Q 1 C program to perform all arithmetic operations

```
#include <stdio.h>

int main()

{

   int num1, num2;

   int sum, sub, mult, mod;

   float div;

   printf("Enter any two numbers: ");

   scanf("%d%d", &num1, &num2);

   sum = num1 + num2;

   sub = num1 - num2;

   mult = num1 * num2;

   div = (float)num1 / num2;

   mod = num1 % num2;

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

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

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

   printf("QUOTIENT = %f\n", div);

   printf("MODULUS = %d", mod);

   return 0;

}
```

Q2 C program to find area of a triangle if base and height are given.

```
#include <stdio.h>

int main()

{

   float base, height, area;
```

```
    printf("Enter base of the triangle: ");
    scanf("%f", &base);
    printf("Enter height of the triangle: ");
    scanf("%f", &height);
    area = (base * height) / 2;
    printf("Area of the triangle = %.2f sq.
units", area);


    return 0;
}
```

3. C program to find all angles of a triangle if two angles are given.

```
#include <stdio.h>
int main()
{
    int a, b, c;
    printf("Enter two angles of triangle: ");
    scanf("%d%d", &a, &b);
    c = 180 - (a + b);
    printf("Third angle of the triangle =
%d", c);
    return 0;
}
```

Q4 C program to convert days in to years, weeks and days.

```
#include <stdio.h>
int main()
{
```

```
    int days, years, weeks;

    printf("Enter days: ");

    scanf("%d", &days);

    years = (days / 365);

    weeks = (days % 365)/7;

    days  = days - ((years * 365) + (weeks *
7));

    printf("YEARS: %d\n", years);

    printf("WEEKS: %d\n", weeks);

    printf("DAYS: %d", days);


    return 0;

}
```

Q5 C program to find power and square root of any number.

```
#include <stdio.h>

#include <math.h>

int main()

{

    double num, root;

    printf("Enter any number to find
square root: ");

    scanf("%lf", &num);

    root = sqrt(num);

    printf("Square root of %.2lf = %.2lf",
num, root);


    return 0;
```

```
}
```

Q6 C program to calculate total, average and percentage and grades of five subjects.

```
#include <stdio.h>

int main()

{

   float eng, phy, chem, math, comp;

   float total, average, percentage;

   printf("Enter marks of five subjects:
\n");

   scanf("%f%f%f%f%f", &eng, &phy,
&chem, &math, &comp);

   total = eng + phy + chem + math +
comp;

   average = total / 5.0;

   percentage = (total / 500.0) * 100;

   printf("Total marks = %.2f\n", total);

   printf("Average marks = %.2f\n",
average);

   printf("Percentage = %.2f",
percentage);



   return 0;

}
```

Q7 C program to check Least Significant Bit (LSB) and MSB of a number using bitwise operator.

```
#include <stdio.h>

int main()
```

```
{
   int num;
   printf("Enter any number: ");
   scanf("%d", &num);
   if(num & 1)
      printf("LSB of %d is set (1).", num);
   else
      printf("LSB of %d is unset (0).",
num);


   return 0;
}
```

Q8 C program to swap two numbers
USING 3RD VARIABLE AND WITHOUT
3RD VARIABLE

```
#include<stdio.h>
int main()
{
        int a,b,c;
        printf("Enter two numbers \n");
        scanf("%d%d",&a,&b);
        int x=a,y=b;
        printf("value of a and b before
swapping is : %d and %d\n",a,b);
        c=a;
        a=b;
        b=c;
```

```
        printf("Value of a and b after
swapping with use of third variable is: %d
and %d\n",a,b);

        printf("----------------------------------
---------------\n");

        //without using third variable;

        x=x+y;

        y=x-y;

        x=x-y;

        printf("Value of a and b after
swapping without using third variable is:
%d and %d\n",x,y);

}
```

Q9 C program to find maximum between three numbers using conditional operator AND Ternary Operator

```
#include <stdio.h>

int main()

{

   int num1, num2, num3, max;

   printf("Enter three numbers: ");

   scanf("%d%d%d", &num1, &num2,
&num3);

   max = (num1 > num2 && num1 >
num3) ? num1 :

        (num2 > num3) ? num2 : num3;



   printf("\nMaximum between %d, %d
and %d = %d", num1, num2, num3, max);



   return 0;
```

```
}
```

10. C program to check alphabet, digit or special character using Conditional operator.

```
#include <stdio.h>

int main()

{

   char ch;

   printf("Enter any character: ");

   scanf("%c", &ch);

   if((ch >= 'a' && ch <= 'z') || (ch >= 'A' && ch <= 'Z'))

   {

      printf("'%c' is alphabet.", ch);

   }

   else if(ch >= '0' && ch <= '9')

   {

      printf("'%c' is digit.", ch);

   }

   else

   {

      printf("'%c' is special character.", ch);

   }



   return 0;

}
```

11. C program to calculate total electricity bill.

```
#include<stdio.h>
int main()
{
   int unit;
   float amt, total_amt, sur_charge;
   printf("Enter total units consumed: ");
   scanf("%d", &unit);
   if(unit <= 50)
   {
      amt = unit * 0.50;
   }
   else if(unit <= 150)
   {
      amt = 25 + ((unit-50) * 0.75);
   }
   else if(unit <= 250)
   {
      amt = 100 + ((unit-150) * 1.20);
   }
   else
   {
      amt = 220 + ((unit-250) * 1.50);
   }
   sur_charge = amt * 0.20;
   total_amt  = amt + sur_charge;
```

```
   printf("Electricity Bill = Rs. %.2f",
total_amt);


   return 0;

}
```

Q 12 C program to create Simple Calculator AND