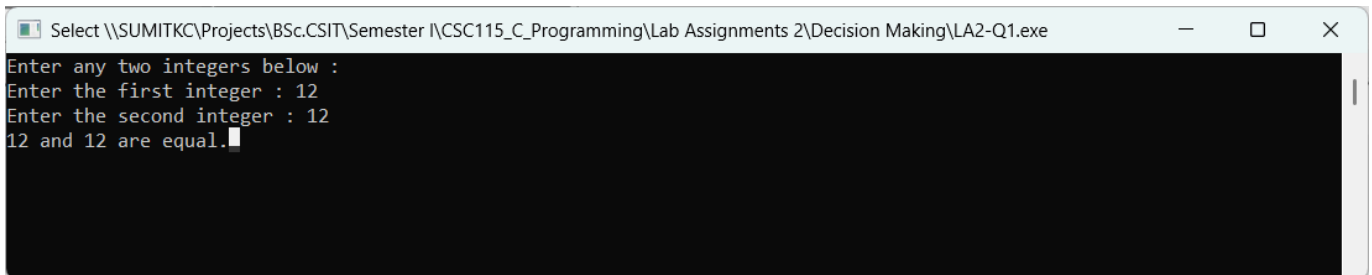
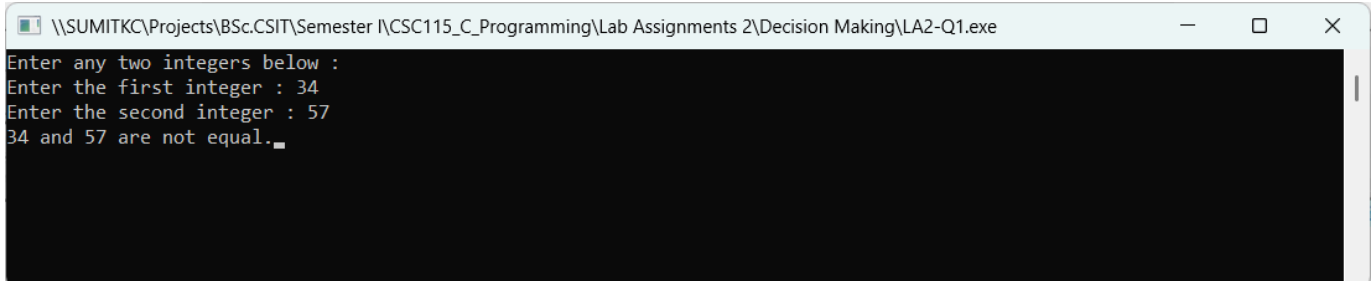
DECISION MAKING

1. Write a C program to accept two integers and check whether they are equal or not.

Source Code: LA2-Q1.c

```
#include <stdio.h>
int main()
{
    int num1, num2;
    printf("Enter any two integers below : \n");
    printf("Enter the first integer : ");
    scanf("%d", &num1);
    printf("Enter the second integer : ");
    scanf("%d", &num2);
    if (num1 == num2)
        printf("%d and %d are equal.", num1, num2);
    else
        printf("%d and %d are not equal.", num1, num2);
    return 0;
}
```

Output: LA2-Q1.exe

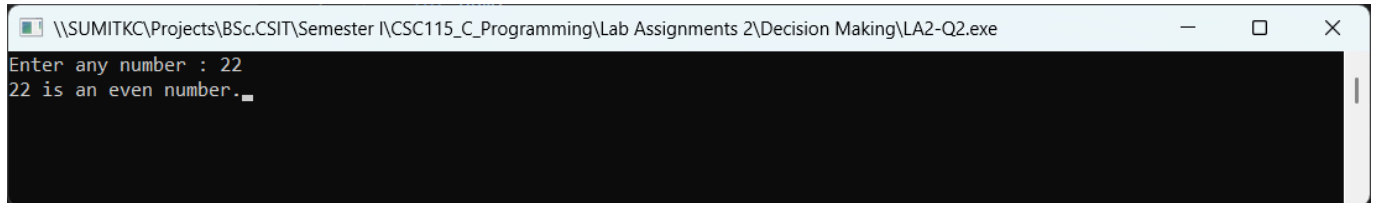


2. Write a C program to check whether a given number is even or odd.

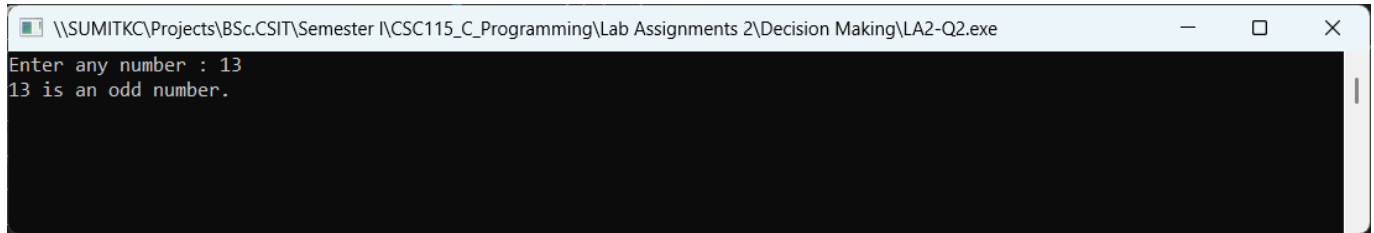
Source Code: LA2-Q2.c

```
#include <stdio.h>
int main()
{
    int num;
    printf("Enter any number : ");
    scanf("%d", &num);
    if (num % 2 == 0)
        printf("%d is an even number.", num);
    else
        printf("%d is an odd number.", num);
    return 0;
}
```

Output: LA2-Q2.exe



A screenshot of a Windows command prompt window. The title bar shows the file path: \\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Decision Making\\LA2-Q2.exe. The window contains the text: "Enter any number : 22" followed by "22 is an even number." on the next line.



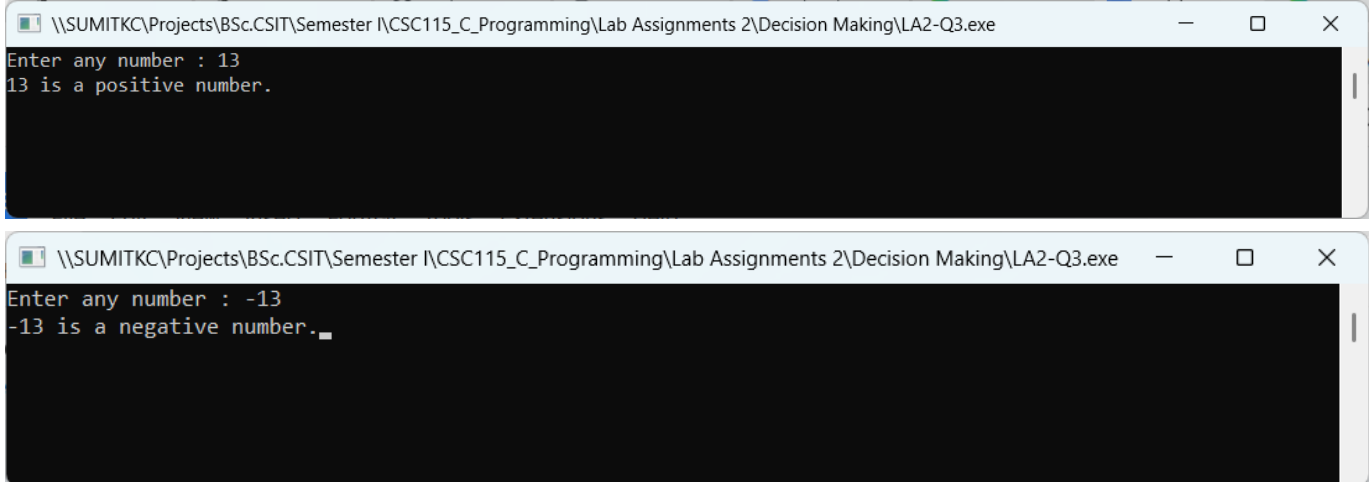
A screenshot of a Windows command prompt window. The title bar shows the file path: \\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Decision Making\\LA2-Q2.exe. The window contains the text: "Enter any number : 13" followed by "13 is an odd number." on the next line.

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

Source Code: LA2-Q3.c

```
#include <stdio.h>
int main()
{
    int num;
    printf("Enter any number : ");
    scanf("%d", &num);
    if (num > 0)
        printf("%d is a positive number.", num);
    else if (num < 0)
        printf("%d is a negative number.", num);
    else
        printf("The number is zero which is neither positive nor negative.");
    return 0;
}
```

Output: LA2-Q3.exe



The image displays two sequential screenshots of a Windows command prompt window titled "\\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Decision Making\\LA2-Q3.exe".

The first screenshot shows the program's execution with the input "13". The output displayed is "13 is a positive number.".

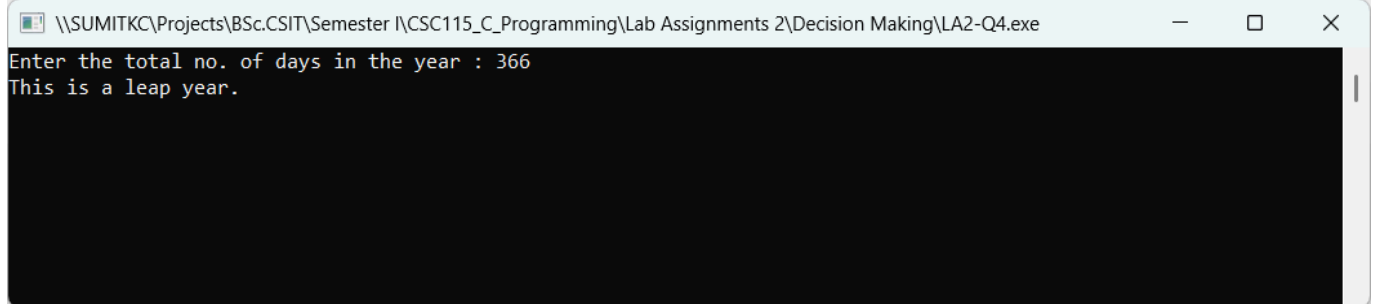
The second screenshot shows the program's execution with the input "-13". The output displayed is "-13 is a negative number.".

4. Write a C program to find whether a given year is a leap year or not.

Source Code: LA2-Q4.c

```
#include <stdio.h>
int main()
{
    int days;
    printf("Enter the total no. of days in the year : ");
    scanf("%d", &days);
    if (days == 366)
        printf("This is a leap year.");
    else if (days == 365)
        printf("This is not a leap year.");
    else
        printf("Enter the valid days of a year.");
    return 0;
}
```

Output: LA2-Q4.exe



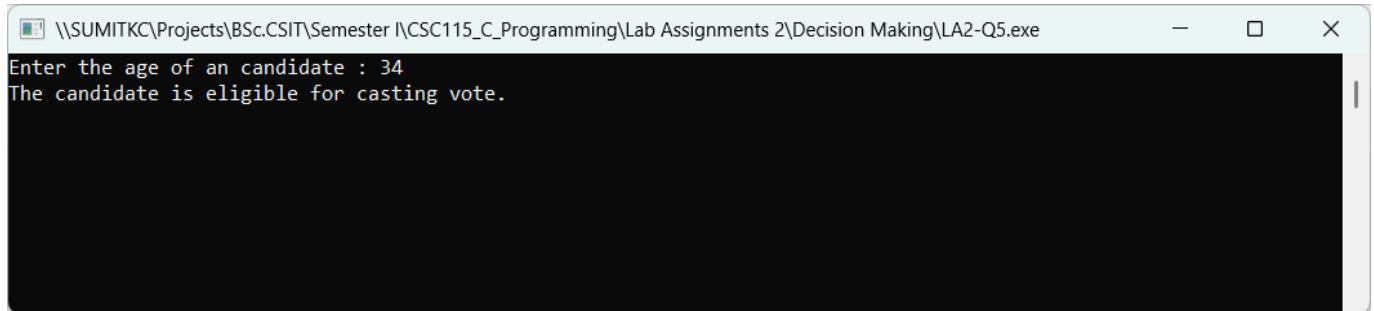
```
\\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Decision Making\\LA2-Q4.exe
Enter the total no. of days in the year : 366
This is a leap year.
```


5. Write a C program to read the age of a candidate and determine whether it is eligible for casting his/her own vote.

Source Code: LA2-Q5.c

```
#include <stdio.h>
int main()
{
    int age;
    printf("Enter the age of an candidate : ");
    scanf("%d", &age);
    if (age ≥ 18)
        printf("The candidate is eligible for casting vote.");
    else if (age > 0)
        printf("The candidate is not eligible for casting vote.");
    else
        printf("Enter the valid age of candidate.");
    return 0;
}
```

Output: LA2-Q5.exe



```
\\SUMITKC\Projects\BSc.CSIT\Semester I\CSC115_C_Programming\Lab Assignments 2\Decision Making\LA2-Q5.exe
Enter the age of an candidate : 34
The candidate is eligible for casting vote.
```

6. Write a C program to read the value of an integer m and display the value of n is 1 when m is larger than 0, 0 when m is 0 and -1 when m is less than 0.

Source Code: LA2-Q6.c

```
#include <stdio.h>

int main()
{
    int m, n;

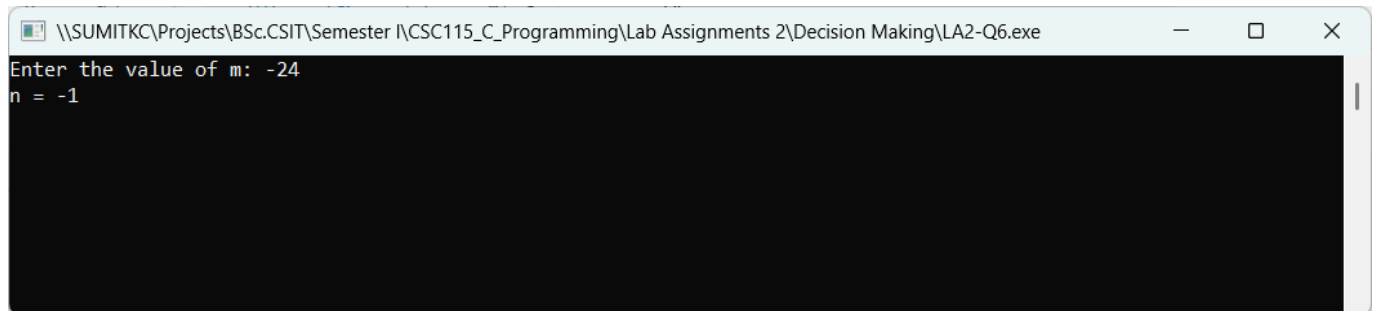
    printf("Enter the value of m: ");
    scanf("%d", &m);

    if (m > 0)
        n = 1;
    else if (m == 0)
        n = 0;
    else
        n = -1;

    printf("n = %d\n", n);\

    return 0;
}
```

Output: LA2-Q6.exe



```
\\SUMITKC\Projects\BSc.CSIT\Semester I\CSC115_C_Programming\Lab Assignments 2\Decision Making\LA2-Q6.exe
Enter the value of m: -24
n = -1
```

7. Write a C program to accept the height of a person in centimeters and categorize the person according to their height.

Source Code: LA2-Q7.c

```
#include <stdio.h>

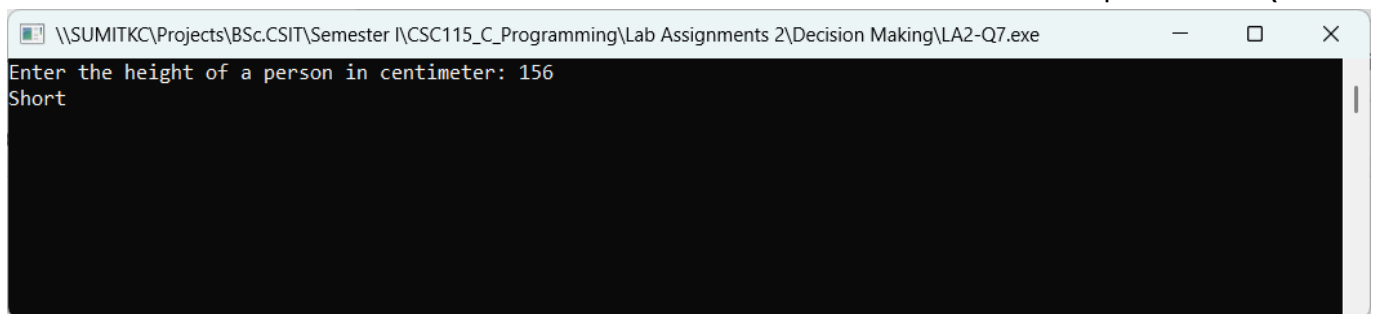
int main()
{
    float height;

    printf("Enter the height of a person in centimeter: ");
    scanf("%f", &height);

    if (height < 100)
        printf("Dwarf\n");
    else if (height ≥ 100 && height < 150)
        printf("Very Short\n");
    else if (height ≥ 150 && height < 170)
        printf("Short\n");
    else if (height ≥ 170 && height < 190)
        printf("Average\n");
    else if (height ≥ 190 && height < 210)
        printf("Tall\n");
    else
        printf("Very Tall\n");

    return 0;
}
```

Output: LA2-Q7.exe



```
\\SUMITKC\Projects\BSc.CSIT\Semester I\CSC115_C_Programming\Lab Assignments 2\Decision Making\LA2-Q7.exe
Enter the height of a person in centimeter: 156
Short
```

8. Write a C program to find the largest of three numbers.

Source Code: LA2-Q8.c

```
#include <stdio.h>

int main()
{
    int a, b, c, largest;

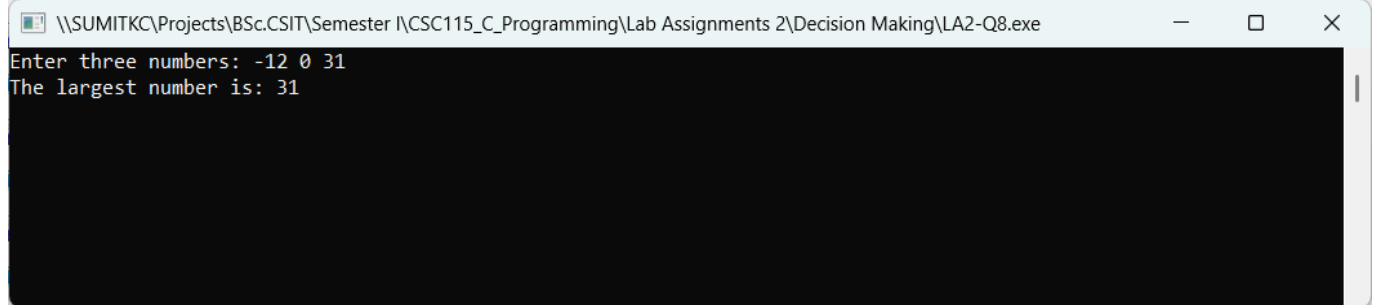
    printf("Enter three numbers: ");
    scanf("%d %d %d", &a, &b, &c);

    if (a > b && a > c)
        largest = a;
    else if (b > a && b > c)
        largest = b;
    else
        largest = c;

    printf("The largest number is: %d\n", largest);

    return 0;
}
```

Output: LA2-Q8.exe



```
\\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Decision Making\\LA2-Q8.exe
Enter three numbers: -12 0 31
The largest number is: 31
```

9. Write a C program to accept a coordinate point in a XY coordinate system and determine in which quadrant the coordinate point lies.

Source Code: LA2-Q9.c

```
#include <stdio.h>

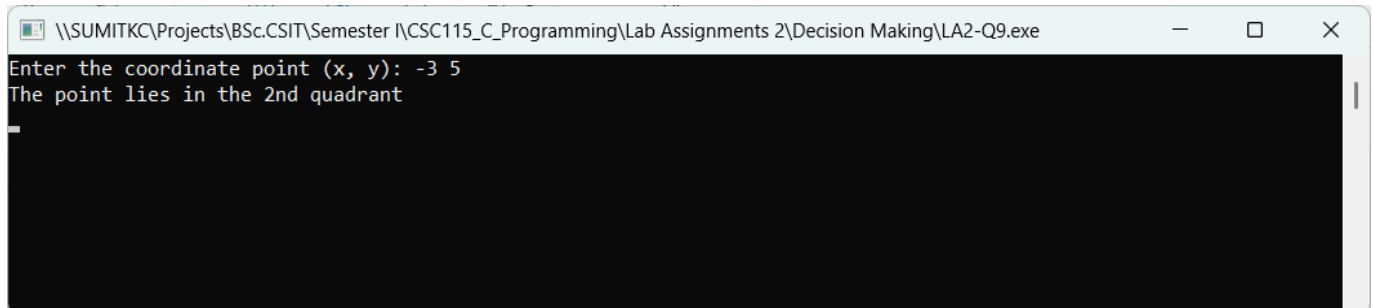
int main()
{
    int x, y;

    printf("Enter the coordinate point (x, y): ");
    scanf("%d %d", &x, &y);

    if (x > 0 && y > 0)
        printf("The point lies in the 1st quadrant\n");
    else if (x < 0 && y > 0)
        printf("The point lies in the 2nd quadrant\n");
    else if (x < 0 && y < 0)
        printf("The point lies in the 3rd quadrant\n");
    else if (x > 0 && y < 0)
        printf("The point lies in the 4th quadrant\n");
    else if (x == 0 && y == 0)
        printf("The point lies at the origin\n");
    else if (x == 0)
        printf("The point lies on the Y-axis\n");
    else
        printf("The point lies on the X-axis\n");

    return 0;
}
```

Output: LA2-Q9.exe



```
\\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Decision Making\\LA2-Q9.exe
Enter the coordinate point (x, y): -3 5
The point lies in the 2nd quadrant
```

10. Write a C program to find the eligibility of admission for a professional course based on the following criteria:

Marks in Maths ≥ 65

Marks in Phy ≥ 55

Marks in Chem ≥ 50

Total in all three subject ≥ 180

or

Total in Math and Subjects ≥ 140

Source Code: LA2-Q10.c

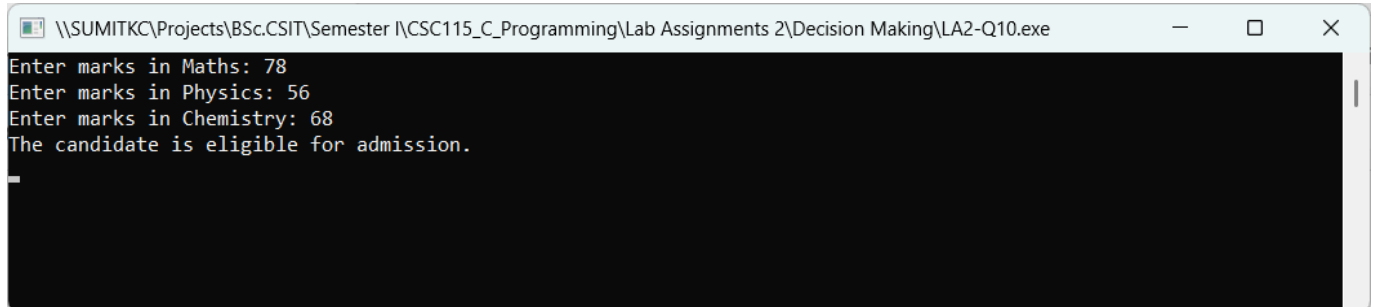
```
#include <stdio.h>
int main()
{
    int maths, phy, chem, total;
    printf("Enter marks in Maths: ");
    scanf("%d", &maths);
    printf("Enter marks in Physics: ");
    scanf("%d", &phy);
    printf("Enter marks in Chemistry: ");
    scanf("%d", &chem);

    total = maths + phy + chem;

    if ((maths  $\geq$  65 && phy  $\geq$  55 && chem  $\geq$  50 && total  $\geq$  180) || (maths +
phy  $\geq$  140)) {
        printf("The candidate is eligible for admission.\n");
    } else {
        printf("The candidate is not eligible for admission.\n");
    }

    return 0;
}
```

Output: LA2-Q10.exe



```
\\SUMITKC\Projects\BSc.CSIT\Semester I\CSC115_C_Programming\Lab Assignments 2\Decision Making\LA2-Q10.exe
Enter marks in Maths: 78
Enter marks in Physics: 56
Enter marks in Chemistry: 68
The candidate is eligible for admission.
```

11. Write a C program to calculate the root of a Quadratic Equation.

Source Code: LA2-Q11.c

```
#include <stdio.h>

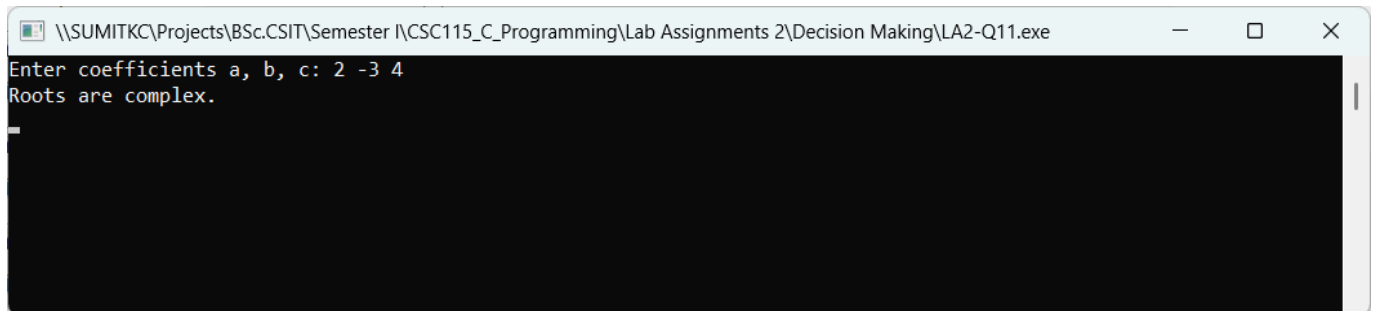
int main()
{
    float a, b, c, discriminant, root1, root2;

    printf("Enter coefficients a, b, c: ");
    scanf("%f %f %f", &a, &b, &c);

    discriminant = (b * b) - (4 * a * c);

    if (discriminant > 0) {
        root1 = (-b + sqrt(discriminant)) / (2 * a);
        root2 = (-b - sqrt(discriminant)) / (2 * a);
        printf("Root 1 = %.2f\n", root1);
        printf("Root 2 = %.2f\n", root2);
    } else if (discriminant == 0) {
        root1 = -b / (2 * a);
        printf("Root = %.2f\n", root1);
    } else {
        printf("Roots are complex.\n");
    }

    return 0;
}
```

Output: LA2-Q11.exe

12. Write a C program to read roll no, name and marks of three subjects and calculate the total, percentage and division.

Source Code: LA2-Q12.c

```
#include <stdio.h>
int main()
{
    int rollNo, marks1, marks2, marks3, total;
    float percentage;
    char name[50];

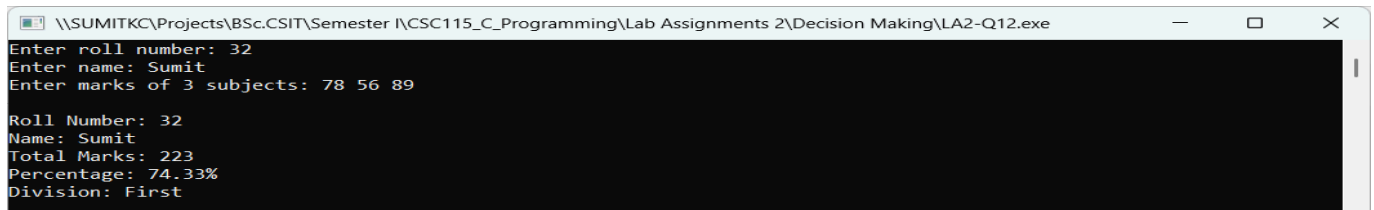
    printf("Enter roll number: ");
    scanf("%d", &rollNo);
    printf("Enter name: ");
    scanf("%s", name);
    printf("Enter marks of 3 subjects: ");
    scanf("%d %d %d", &marks1, &marks2, &marks3);

    total = marks1 + marks2 + marks3;
    percentage = (total / 300.0) * 100;

    printf("\nRoll Number: %d\n", rollNo);
    printf("Name: %s\n", name);
    printf("Total Marks: %d\n", total);
    printf("Percentage: %.2f%%\n", percentage);

    if (percentage ≥ 60)
        printf("Division: First\n");
    else if (percentage ≥ 45)
        printf("Division: Second\n");
    else if (percentage ≥ 33)
        printf("Division: Third\n");
    else
        printf("Division: Fail\n");
    return 0;
}
```

Output: LA2-Q12.exe



```
\\SUMITKC\Projects\BSc.CSIT\Semester I\CSC115_C_Programming\Lab Assignments 2\Decision Making\LA2-Q12.exe
Enter roll number: 32
Enter name: Sumit
Enter marks of 3 subjects: 78 56 89

Roll Number: 32
Name: Sumit
Total Marks: 223
Percentage: 74.33%
Division: First
```


13. Write a C program to read temperature in centigrade and display a suitable message according to temperature state below:

Temp < 0 then Freezing weather
Temp 0-10 then Very Cold weather
Temp 10-20 then Cold weather
Temp 20-30 then Normal in Temp
Temp 30-40 then Its Hot
Temp >=40 then Its Very Hot

Source Code: LA2-Q13.c

```
#include <stdio.h>

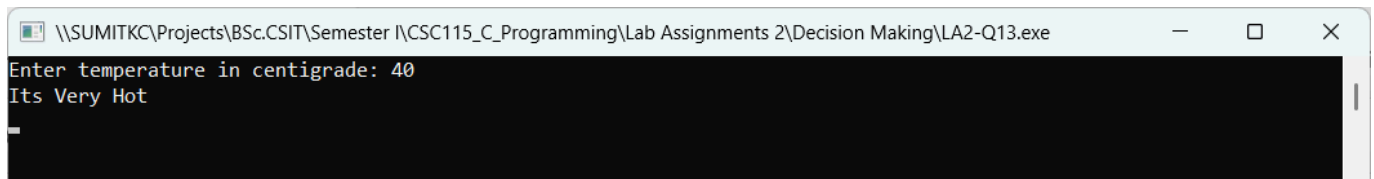
int main()
{
    float temp;

    printf("Enter temperature in centigrade: ");
    scanf("%f", &temp);

    if (temp < 0)
        printf("Freezing weather\n");
    else if (temp ≥ 0 && temp < 10)
        printf("Very Cold weather\n");
    else if (temp ≥ 10 && temp < 20)
        printf("Cold weather\n");
    else if (temp ≥ 20 && temp < 30)
        printf("Normal temperature\n");
    else if (temp ≥ 30 && temp < 40)
        printf("Its Hot\n");
    else if (temp ≥ 40)
        printf("Its Very Hot\n");

    return 0;
}
```

Output: LA2-Q13.exe



14. Write a C program to check whether a triangle is Equilateral, Isosceles or Scalene.

Source Code: LA2-Q14.c

```
#include <stdio.h>

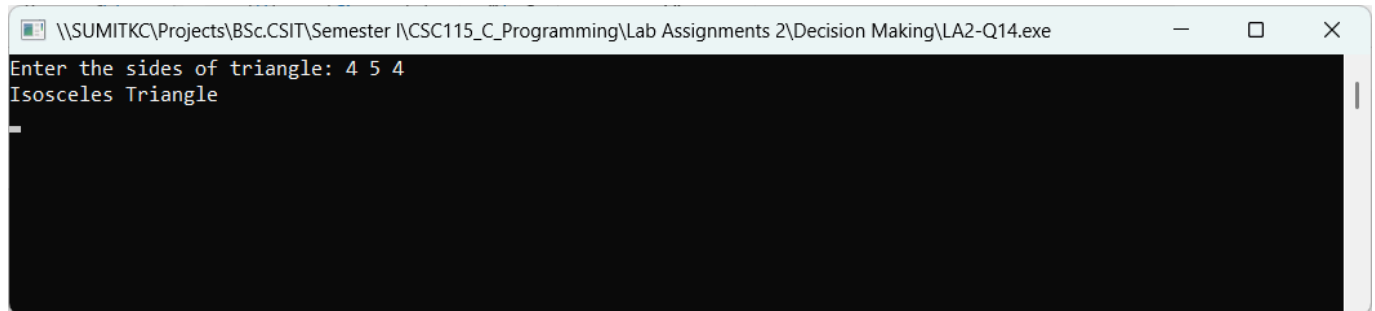
int main()
{
    int a, b, c;

    printf("Enter the sides of triangle: ");
    scanf("%d %d %d", &a, &b, &c);

    if (a == b && b == c)
        printf("Equilateral Triangle\n");
    else if (a == b || b == c || a == c)
        printf("Isosceles Triangle\n");
    else
        printf("Scalene Triangle\n");

    return 0;
}
```

Output: LA2-Q14.exe



```
\\SUMITKC\Projects\BSc.CSIT\Semester I\CSC115_C_Programming\Lab Assignments 2\Decision Making\LA2-Q14.exe
Enter the sides of triangle: 4 5 4
Isosceles Triangle
```

15. Write a C program to check whether a triangle can be formed by the given value for the angles.

Source Code: LA2-Q15.c

```
#include <stdio.h>

int main()
{
    int angle1, angle2, angle3, sum;

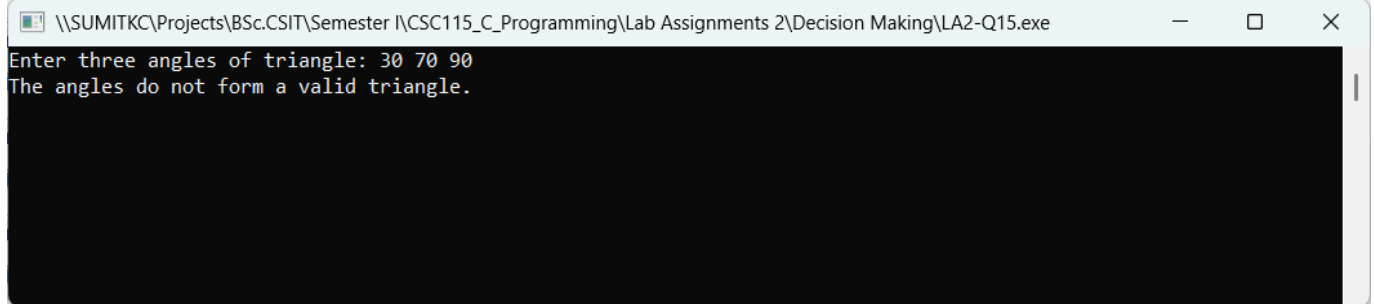
    printf("Enter three angles of triangle: ");
    scanf("%d %d %d", &angle1, &angle2, &angle3);

    sum = angle1 + angle2 + angle3;

    if (sum == 180 && angle1 > 0 && angle2 > 0 && angle3 > 0)
        printf("The angles form a valid triangle.\n");
    else
        printf("The angles do not form a valid triangle.\n");

    return 0;
}
```

Output: LA2-Q15.exe



```
\\SUMITKC\Projects\BSc.CSIT\Semester I\CSC115_C_Programming\Lab Assignments 2\Decision Making\LA2-Q15.exe
Enter three angles of triangle: 30 70 90
The angles do not form a valid triangle.
```

16. Write a C program to check whether a character is an alphabet, digit or special character.

Source Code: LA2-Q16.c

```
#include <stdio.h>

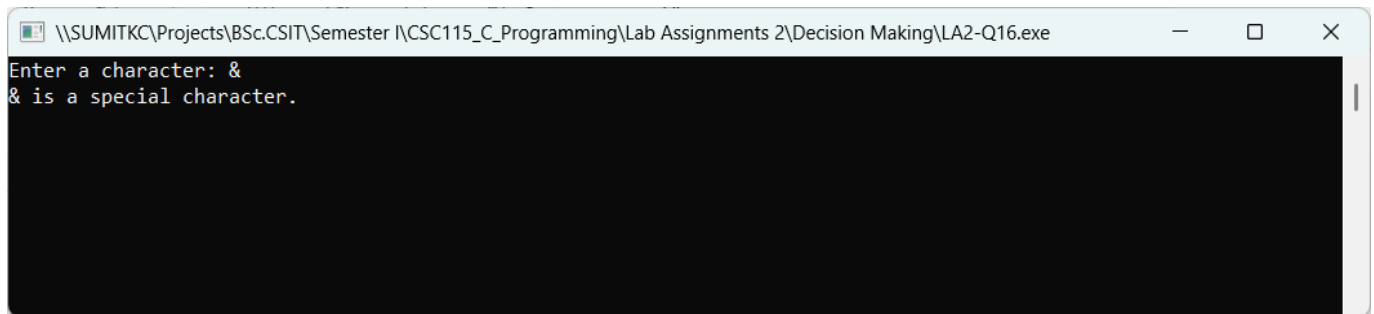
int main()
{
    char ch;

    printf("Enter a character: ");
    scanf("%c", &ch);

    if ((ch ≥ 'a' && ch ≤ 'z') || (ch ≥ 'A' && ch ≤ 'Z'))
        printf("%c is an alphabet.\n", ch);
    else if (ch ≥ '0' && ch ≤ '9')
        printf("%c is a digit.\n", ch);
    else
        printf("%c is a special character.\n", ch);

    return 0;
}
```

Output: LA2-Q16.exe



```
\\SUMITKC\Projects\BSc.CSIT\Semester I\CSC115_C_Programming\Lab Assignments 2\Decision Making\LA2-Q16.exe
Enter a character: &
& is a special character.
```

17. Write a C program to check whether an alphabet is a vowel or consonant.

Source Code: LA2-Q17.c

```
#include <stdio.h>

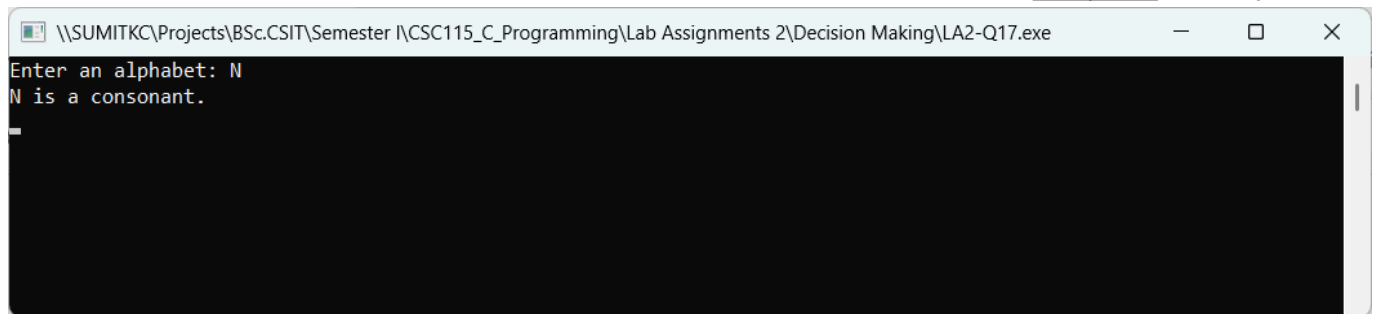
int main()
{
    char ch;

    printf("Enter an alphabet: ");
    scanf("%c", &ch);

    if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u' ||
        ch == 'A' || ch == 'E' || ch == 'I' || ch == 'O' || ch == 'U')
        printf("%c is a vowel.\n", ch);
    else
        printf("%c is a consonant.\n", ch);

    return 0;
}
```

Output: LA2-Q17.exe



```
\\SUMITKC\Projects\BSc.CSIT\Semester I\CSC115_C_Programming\Lab Assignments 2\Decision Making\LA2-Q17.exe
Enter an alphabet: N
N is a consonant.
```

18. Write a C program to calculate profit and loss on a transaction.

Source Code: LA2-Q18.c

```
#include <stdio.h>

int main()
{
    float costPrice, sellingPrice, profitLoss;

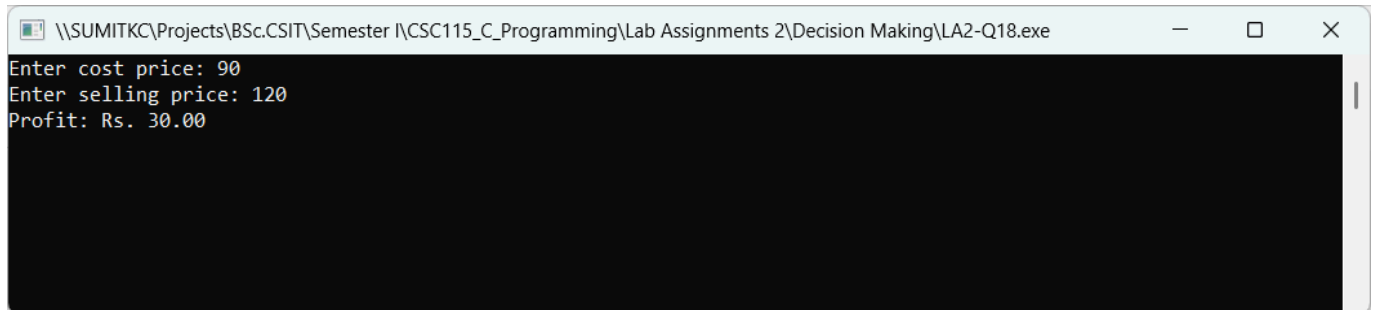
    printf("Enter cost price: ");
    scanf("%f", &costPrice);
    printf("Enter selling price: ");
    scanf("%f", &sellingPrice);

    profitLoss = sellingPrice - costPrice;

    if (profitLoss > 0)
        printf("Profit: Rs. %.2f\n", profitLoss);
    else if (profitLoss < 0)
        printf("Loss: Rs. %.2f\n", -profitLoss);
    else
        printf("No profit, no loss.\n");

    return 0;
}
```

Output: LA2-Q18.exe



```
\\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Decision Making\\LA2-Q18.exe
Enter cost price: 90
Enter selling price: 120
Profit: Rs. 30.00
```

19. Write a program in C to calculate and print the Electricity bill of a given customer. The customer id., name and unit consumed by the user should be taken from the keyboard and display the total amount to pay to the customer. The charge are as follow:

Unit	Charge/unit
upto 199	@1.20
200 and above but less than 400	@1.50
400 and above but less than 600	@1.80
600 and above	@2.00

If bill exceeds Rs. 400 then a surcharge of 15% will be charged and the minimum bill should be of Rs. 100/-

Source Code: LA2-Q19.c

```
#include <stdio.h>

int main()
{
    int custId, units;
    float chargePerUnit, bill, surcharge;
    char custName[50];

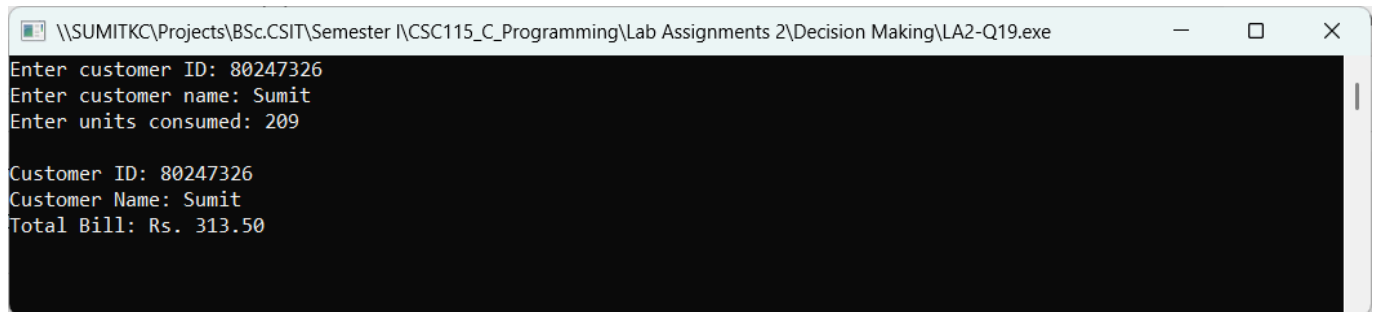
    printf("Enter customer ID: ");
    scanf("%d", &custId);
    printf("Enter customer name: ");
    scanf("%s", custName);
    printf("Enter units consumed: ");
    scanf("%d", &units);

    if (units ≤ 199)
        chargePerUnit = 1.20;
    else if (units ≤ 399)
        chargePerUnit = 1.50;
    else if (units ≤ 599)
        chargePerUnit = 1.80;
    else
        chargePerUnit = 2.00;

    bill = units * chargePerUnit;
```

```
    if (bill > 400) {  
        surcharge = bill * 0.15;  
        bill += surcharge;  
    }  
  
    if (bill < 100)  
        bill = 100;  
  
    printf("\nCustomer ID: %d\n", custId);  
    printf("Customer Name: %s\n", custName);  
    printf("Total Bill: Rs. %.2f\n", bill);  
  
    return 0;  
}
```

Output: LA2-Q19.exe



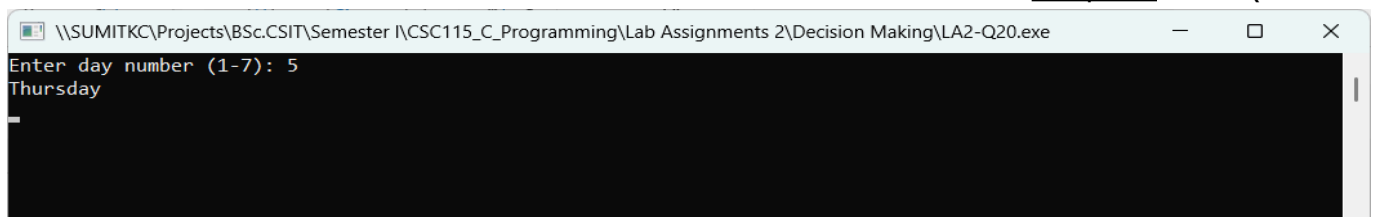
```
\\SUMITKC\Projects\BSc.CSIT\Semester I\CSC115_C_Programming\Lab Assignments 2\Decision Making\LA2-Q19.exe  
Enter customer ID: 80247326  
Enter customer name: Sumit  
Enter units consumed: 209  
  
Customer ID: 80247326  
Customer Name: Sumit  
Total Bill: Rs. 313.50
```


20. Write a program in C to read any day number in integer and display day name in the word.

Source Code: LA2-Q20.c

```
#include <stdio.h>
int main()
{
    int day;
    printf("Enter day number (1-7): ");
    scanf("%d", &day);
    switch (day) {
        case 1:
            printf("Monday\n");
            break;
        case 2:
            printf("Tuesday\n");
            break;
        case 3:
            printf("Wednesday\n");
            break;
        case 4:
            printf("Thursday\n");
            break;
        case 5:
            printf("Friday\n");
            break;
        case 6:
            printf("Saturday\n");
            break;
        case 7:
            printf("Sunday\n");
            break;
        default:
            printf("Invalid day number.\n");
    }
    return 0;
}
```

Output: LA2-Q20.exe



```
\\SUMITKC\Projects\BSc.CSIT\Semester I\CSC115_C_Programming\Lab Assignments 2\Decision Making\LA2-Q20.exe
Enter day number (1-7): 5
Thursday
```

21. Write a program in C to read any digit, displayed in the word.

Source Code: LA2-Q21.c

```
#include <stdio.h>

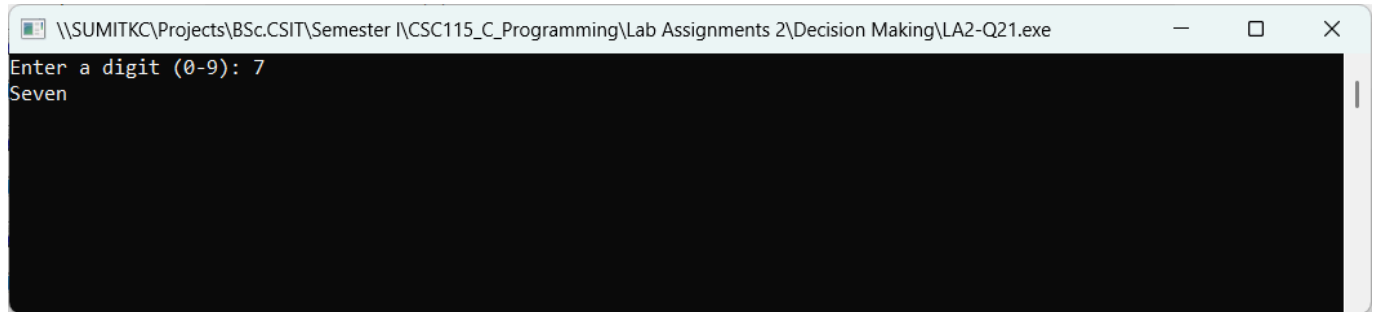
int main()
{
    int digit;

    printf("Enter a digit (0-9): ");
    scanf("%d", &digit);

    switch (digit) {
        case 0:
            printf("Zero\n");
            break;
        case 1:
            printf("One\n");
            break;
        case 2:
            printf("Two\n");
            break;
        case 3:
            printf("Three\n");
            break;
        case 4:
            printf("Four\n");
            break;
        case 5:
            printf("Five\n");
            break;
        case 6:
            printf("Six\n");
            break;
        case 7:
            printf("Seven\n");
            break;
        case 8:
            printf("Eight\n");
            break;
        case 9:
            printf("Nine\n");
            break;
        default:
            printf("Invalid digit.\n");
    }
}
```

```
}  
  
    return 0;  
}
```

Output: LA2-Q21.exe



22. Write a program in C which is a Menu-Driven Program to compute the area of the various geometrical shapes.

Source Code: LA2-Q22.c

```
#include <stdio.h>

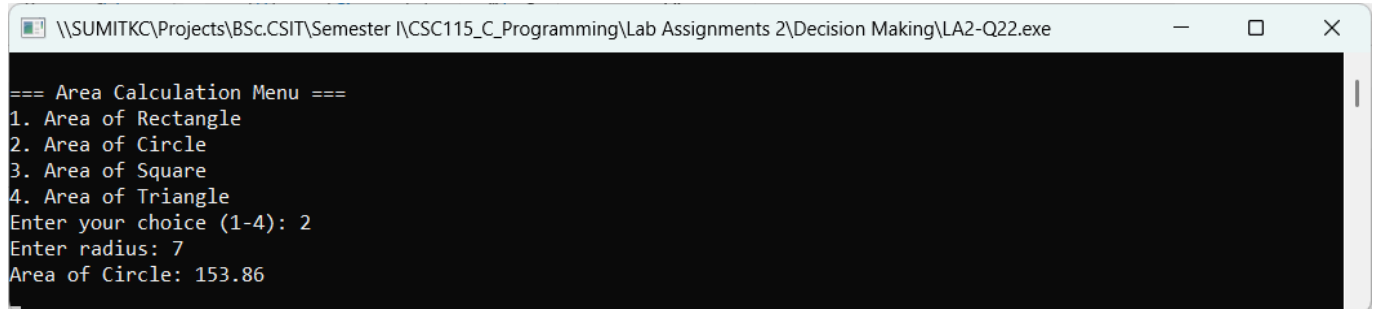
int main()
{
    int choice;
    float area, length, breadth, radius, side, base, height;

    printf("\n≡≡≡ Area Calculation Menu ≡≡≡");
    printf("\n1. Area of Rectangle\n");
    printf("2. Area of Circle\n");
    printf("3. Area of Square\n");
    printf("4. Area of Triangle\n");
    printf("Enter your choice (1-4): ");
    scanf("%d", &choice);

    switch (choice) {
        case 1:
            printf("Enter length and breadth: ");
            scanf("%f %f", &length, &breadth);
            area = length * breadth;
            printf("Area of Rectangle: %.2f\n", area);
            break;
        case 2:
            printf("Enter radius: ");
            scanf("%f", &radius);
            area = 3.14 * radius * radius;
            printf("Area of Circle: %.2f\n", area);
            break;
        case 3:
            printf("Enter side: ");
            scanf("%f", &side);
            area = side * side;
            printf("Area of Square: %.2f\n", area);
            break;
        case 4:
            printf("Enter base and height: ");
            scanf("%f %f", &base, &height);
            area = 0.5 * base * height;
            printf("Area of Triangle: %.2f\n", area);
            break;
        default:
```

```
        printf("Invalid choice.\n");  
    }  
  
    return 0;  
}
```

Output: LA2-Q22.exe



```
\\SUMITKC\Projects\BSc.CSIT\Semester I\CSC115_C_Programming\Lab Assignments 2\Decision Making\LA2-Q22.exe  
=== Area Calculation Menu ===  
1. Area of Rectangle  
2. Area of Circle  
3. Area of Square  
4. Area of Triangle  
Enter your choice (1-4): 2  
Enter radius: 7  
Area of Circle: 153.86
```

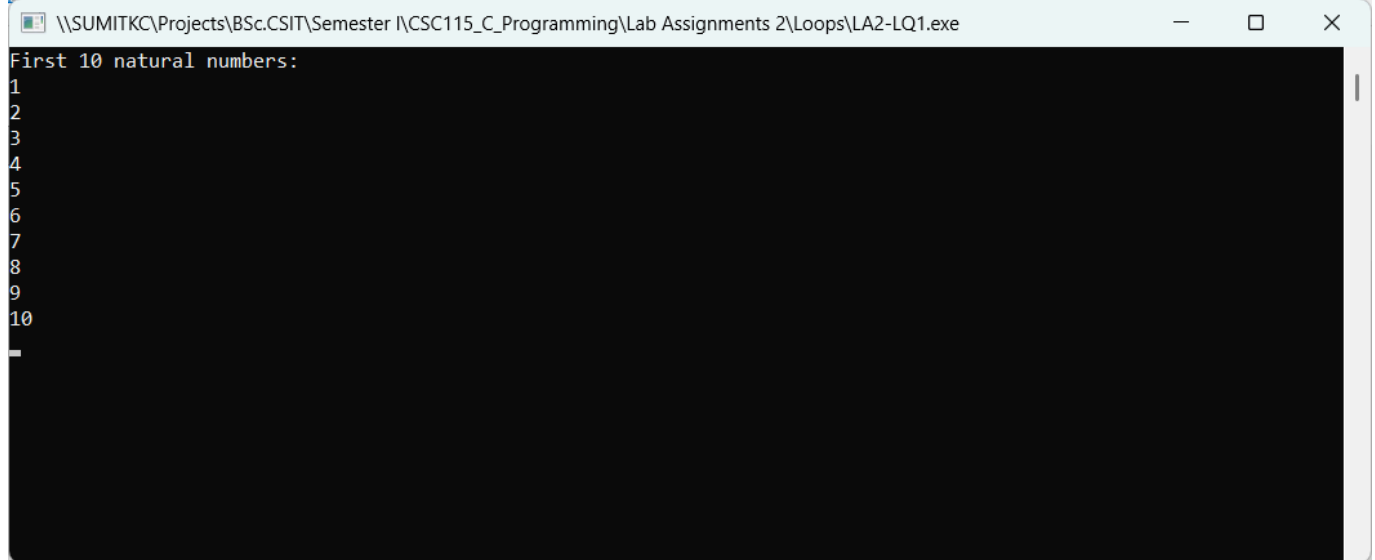
LOOPS

1. Write a program in C to display the first 10 natural numbers.

Source Code: LA2-LQ1.c

```
#include <stdio.h>
int main()
{
    int i;
    printf("First 10 natural numbers:\n");
    for (i = 1; i ≤ 10; i++) {
        printf("%d\n", i);
    }
    return 0;
}
```

Output: LA2-LQ1.exe



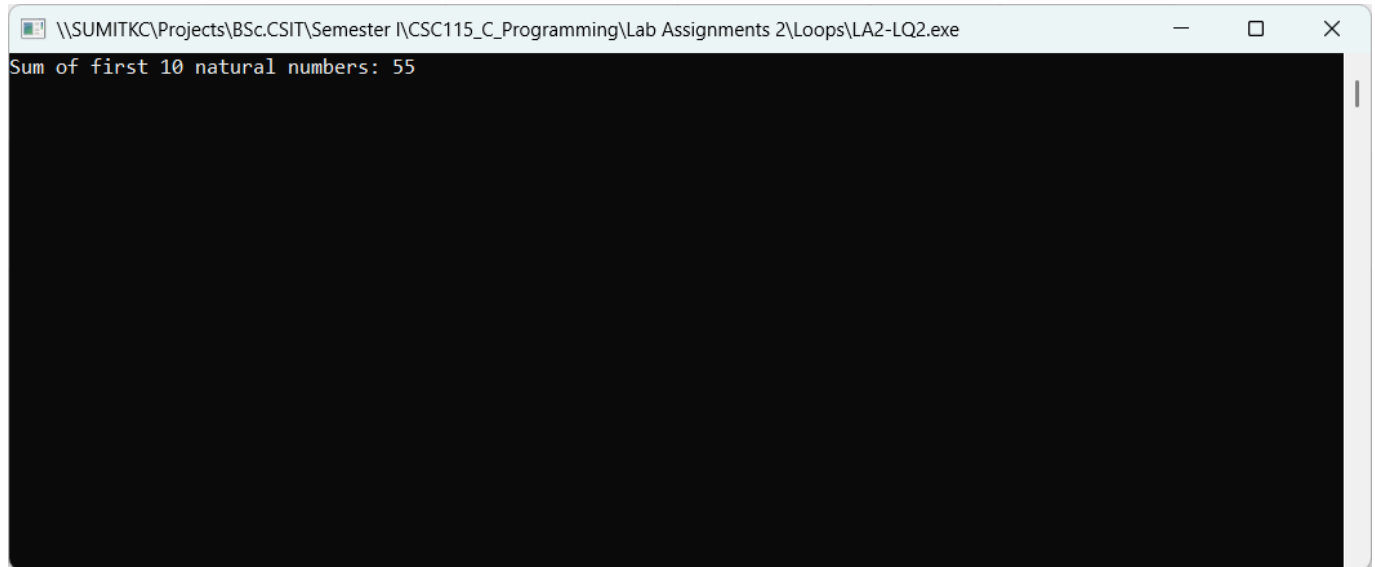
```
\\SUMITKC\Projects\BSc.CSIT\Semester I\CSC115_C_Programming\Lab Assignments 2\Loops\LA2-LQ1.exe
First 10 natural numbers:
1
2
3
4
5
6
7
8
9
10
```

2. Write a C program to find the sum of the first 10 natural numbers.

Source Code: LA2-LQ2.c

```
#include <stdio.h>
int main()
{
    int i, sum = 0;
    for (i = 1; i ≤ 10; i++) {
        sum += i;
    }
    printf("Sum of first 10 natural numbers: %d\n", sum);
    return 0;
}
```

Output: LA2-LQ2.exe

A screenshot of a Windows command prompt window. The title bar reads "\\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Loops\\LA2-LQ2.exe". The window content shows the output of the program: "Sum of first 10 natural numbers: 55". The rest of the window is black.

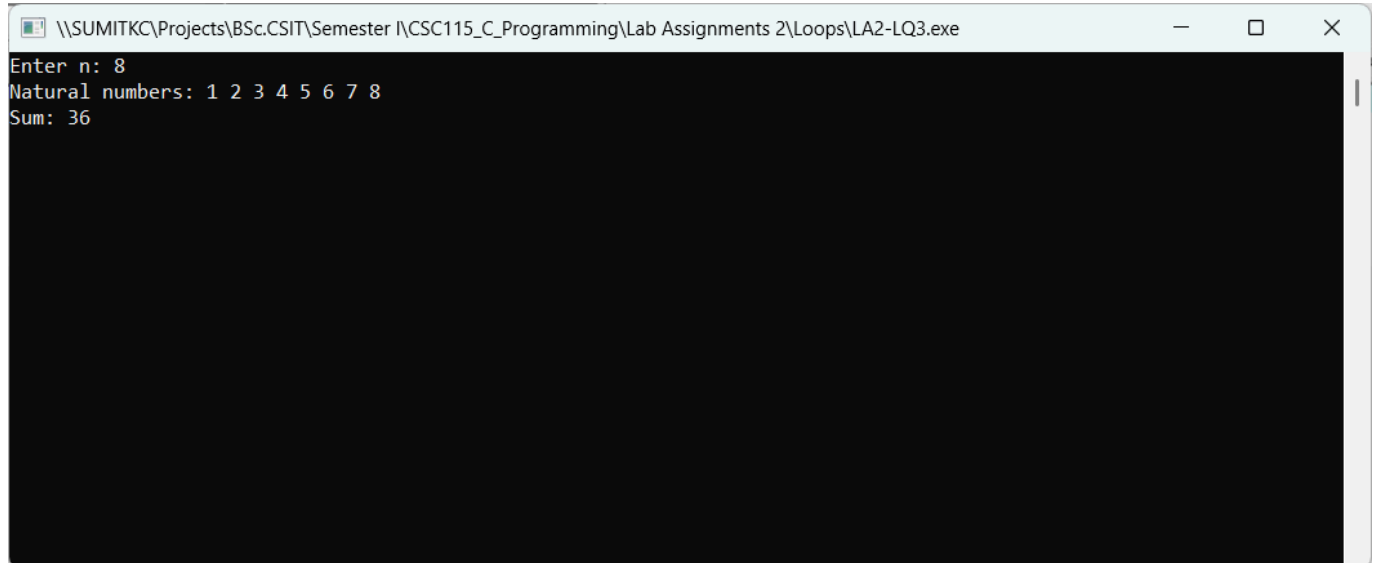
```
\\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Loops\\LA2-LQ2.exe
Sum of first 10 natural numbers: 55
```

3. Write a program in C to display n terms of natural numbers and their sum.

Source Code: LA2-LQ3.c

```
#include <stdio.h>
int main()
{
    int n, i, sum = 0;
    printf("Enter n: ");
    scanf("%d", &n);
    printf("Natural numbers: ");
    for (i = 1; i ≤ n; i++) {
        printf("%d ", i);
        sum += i;
    }
    printf("\nSum: %d\n", sum);
    return 0;
}
```

Output: LA2-LQ3.exe



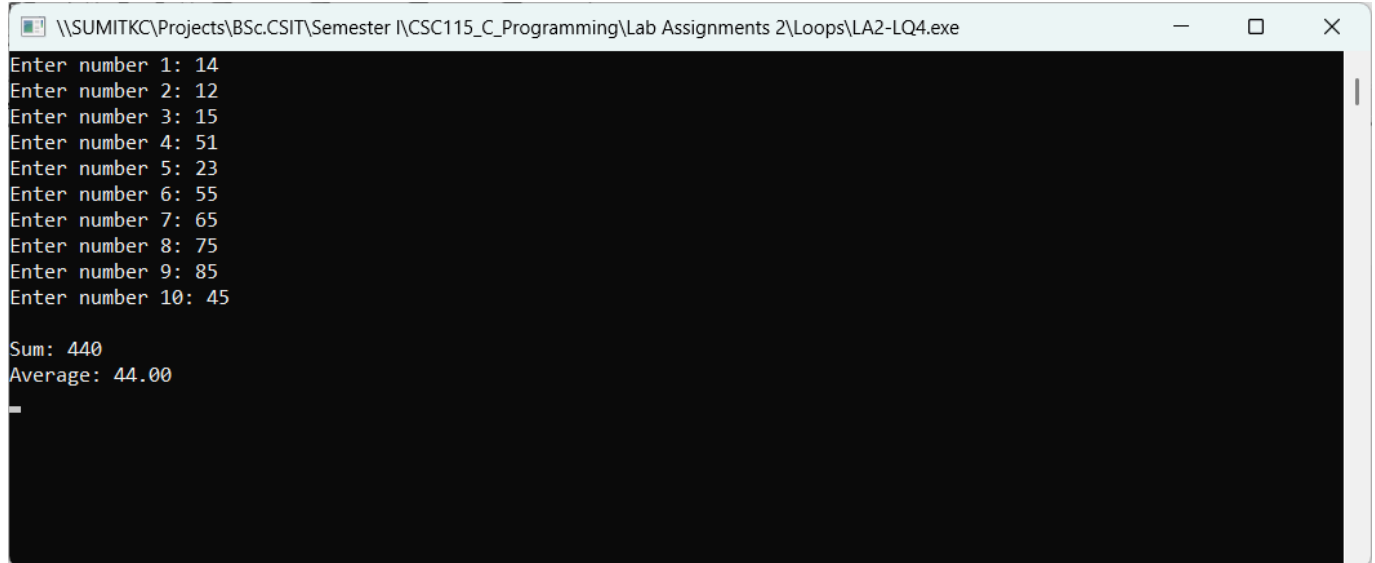
```
\\SUMITKC\Projects\BSc.CSIT\Semester I\CSC115_C_Programming\Lab Assignments 2\Loops\LA2-LQ3.exe
Enter n: 8
Natural numbers: 1 2 3 4 5 6 7 8
Sum: 36
```


4. Write a program in C to read 10 numbers from the keyboard and find their sum and average.

Source Code: LA2-LQ4.c

```
#include <stdio.h>
int main()
{
    int i, num, sum = 0;
    float avg;
    for (i = 0; i < 10; i++) {
        printf("Enter number %d: ", i + 1);
        scanf("%d", &num);
        sum += num;
    }
    avg = (float)sum / 10;
    printf("\nSum: %d\n", sum);
    printf("Average: %.2f\n", avg);
    return 0;
}
```

Output: LA2-LQ4.exe



```
\\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Loops\\LA2-LQ4.exe
Enter number 1: 14
Enter number 2: 12
Enter number 3: 15
Enter number 4: 51
Enter number 5: 23
Enter number 6: 55
Enter number 7: 65
Enter number 8: 75
Enter number 9: 85
Enter number 10: 45

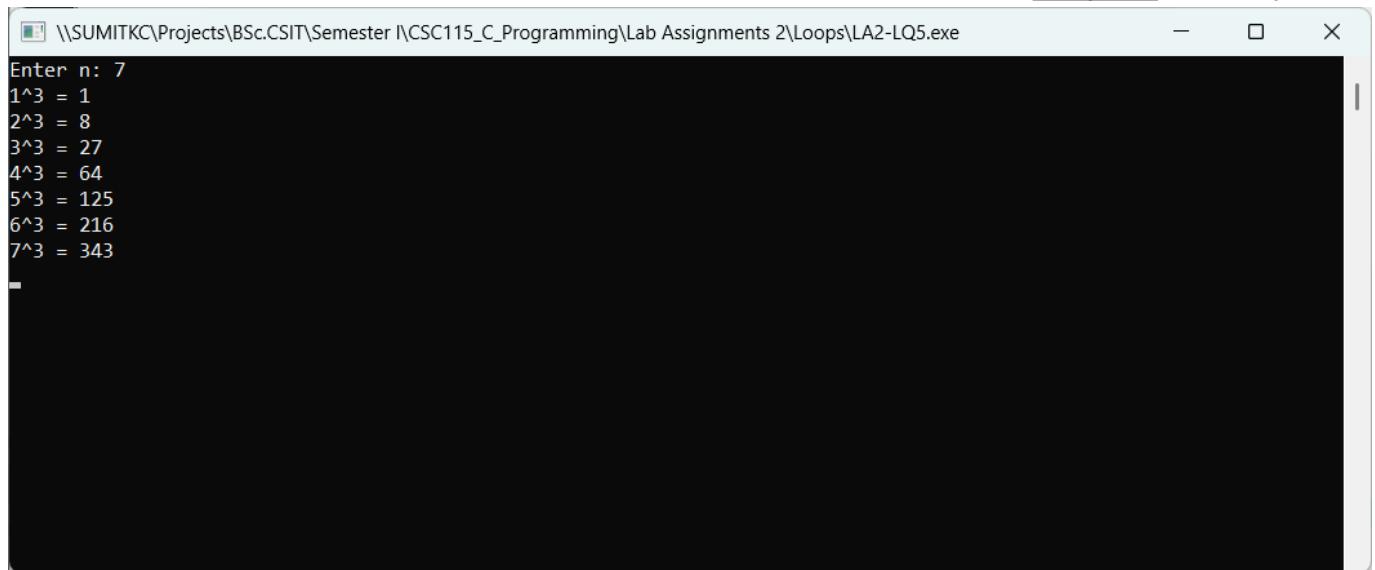
Sum: 440
Average: 44.00
```

5. Write a program in C to display the cube of the number upto given integer.

Source Code: LA2-LQ5.c

```
#include <stdio.h>
int main()
{
    int n, i;
    printf("Enter n: ");
    scanf("%d", &n);
    for (i = 1; i ≤ n; i++) {
        printf("%d^3 = %d\n", i, i * i * i);
    }
    return 0;
}
```

Output: LA2-LQ5.exe



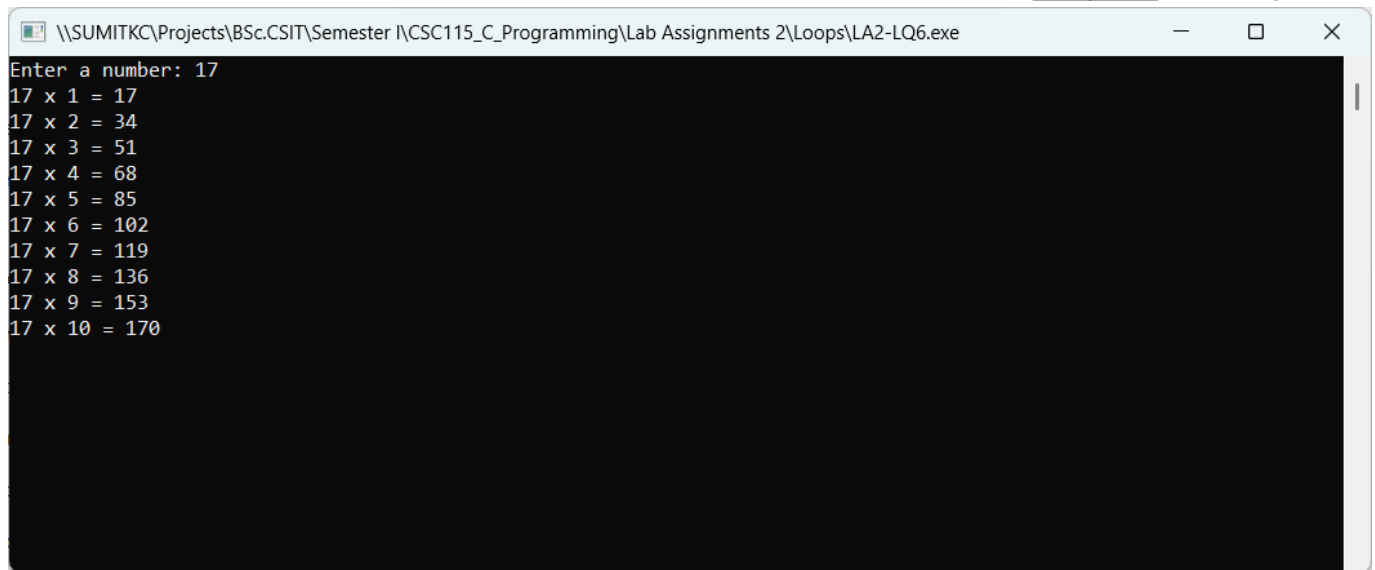
```
\\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Loops\\LA2-LQ5.exe
Enter n: 7
1^3 = 1
2^3 = 8
3^3 = 27
4^3 = 64
5^3 = 125
6^3 = 216
7^3 = 343
```

6. Write a program in C to display the multiplication table of a given integer.

Source Code: LA2-LQ6.c

```
#include <stdio.h>
int main()
{
    int n, i;
    printf("Enter a number: ");
    scanf("%d", &n);
    for (i = 1; i ≤ 10; i++) {
        printf("%d x %d = %d\n", n, i, n * i);
    }
    return 0;
}
```

Output: LA2-LQ6.exe



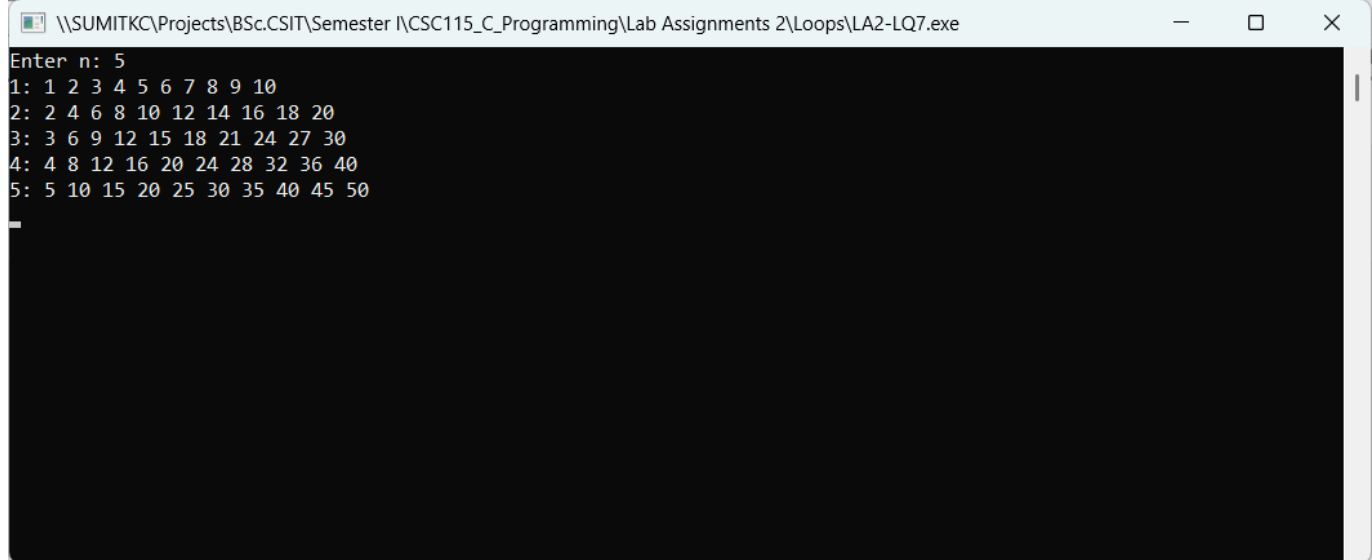
```
\\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Loops\\LA2-LQ6.exe
Enter a number: 17
17 x 1 = 17
17 x 2 = 34
17 x 3 = 51
17 x 4 = 68
17 x 5 = 85
17 x 6 = 102
17 x 7 = 119
17 x 8 = 136
17 x 9 = 153
17 x 10 = 170
```

7. Write a program in C to display the multiplication table vertically from 1 to n.

Source Code: LA2-LQ7.c

```
#include <stdio.h>
int main()
{
    int n, i, j;
    printf("Enter n: ");
    scanf("%d", &n);
    for (i = 1; i ≤ n; i++) {
        printf("%d: ", i);
        for (j = 1; j ≤ 10; j++) {
            printf("%d ", i * j);
        }
        printf("\n");
    }
    return 0;
}
```

Output: LA2-LQ7.exe



```
\\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Loops\\LA2-LQ7.exe
Enter n: 5
1: 1 2 3 4 5 6 7 8 9 10
2: 2 4 6 8 10 12 14 16 18 20
3: 3 6 9 12 15 18 21 24 27 30
4: 4 8 12 16 20 24 28 32 36 40
5: 5 10 15 20 25 30 35 40 45 50
```

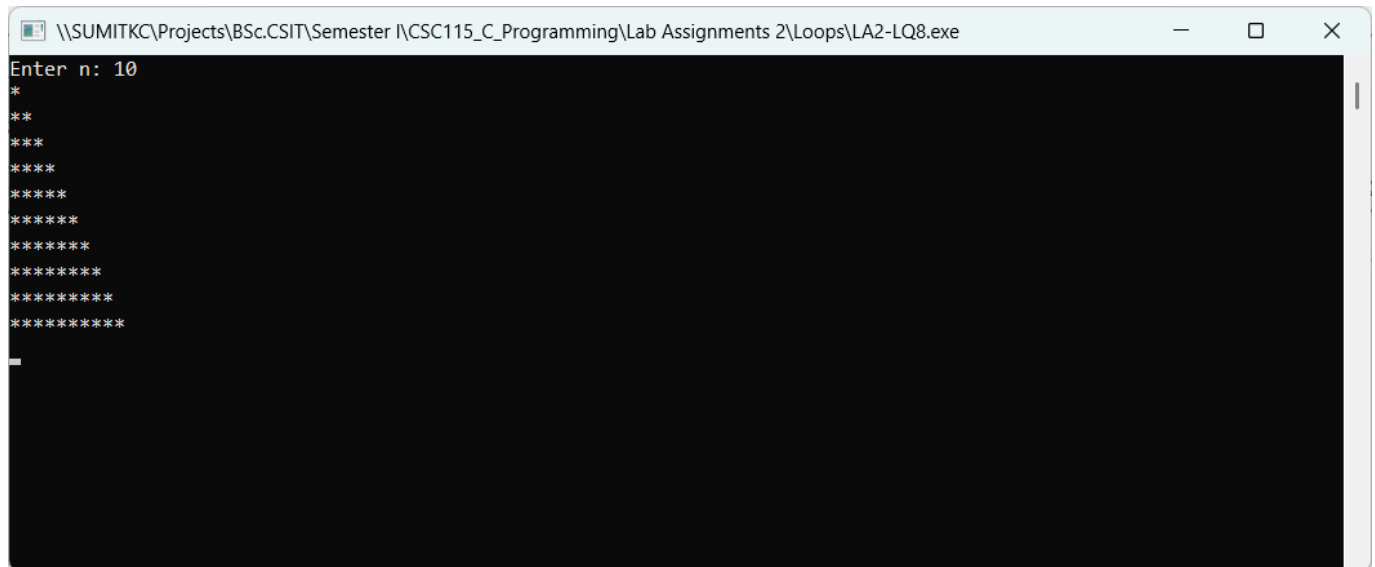
8. Write a program in C to display the pattern like a right angle triangle using an asterisk.

```
*  
**  
***  
****
```

Source Code: LA2-LQ8.c

```
#include <stdio.h>  
int main()  
{  
    int n, i, j;  
    printf("Enter n: ");  
    scanf("%d", &n);  
    for (i = 1; i ≤ n; i++) {  
        for (j = 1; j ≤ i; j++) {  
            printf("*");  
        }  
        printf("\n");  
    }  
    return 0;  
}
```

Output: LA2-LQ8.exe



```
\\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Loops\\LA2-LQ8.exe  
Enter n: 10  
*  
**  
***  
****  
*****  
*****  
*****  
*****  
*****  
*****  
*****
```

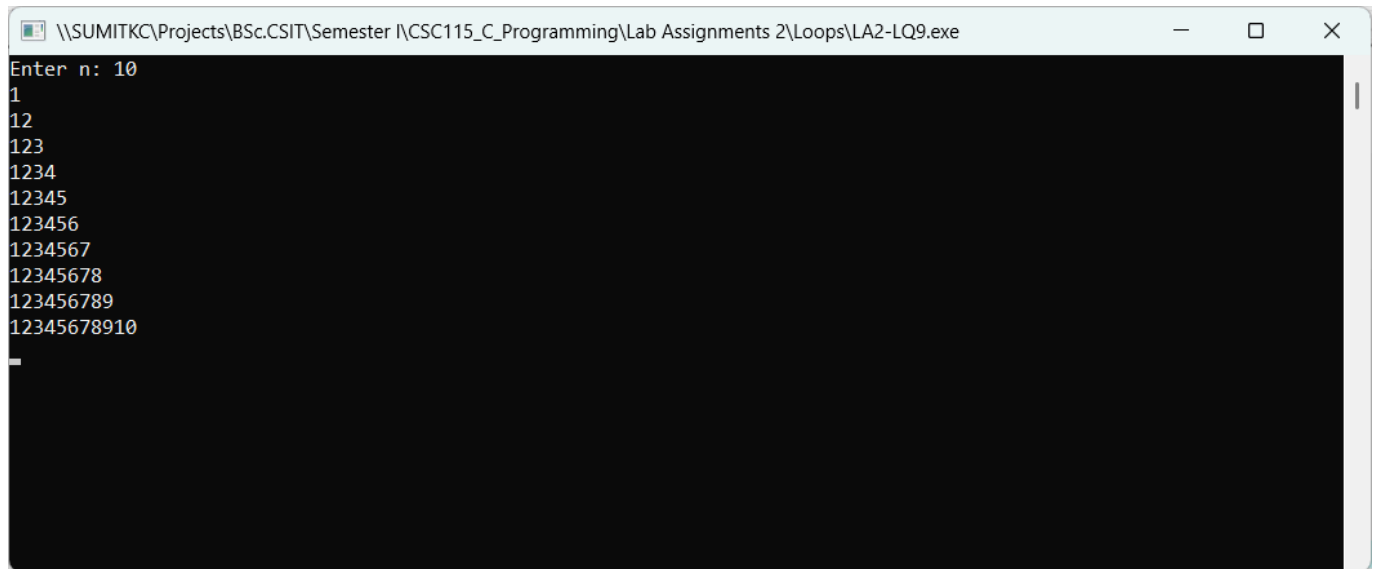
9. Write a program in C to display the pattern like a right angle triangle with a number.

```
1
12
123
1234
```

Source Code: LA2-LQ9.c

```
#include <stdio.h>
int main()
{
    int n, i, j;
    printf("Enter n: ");
    scanf("%d", &n);
    for (i = 1; i ≤ n; i++) {
        for (j = 1; j ≤ i; j++) {
            printf("%d", j);
        }
        printf("\n");
    }
    return 0;
}
```

Output: LA2-LQ9.exe



```
\\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Loops\\LA2-LQ9.exe
Enter n: 10
1
12
123
1234
12345
123456
1234567
12345678
123456789
12345678910
```

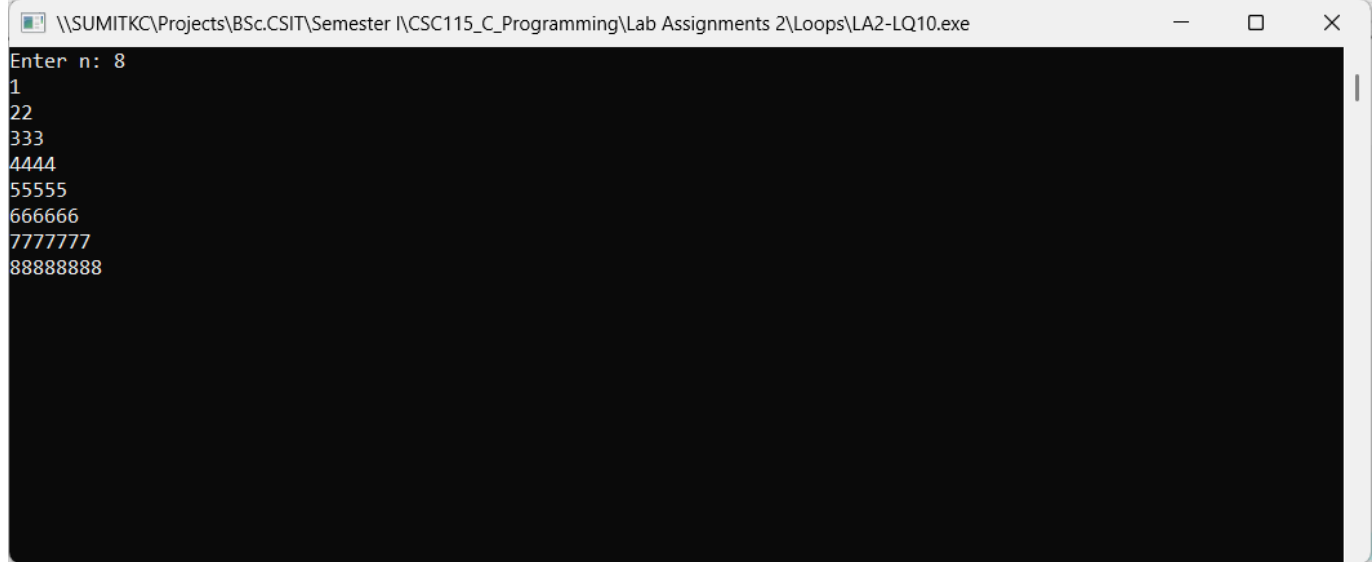
10. Write a program in C to make such a pattern like a right angle triangle with a number which will repeat a number in a row.

```
1
22
333
4444
```

Source Code: LA2-lQ10.c

```
#include <stdio.h>
int main()
{
    int n, i, j;
    printf("Enter n: ");
    scanf("%d", &n);
    for (i = 1; i ≤ n; i++) {
        for (j = 1; j ≤ i; j++) {
            printf("%d", i);
        }
        printf("\n");
    }
    return 0;
}
```

Output: LA2-LQ10.exe



```
\\SUMITKC\Projects\BSc.CSIT\Semester I\CSC115_C_Programming\Lab Assignments 2\Loops\LA2-LQ10.exe
Enter n: 8
1
22
333
4444
55555
666666
7777777
88888888
```

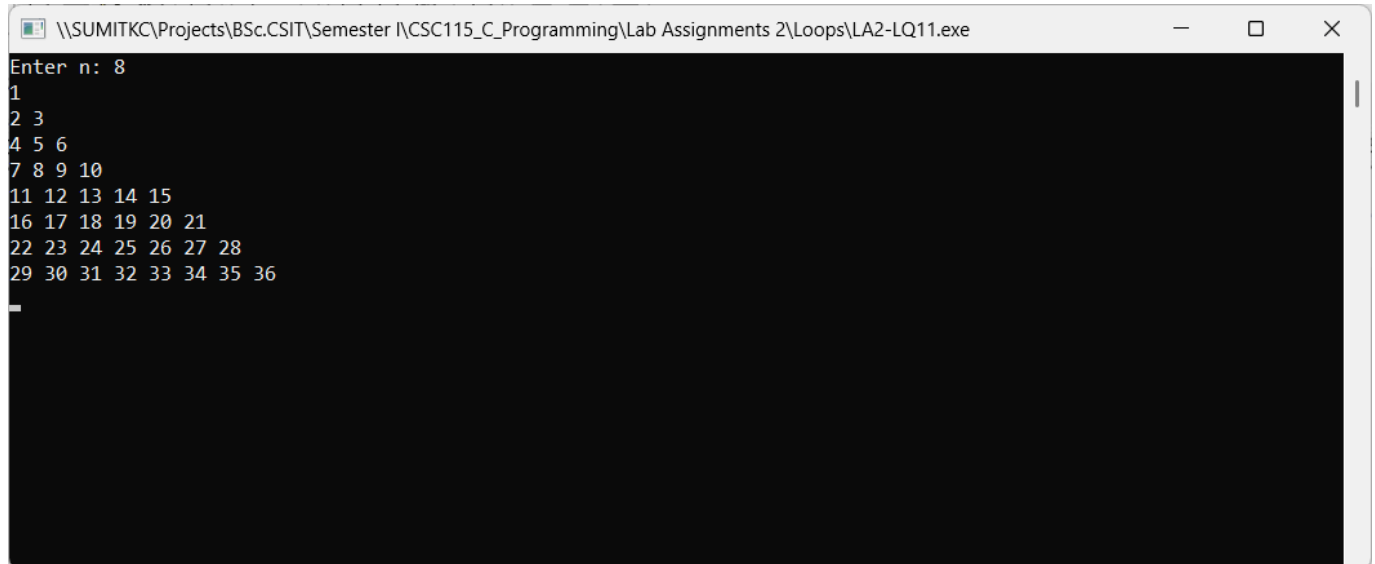
11. Write a program in C to make such a pattern like a right angle triangle with the number increased by 1.

```
1
2 3
4 5 6
7 8 9 10
```

Source Code: LA2-lQ11.c

```
#include <stdio.h>
int main()
{
    int n, i, j, num = 1;
    printf("Enter n: ");
    scanf("%d", &n);
    for (i = 1; i ≤ n; i++) {
        for (j = 1; j ≤ i; j++) {
            printf("%d ", num);
            num++;
        }
        printf("\n");
    }
    return 0;
}
```

Output: LA2-LQ11.exe



```
\\SUMITKC\Projects\BSc.CSIT\Semester I\CSC115_C_Programming\Lab Assignments 2\Loops\LA2-LQ11.exe
Enter n: 8
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31 32 33 34 35 36
```

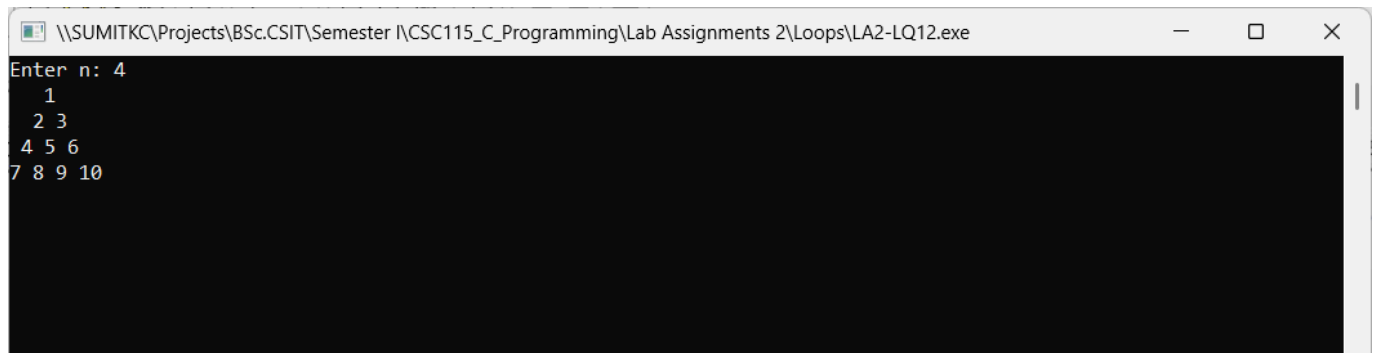

12. Write a program in C to make such a pattern like a pyramid with numbers increased by 1.

```
1
2 3
4 5 6
7 8 9 10
```

Source Code: LA2-lQ12.c

```
#include <stdio.h>
int main()
{
    int n, i, j, num = 1;
    printf("Enter n: ");
    scanf("%d", &n);
    for (i = 1; i ≤ n; i++) {
        for (j = 1; j ≤ n - i; j++) {
            printf(" ");
        }
        for (j = 1; j ≤ i; j++) {
            printf("%d ", num);
            num++;
        }
        printf("\n");
    }
    return 0;
}
```

Output: LA2-LQ12.exe



```
\\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Loops\\LA2-LQ12.exe
Enter n: 4
1
2 3
4 5 6
7 8 9 10
```

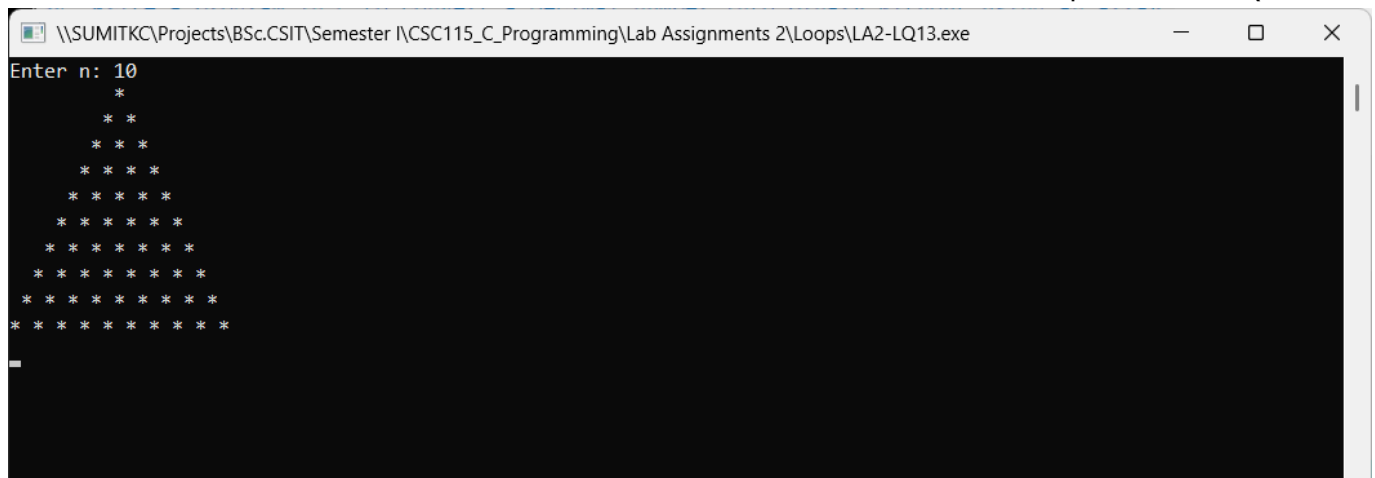
13. Write a program in C to make such a pattern like a pyramid with an asterisk.

```
*  
* *  
* * *  
* * * *
```

Source Code: LA2-LQ13.c

```
#include <stdio.h>  
int main()  
{  
    int n, i, j;  
    printf("Enter n: ");  
    scanf("%d", &n);  
    for (i = 1; i ≤ n; i++) {  
        for (j = 1; j ≤ n - i; j++) {  
            printf(" ");  
        }  
        for (j = 1; j ≤ i; j++) {  
            printf("* ");  
        }  
        printf("\n");  
    }  
    return 0;  
}
```

Output: LA2-LQ13.exe




```
\\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Loops\\LA2-LQ13.exe  
Enter n: 10  
*  
* *  
* * *  
* * * *  
* * * * *  
* * * * *  
* * * * *  
* * * * *  
* * * * *  
* * * * *  
* * * * *  
* * * * *  
* * * * *  
* * * * *  
* * * * *
```

14. Write a C program to calculate the factorial of a given number.

Source Code: LA2-LQ14.c

```
#include <stdio.h>
int main()
{
    int n, i, fact = 1;
    printf("Enter a number: ");
    scanf("%d", &n);
    for (i = 1; i ≤ n; i++) {
        fact *= i;
    }
    printf("Factorial of %d is %d\n", n, fact);
    return 0;
}
```

Output: LA2-LQ14.exe



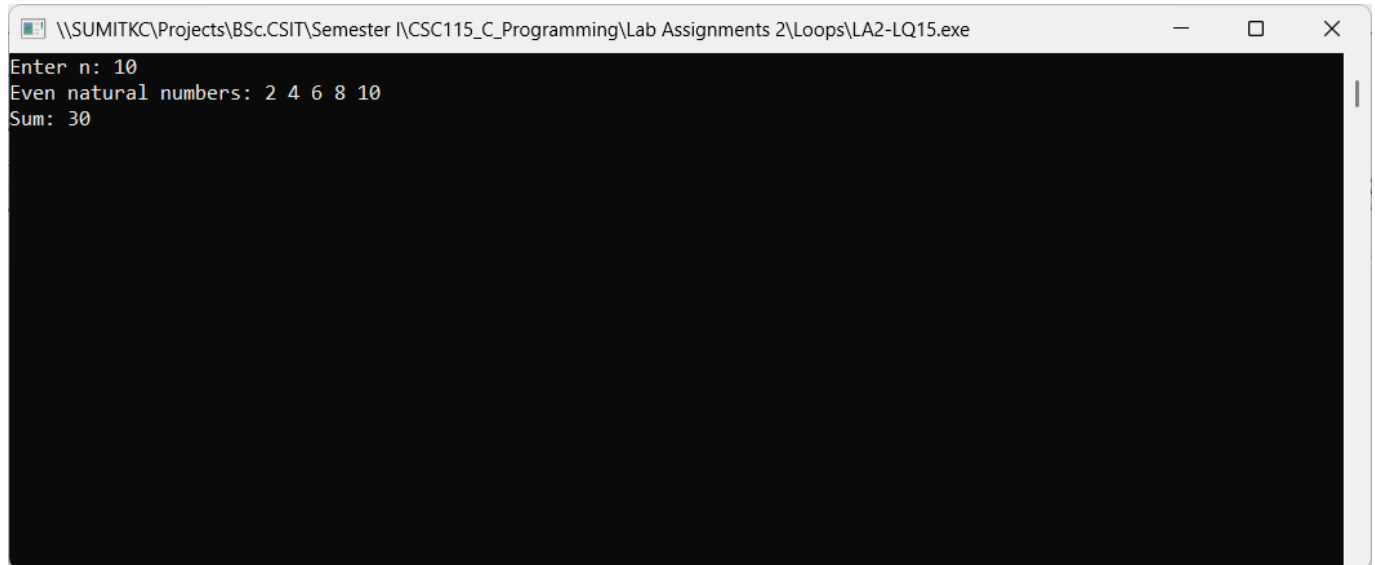
The screenshot shows a Windows command prompt window titled "\\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Loops\\LA2-LQ14.exe". The window has standard Windows window controls (minimize, maximize, close) in the top right corner. The command prompt shows the following text: "Enter a number: 8" followed by "Factorial of 8 is 40320". The rest of the window is black, indicating that the output has been scrolled out of view.

15. Write a program in C to display the n terms of even natural numbers and their sum.

Source Code: LA2-LQ15.c

```
#include <stdio.h>
int main()
{
    int n, i, sum = 0;
    printf("Enter n: ");
    scanf("%d", &n);
    printf("Even natural numbers: ");
    for (i = 1; i ≤ n; i++) {
        if (i % 2 == 0) {
            printf("%d ", i);
            sum += i;
        }
    }
    printf("\nSum: %d\n", sum);
    return 0;
}
```

Output: LA2-LQ15.exe



```
\\SUMITKC\Projects\BSc.CSIT\Semester I\CSC115_C_Programming\Lab Assignments 2\Loops\LA2-LQ15.exe
Enter n: 10
Even natural numbers: 2 4 6 8 10
Sum: 30
```

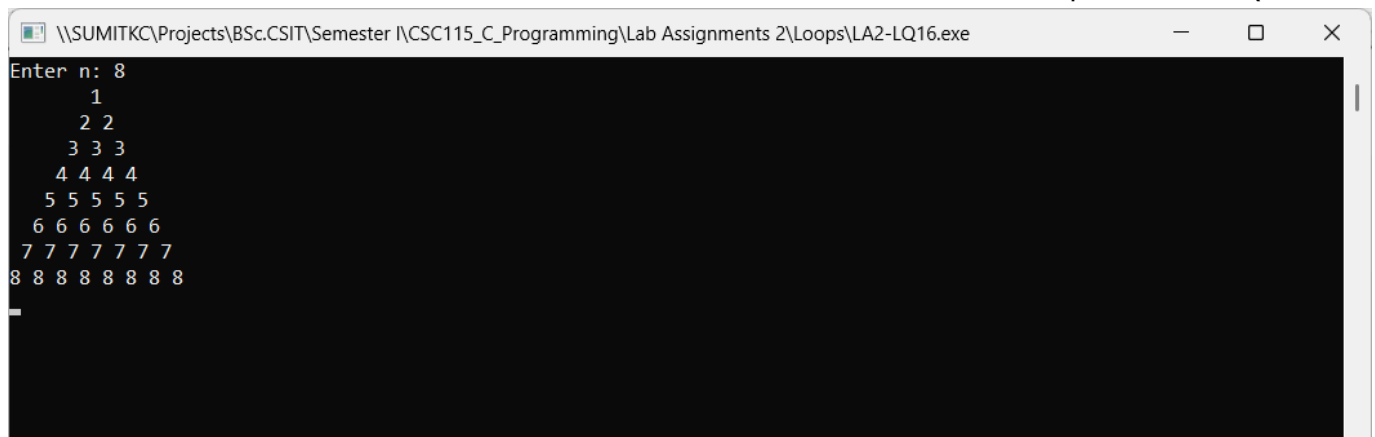
16. Write a program in C to make such a pattern like a pyramid with a number which will repeat the number in the same row.

```
1
2 2
3 3 3
4 4 4 4
```

Source Code: LA2-lQ16.c

```
#include <stdio.h>
int main()
{
    int n, i, j;
    printf("Enter n: ");
    scanf("%d", &n);
    for (i = 1; i ≤ n; i++) {
        for (j = 1; j ≤ n - i; j++) {
            printf(" ");
        }
        for (j = 1; j ≤ i; j++) {
            printf("%d ", i);
        }
        printf("\n");
    }
    return 0;
}
```

Output: LA2-LQ16.exe



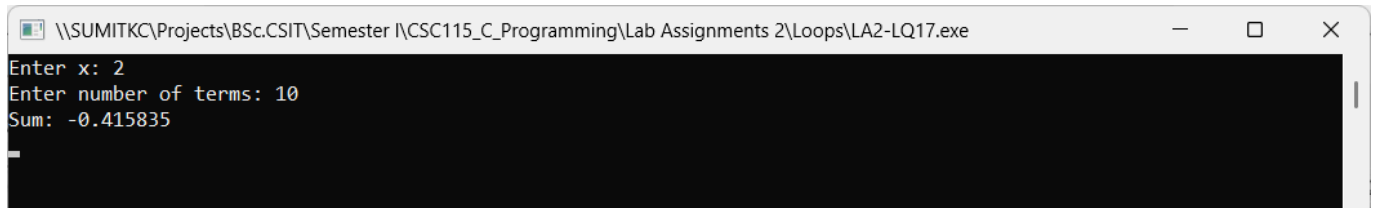
```
\\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Loops\\LA2-LQ16.exe
Enter n: 8
 1
 2 2
 3 3 3
 4 4 4 4
 5 5 5 5 5
 6 6 6 6 6 6
 7 7 7 7 7 7 7
 8 8 8 8 8 8 8 8
```

17. Write a program in C to find the sum of the series [$1 - X^2/2! + X^4/4! - \dots$].

Source Code: LA2-LQ17.c

```
#include <stdio.h>
int main()
{
    int n, i;
    double x, sum = 1.0, term;
    long fact;
    printf("Enter x: ");
    scanf("%lf", &x);
    printf("Enter number of terms: ");
    scanf("%d", &n);
    for (i = 1; i < n; i++) {
        fact = 1;
        int j;
        for (j = 1; j ≤ 2 * i; j++) {
            fact *= j;
        }
        term = 1.0;
        for (j = 0; j < 2 * i; j++) {
            term *= x;
        }
        if (i % 2 == 1) {
            sum -= term / fact;
        } else {
            sum += term / fact;
        }
    }
    printf("Sum: %.6f\n", sum);
    return 0;
}
```

Output: LA2-LQ17.exe



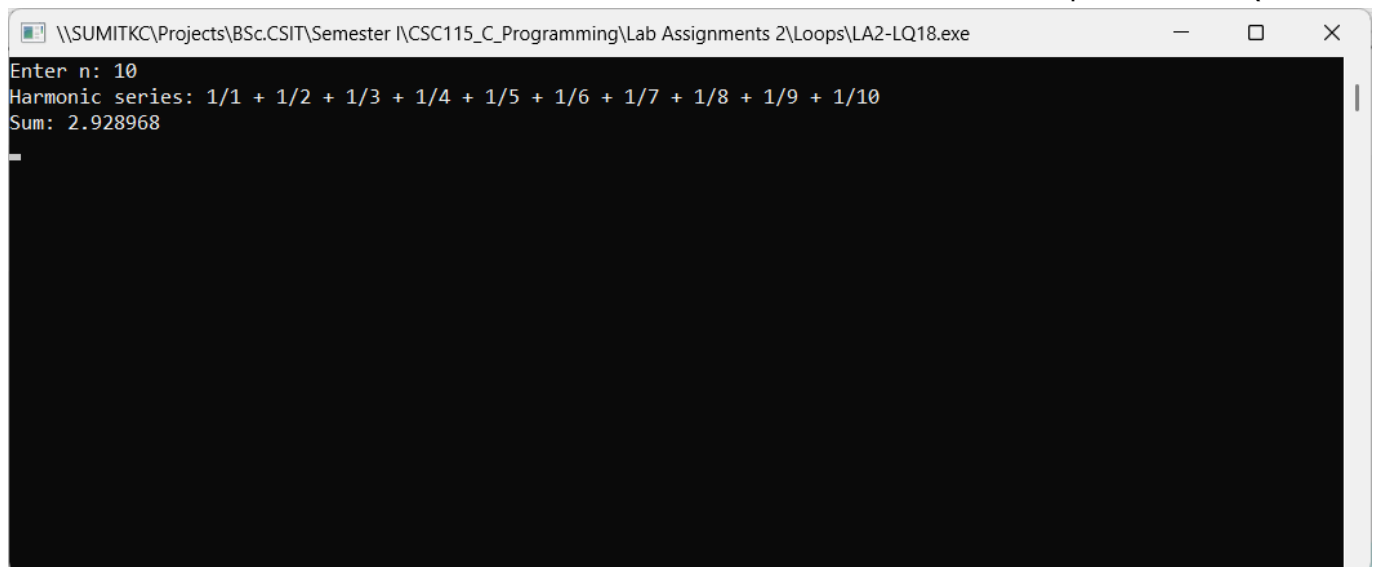
```
\\SUMITKC\Projects\BSc.CSIT\Semester I\CSC115_C_Programming\Lab Assignments 2\Loops\LA2-LQ17.exe
Enter x: 2
Enter number of terms: 10
Sum: -0.415835
```

18. Write a program in C to display the n terms of harmonic series and their sum. $1 + 1/2 + 1/3 + 1/4 + 1/5 \dots 1/n$ terms.

Source Code: LA2-LQ18.c

```
#include <stdio.h>
int main()
{
    int n, i;
    double sum = 0.0;
    printf("Enter n: ");
    scanf("%d", &n);
    printf("Harmonic series: ");
    for (i = 1; i ≤ n; i++) {
        printf("1/%d ", i);
        if (i < n) printf("+ ");
        sum += 1.0 / i;
    }
    printf("\nSum: %.6f\n", sum);
    return 0;
}
```

Output: LA2-LQ18.exe



The screenshot shows a Windows command prompt window titled "LA2-LQ18.exe". The window's title bar includes the file path: "\\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Loops\\LA2-LQ18.exe". The command prompt displays the following output:

```
Enter n: 10
Harmonic series: 1/1 + 1/2 + 1/3 + 1/4 + 1/5 + 1/6 + 1/7 + 1/8 + 1/9 + 1/10
Sum: 2.928968
```

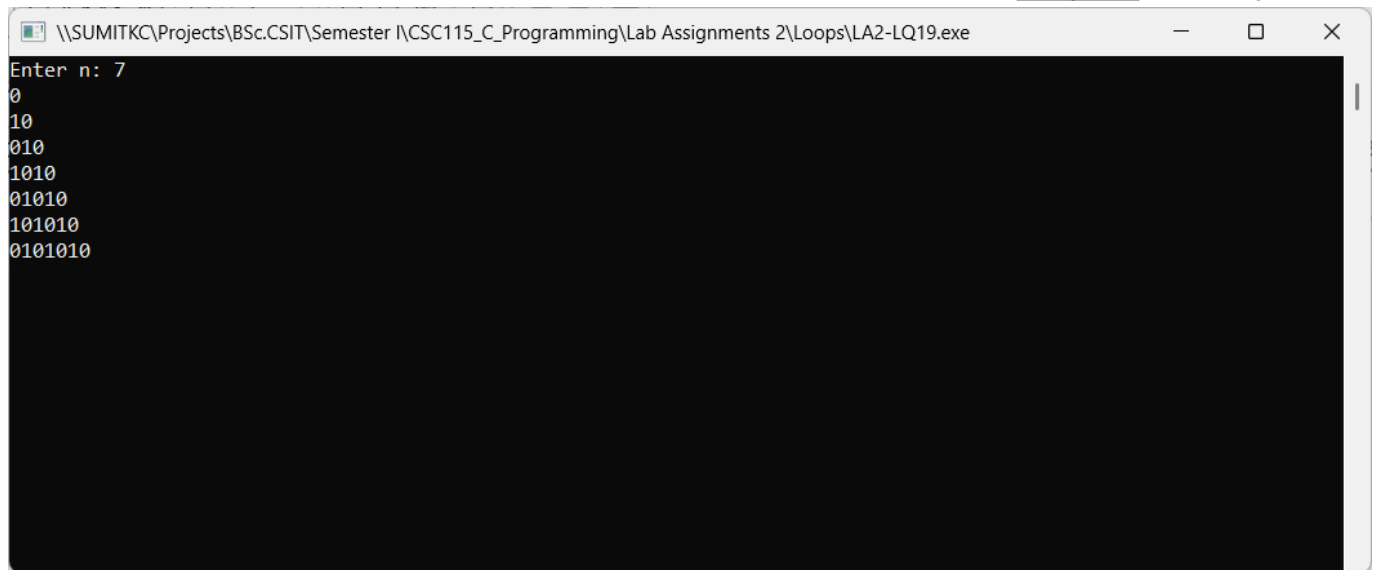
19. Write a program in C to print the Floyd's Triangle.

```
1
01
101
0101
10101
```

Source Code: LA2-LQ19.c

```
#include <stdio.h>
int main()
{
    int n, i, j;
    printf("Enter n: ");
    scanf("%d", &n);
    for (i = 1; i ≤ n; i++) {
        for (j = 1; j ≤ i; j++) {
            printf("%d", (j + i) % 2);
        }
        printf("\n");
    }
    return 0;
}
```

Output: LA2-LQ19.exe



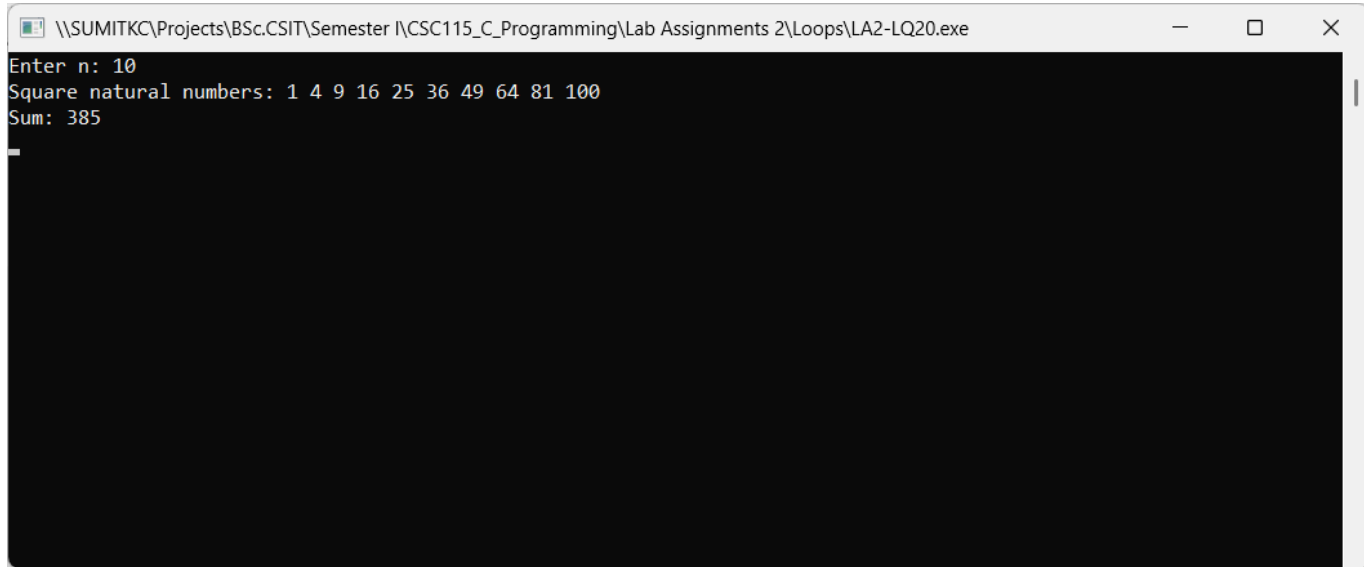
```
\\SUMITKC\Projects\BSc.CSIT\Semester I\CSC115_C_Programming\Lab Assignments 2\Loops\LA2-LQ19.exe
Enter n: 7
0
10
010
1010
01010
101010
0101010
```


20. Write a program in C to display the n terms of square natural numbers and their sum.

Source Code: LA2-LQ20.c

```
#include <stdio.h>
int main()
{
    int n, i, sum = 0;
    printf("Enter n: ");
    scanf("%d", &n);
    printf("Square natural numbers: ");
    for (i = 1; i ≤ n; i++) {
        printf("%d ", i * i);
        sum += i * i;
    }
    printf("\nSum: %d\n", sum);
    return 0;
}
```

Output: LA2-LQ20.exe



```
\\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Loops\\LA2-LQ20.exe
Enter n: 10
Square natural numbers: 1 4 9 16 25 36 49 64 81 100
Sum: 385
```

21. Write a program in C to find the sum of the series $1 + 11 + 111 + 1111 + \dots$ n terms. Test

Data :

Input the number of terms : 5

Expected Output :

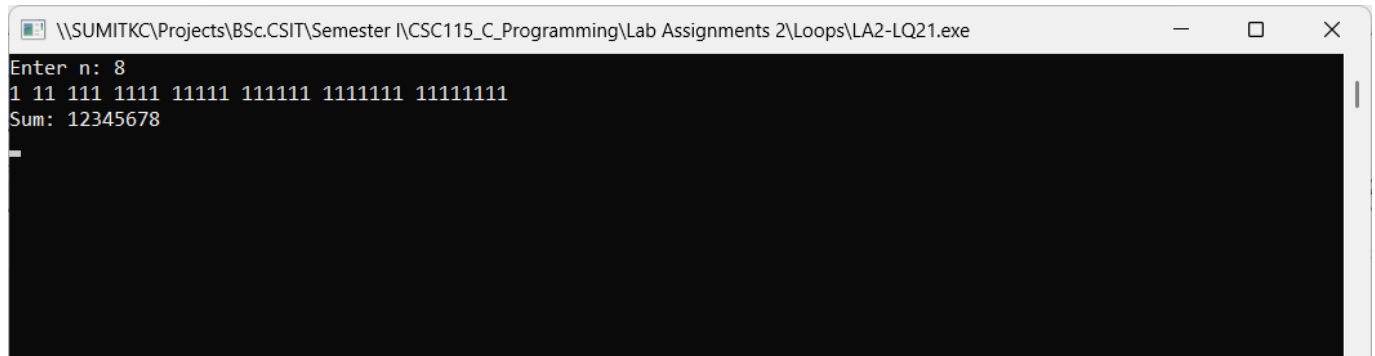
1 + 11 + 111 + 1111 + 11111

The Sum is : 12345

Source Code: LA2-lQ21.c

```
#include <stdio.h>
int main()
{
    int n, i, num, sum = 0;
    printf("Enter n: ");
    scanf("%d", &n);
    for (i = 1; i ≤ n; i++) {
        num = 0;
        int j;
        for (j = 0; j < i; j++) {
            num = num * 10 + 1;
        }
        sum += num;
        printf("%d ", num);
    }
    printf("\nSum: %d\n", sum);
    return 0;
}
```

Output: LA2-LQ21.exe



```
\\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Loops\\LA2-LQ21.exe
Enter n: 8
1 11 111 1111 11111 111111 1111111 11111111
Sum: 12345678
```

22. Write a c program to check whether a given number is a perfect number or not.

Test Data :

Input the number : 56

Expected Output :

The positive divisor : 1 2 4 7 8 14 28

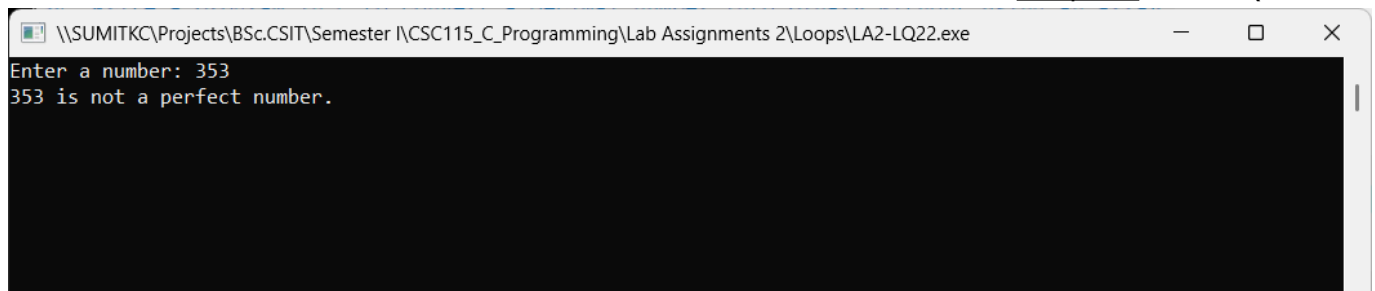
The sum of the divisor is : 64

So, the number is not perfect.

Source Code: LA2-lQ22.c

```
#include <stdio.h>
int main()
{
    int n, i, sum = 0;
    printf("Enter a number: ");
    scanf("%d", &n);
    for (i = 1; i < n; i++) {
        if (n % i == 0) {
            sum += i;
        }
    }
    if (sum == n) {
        printf("%d is a perfect number.\n", n);
    } else {
        printf("%d is not a perfect number.\n", n);
    }
    return 0;
}
```

Output: LA2-LQ22.exe



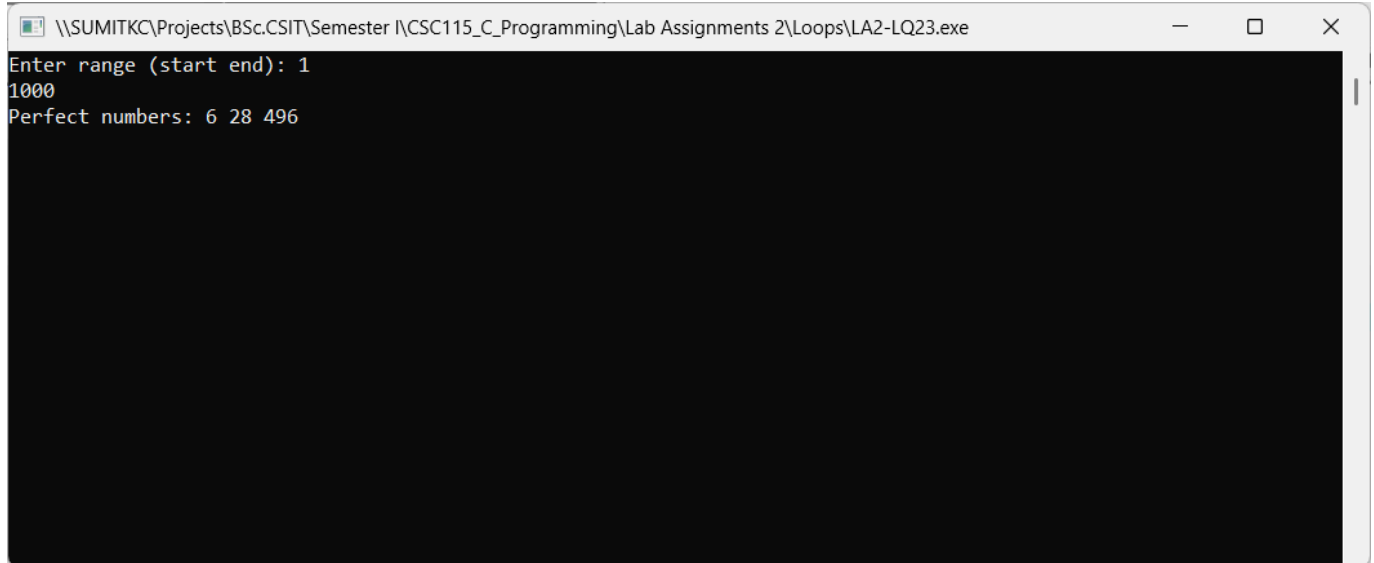
```
\\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Loops\\LA2-LQ22.exe
Enter a number: 353
353 is not a perfect number.
```

23. Write a c program to find the perfect numbers within a given number of range.

Source Code: LA2-LQ23.c

```
#include <stdio.h>
int main()
{
    int start, end, n, i, sum;
    printf("Enter range (start end): ");
    scanf("%d %d", &start, &end);
    printf("Perfect numbers: ");
    for (n = start; n ≤ end; n++) {
        sum = 0;
        for (i = 1; i < n; i++) {
            if (n % i == 0) {
                sum += i;
            }
        }
        if (sum == n) {
            printf("%d ", n);
        }
    }
    printf("\n");
    return 0;
}
```

Output: LA2-LQ23.exe



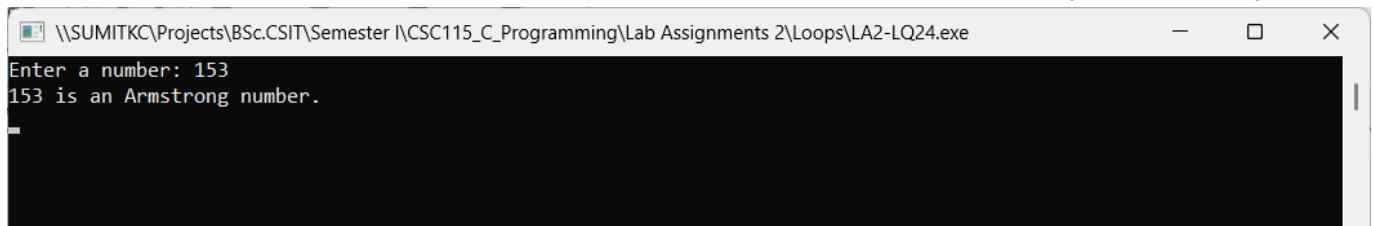
```
\\SUMITKC\Projects\BSc.CSIT\Semester I\CSC115_C_Programming\Lab Assignments 2\Loops\LA2-LQ23.exe
Enter range (start end): 1
1000
Perfect numbers: 6 28 496
```

24. Write a C program to check whether a given number is an armstrong number or not.

Source Code: LA2-LQ24.c

```
#include <stdio.h>
int main()
{
    int n, temp, sum = 0, digits = 0, i;
    printf("Enter a number: ");
    scanf("%d", &n);
    temp = n;
    while (temp > 0) {
        digits++;
        temp /= 10;
    }
    temp = n;
    while (temp > 0) {
        int digit = temp % 10;
        int power = 1;
        for (i = 0; i < digits; i++) {
            power *= digit;
        }
        sum += power;
        temp /= 10;
    }
    if (sum == n) {
        printf("%d is an Armstrong number.\n", n);
    } else {
        printf("%d is not an Armstrong number.\n", n);
    }
    return 0;
}
```

Output: LA2-LQ24.exe



25. Write a C program to find the Armstrong number for a given range of numbers.

Source Code: LA2-lQ25.c

```
#include <stdio.h>
int main()
{
    int start, end, n, temp, sum, digits, i, j;

    printf("Enter range (start end): ");
    scanf("%d %d", &start, &end);

    printf("Armstrong numbers: ");
    for (n = start; n ≤ end; n++) {
        temp = n;
        digits = 0;
        while (temp > 0) {
            digits++;
            temp /= 10;
        }

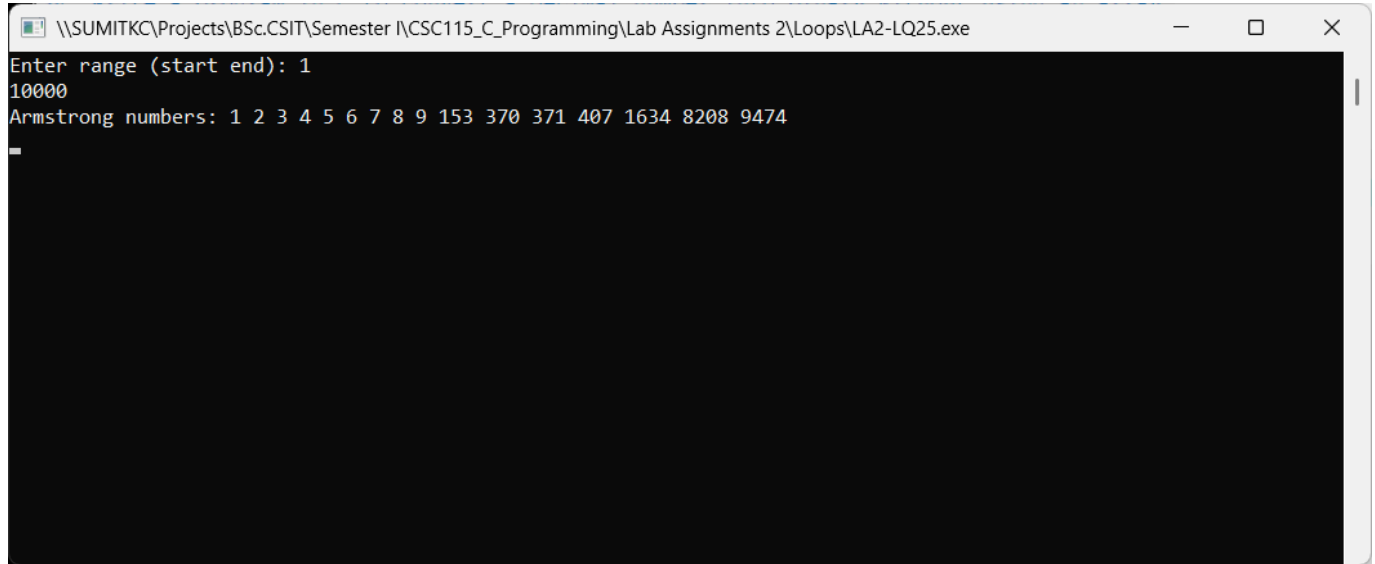
        sum = 0;
        temp = n;
        while (temp > 0) {
            int digit = temp % 10;
            int power = 1;
            for (j = 0; j < digits; j++) {
                power *= digit;
            }
            sum += power;
            temp /= 10;
        }

        if (sum == n) {
            printf("%d ", n);
        }
    }

    printf("\n");
}
```

```
    return 0;  
}
```

Output: LA2-LQ25.exe



```
\\SUMITKC\Projects\BSc.CSIT\Semester I\CSC115_C_Programming\Lab Assignments 2\Loops\LA2-LQ25.exe  
Enter range (start end): 1  
10000  
Armstrong numbers: 1 2 3 4 5 6 7 8 9 153 370 371 407 1634 8208 9474
```

26. Write a program in C to display the pattern like a diamond.

```

*
***
*****
*****
*****
*****
***
*
```

Source Code: LA2-lQ26.c

```

#include <stdio.h>

int main()
{
    int n, i, j, k;

    printf("Enter n: ");
    scanf("%d", &n);

    for (i = 1; i ≤ n; i++) {
        for (j = 1; j ≤ n - i; j++) {
            printf(" ");
        }
        for (j = 1; j ≤ 2 * i - 1; j++) {
            printf("*");
        }
        printf("\n");
    }

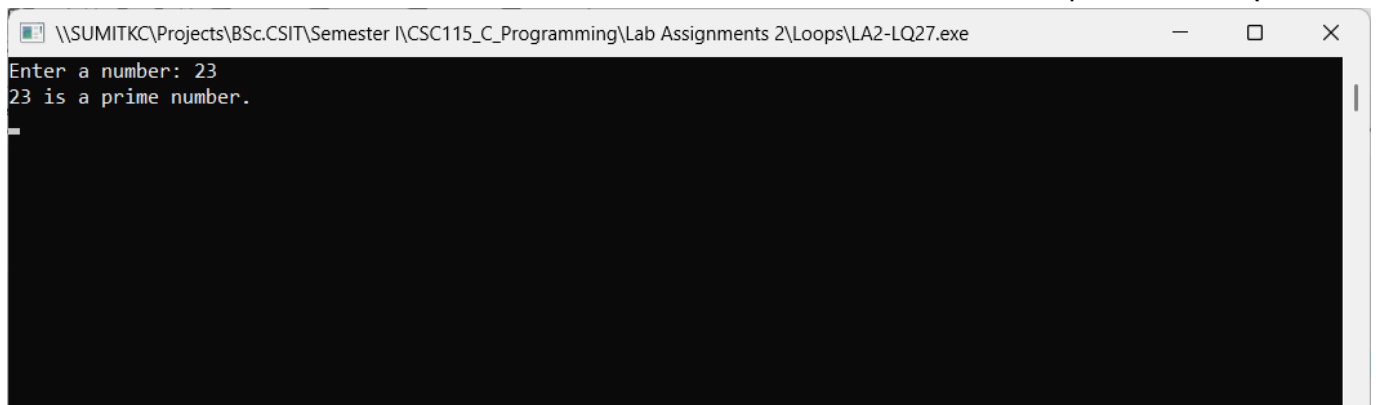
    for (i = n - 1; i ≥ 1; i--) {
        for (j = 1; j ≤ n - i; j++) {
            printf(" ");
        }
        for (j = 1; j ≤ 2 * i - 1; j++) {
            printf("*");
        }
        printf("\n");
    }
}
```


27. Write a C program to determine whether a given number is prime or not.

Source Code: LA2-LQ27.c

```
#include <stdio.h>
int main()
{
    int n, i;
    printf("Enter a number: ");
    scanf("%d", &n);
    if (n < 2) {
        printf("%d is not a prime number.\n", n);
        return 0;
    }
    for (i = 2; i < n; i++) {
        if (n % i == 0) {
            printf("%d is not a prime number.\n", n);
            return 0;
        }
    }
    printf("%d is a prime number.\n", n);
    return 0;
}
```

Output: LA2-LQ27.exe



```
\\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Loops\\LA2-LQ27.exe
Enter a number: 23
23 is a prime number.
```

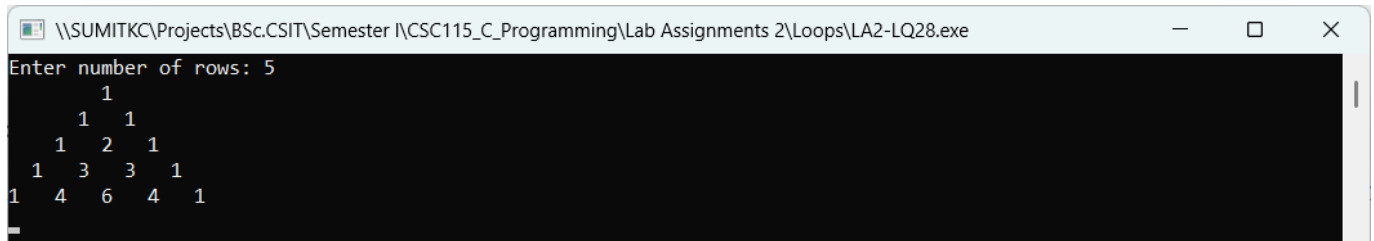
28. Write a C program to display Pascal's triangle.

```
    1
   1 1
  1 2 1
 1 3 3 1
1 4 6 4 1
```

Source Code: LA2-LQ28.c

```
#include <stdio.h>
int main()
{
    int n, i, j, k, coeff;
    printf("Enter number of rows: ");
    scanf("%d", &n);
    for (i = 0; i < n; i++) {
        for (k = 0; k < n - i - 1; k++) {
            printf(" ");
        }
        for (j = 0; j ≤ i; j++) {
            if (j == 0) {
                coeff = 1;
            } else {
                coeff = coeff * (i - j + 1) / j;
            }
            printf("%d  ", coeff);
        }
        printf("\n");
    }
    return 0;
}
```

Output: LA2-LQ28.exe



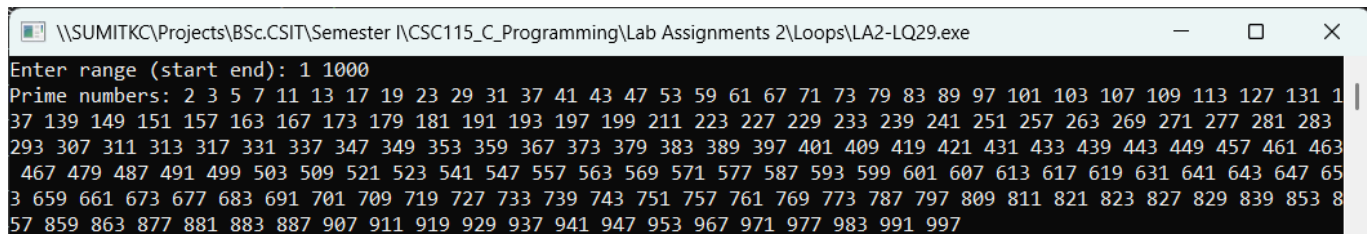
```
\\SUMITKC\Projects\BSc.CSIT\Semester I\CSC115_C_Programming\Lab Assignments 2\Loops\LA2-LQ28.exe
Enter number of rows: 5
    1
   1 1
  1 2 1
 1 3 3 1
1 4 6 4 1
```

29. Write a program in C to find the prime numbers within a range of numbers.

Source Code: LA2-LQ29.c

```
#include <stdio.h>
int main()
{
    int start, end, n, i, isPrime;
    printf("Enter range (start end): ");
    scanf("%d %d", &start, &end);
    printf("Prime numbers: ");
    for (n = start; n ≤ end; n++) {
        isPrime = 1;
        for (i = 2; i < n; i++) {
            if (n % i == 0) {
                isPrime = 0;
                break;
            }
        }
        if (isPrime && n ≥ 2) {
            printf("%d ", n);
        }
    }
    printf("\n");
    return 0;
}
```

Output: LA2-LQ29.exe



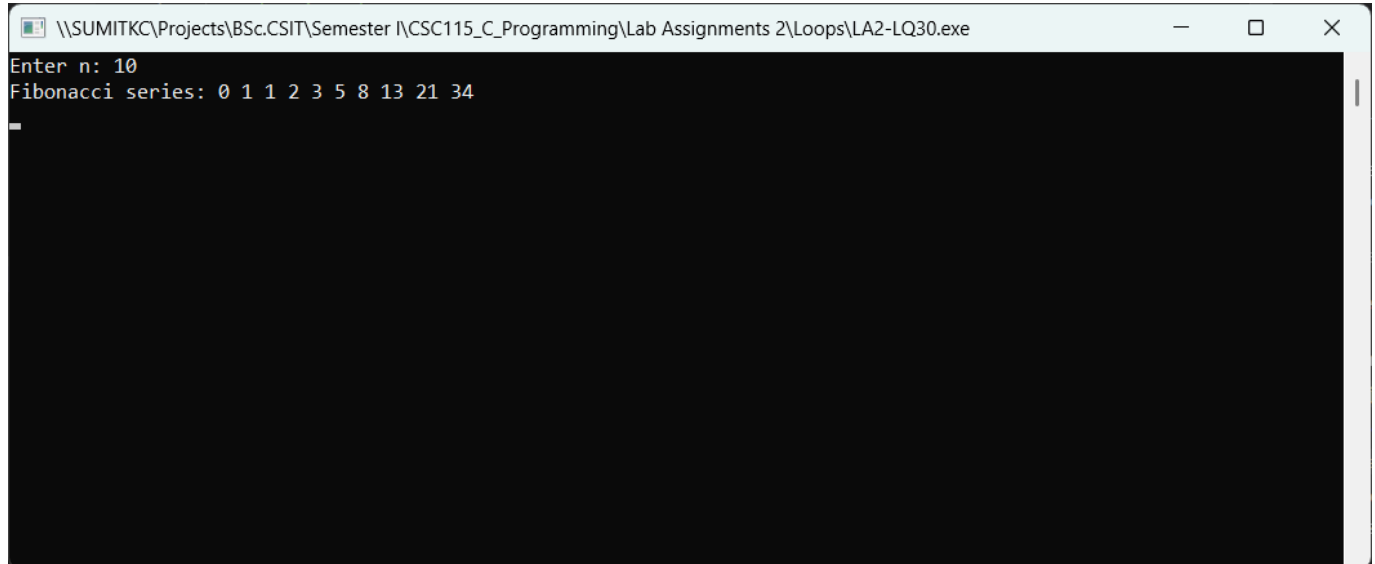
```
Enter range (start end): 1 1000
Prime numbers: 2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79 83 89 97 101 103 107 109 113 127 131 137 139 149 151 157 163 167 173 179 181 191 193 197 199 211 223 227 229 233 239 241 251 257 263 269 271 277 281 283 293 307 311 313 317 331 337 347 349 353 359 367 373 379 383 389 397 401 409 419 421 431 433 439 443 449 457 461 463 467 479 487 491 499 503 509 521 523 541 547 557 563 569 571 577 587 593 599 601 607 613 617 619 631 641 643 647 653 659 661 673 677 683 691 701 709 719 727 733 739 743 751 757 761 769 773 787 797 809 811 821 823 827 829 839 853 857 859 863 877 881 883 887 907 911 919 929 937 941 947 953 967 971 977 983 991 997
```

30. Write a program in C to display the first n terms of Fibonacci series.

Source Code: LA2-LQ30.c

```
#include <stdio.h>
int main()
{
    int n, i;
    long a = 0, b = 1, c;
    printf("Enter n: ");
    scanf("%d", &n);
    printf("Fibonacci series: ");
    for (i = 0; i < n; i++) {
        printf("%ld ", a);
        c = a + b;
        a = b;
        b = c;
    }
    printf("\n");
    return 0;
}
```

Output: LA2-LQ30.exe



The screenshot shows a Windows command prompt window titled "LA2-LQ30.exe". The window's address bar displays the file path: "\\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Loops\\LA2-LQ30.exe". The command prompt shows the user input "Enter n: 10" and the program output "Fibonacci series: 0 1 1 2 3 5 8 13 21 34". The rest of the window is black, indicating the program has finished execution.

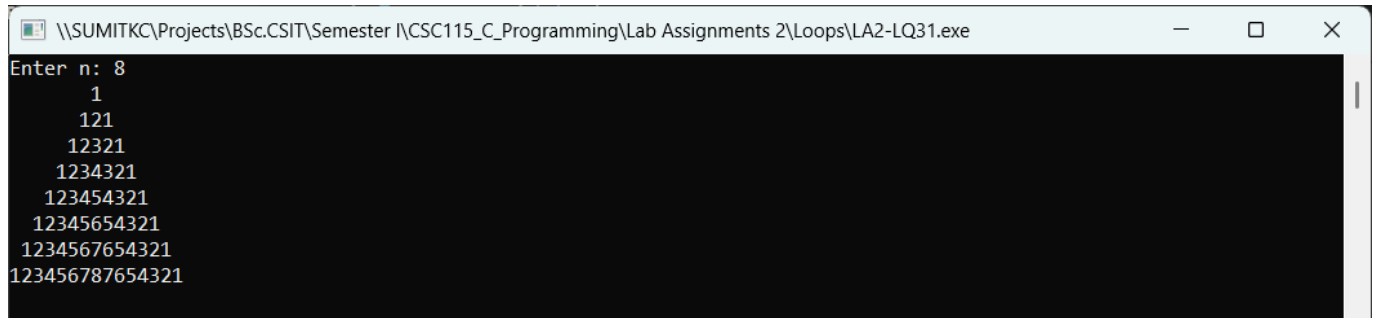
31. Write a program in C to display the such a pattern for n number of rows using a number which will start with the number 1 and the first and a last number of each row will be 1.

```
1
121
12321
```

Source Code: LA2-lQ31.c

```
#include <stdio.h>
int main()
{
    int n, i, j;
    printf("Enter n: ");
    scanf("%d", &n);
    for (i = 1; i ≤ n; i++) {
        for (j = 1; j ≤ n - i; j++) {
            printf(" ");
        }
        for (j = 1; j ≤ 2 * i - 1; j++) {
            if (j ≤ i) {
                printf("%d", j);
            } else {
                printf("%d", 2 * i - j);
            }
        }
        printf("\n");
    }
    return 0;
}
```

Output: LA2-LQ31.exe



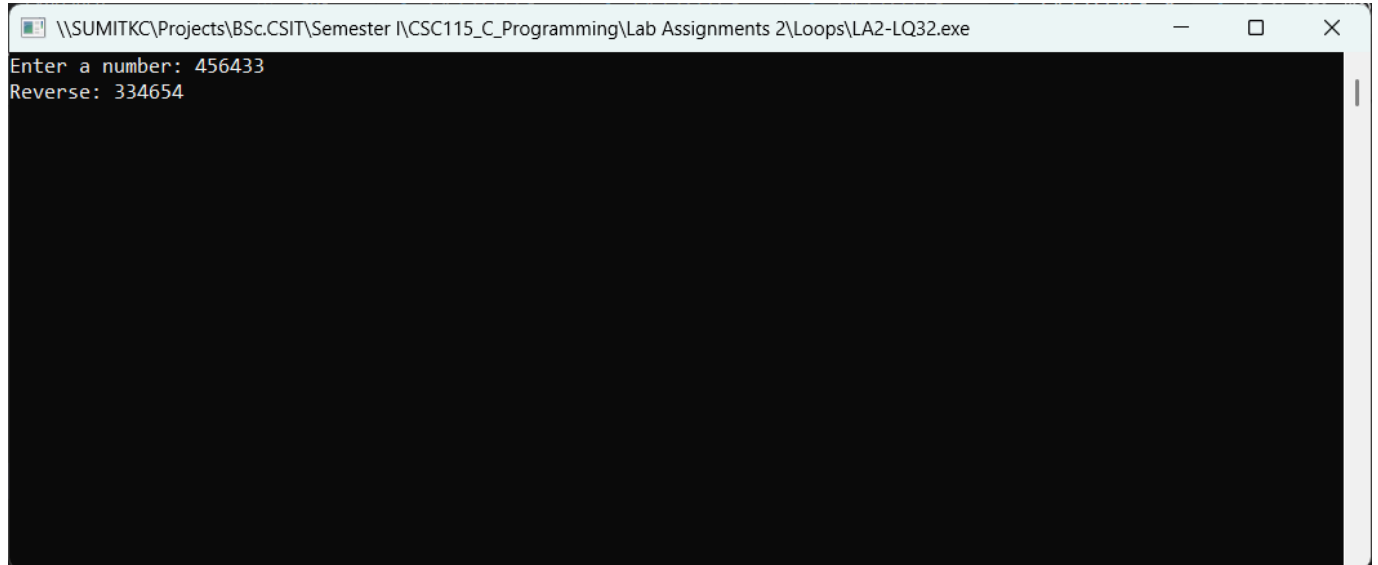
```
\\SUMITKC\Projects\BSc.CSIT\Semester I\CSC115_C_Programming\Lab Assignments 2\Loops\LA2-LQ31.exe
Enter n: 8
1
121
12321
1234321
123454321
12345654321
1234567654321
123456787654321
```

32. Write a program in C to display the number in reverse order.

Source Code: LA2-LQ32.c

```
#include <stdio.h>
int main()
{
    int n;
    printf("Enter a number: ");
    scanf("%d", &n);
    printf("Reverse: ");
    while (n > 0) {
        printf("%d", n % 10);
        n /= 10;
    }
    printf("\n");
    return 0;
}
```

Output: LA2-LQ32.exe



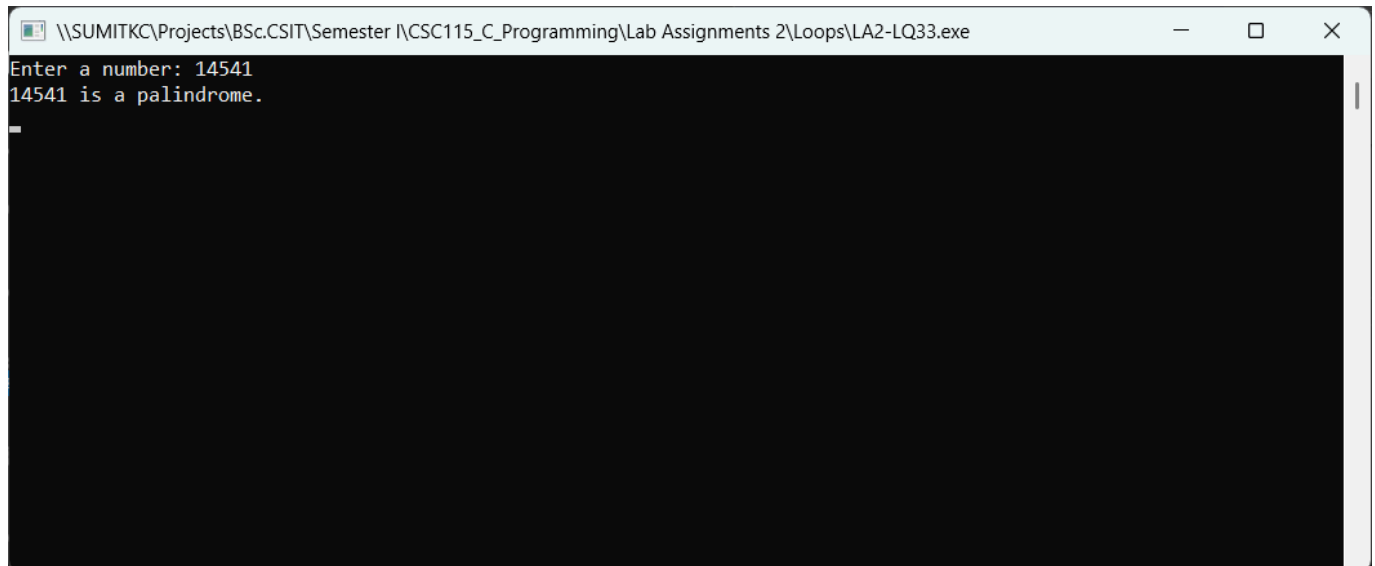
```
\\SUMITKC\Projects\BSc.CSIT\Semester I\CSC115_C_Programming\Lab Assignments 2\Loops\LA2-LQ32.exe
Enter a number: 456433
Reverse: 334654
```

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

Source Code: LA2-LQ33.c

```
#include <stdio.h>
int main()
{
    int n, temp, reverse = 0;
    printf("Enter a number: ");
    scanf("%d", &n);
    temp = n;
    while (temp > 0) {
        reverse = reverse * 10 + temp % 10;
        temp /= 10;
    }
    if (n == reverse) {
        printf("%d is a palindrome.\n", n);
    } else {
        printf("%d is not a palindrome.\n", n);
    }
    return 0;
}
```

Output: LA2-LQ33.exe



```
\\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Loops\\LA2-LQ33.exe
Enter a number: 14541
14541 is a palindrome.
```

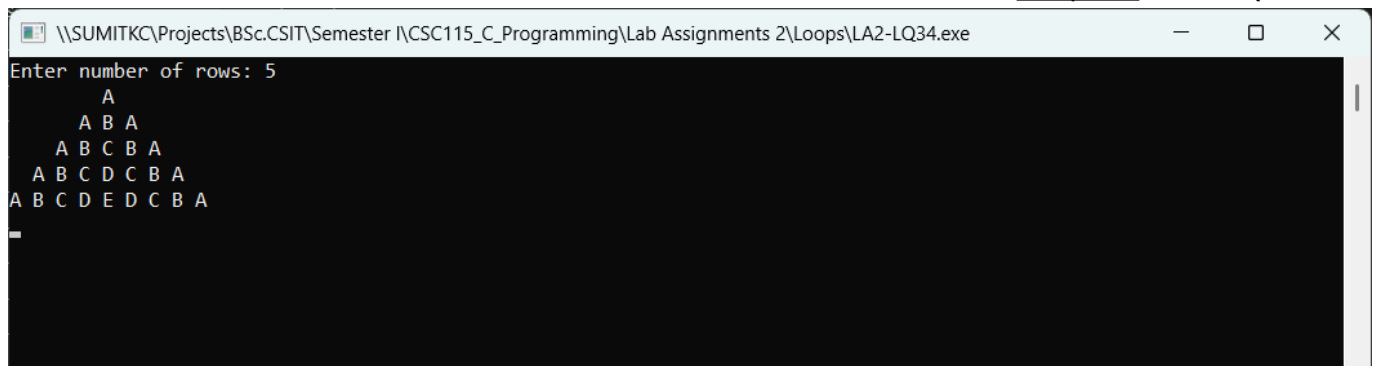

34. Write a C Program to display the pattern like a pyramid using the alphabet.

```
A
A B A
A B C B A
A B C D C B A
```

Source Code: LA2-LQ34.c

```
#include <stdio.h>
int main()
{
    int n, i, j, k;
    printf("Enter number of rows: ");
    scanf("%d", &n);
    for (i = 1; i ≤ n; i++) {
        for (k = 0; k < n - i; k++) {
            printf(" ");
        }
        for (j = 0; j < i; j++) {
            printf("%c ", 'A' + j);
        }
        for (j = i - 2; j ≥ 0; j--) {
            printf("%c ", 'A' + j);
        }
        printf("\n");
    }
    return 0;
}
```

Output: LA2-LQ34.exe



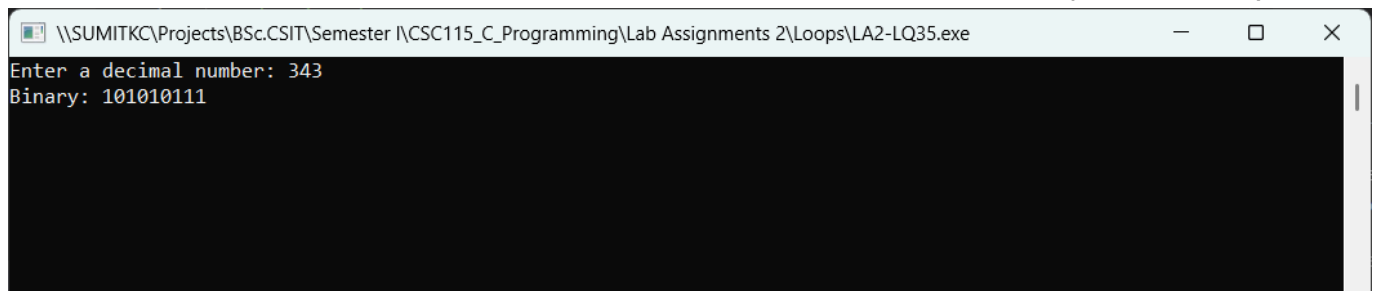
```
\\SUMITKC\\Projects\\BSc.CSIT\\Semester I\\CSC115_C_Programming\\Lab Assignments 2\\Loops\\LA2-LQ34.exe
Enter number of rows: 5
  A
 A B A
A B C B A
A B C D C B A
A B C D E D C B A
```

35. Write a program in C to convert a decimal number into binary without using an array.
The Binary of 25 is 11001.

Source Code: LA2-LQ35.c

```
#include <stdio.h>
int main()
{
    int n;
    printf("Enter a decimal number: ");
    scanf("%d", &n);
    printf("Binary: ");
    if (n == 0) {
        printf("0\n");
    } else {
        int binary[32];
        int i = 0;
        while (n > 0) {
            binary[i] = n % 2;
            n /= 2;
            i++;
        }
        for (int j = i - 1; j ≥ 0; j--) {
            printf("%d", binary[j]);
        }
        printf("\n");
    }
    return 0;
}
```

Output: LA2-LQ35.exe



```
\\SUMITKC\Projects\BSc.CSIT\Semester I\CSC115_C_Programming\Lab Assignments 2\Loops\LA2-LQ35.exe
Enter a decimal number: 343
Binary: 101010111
```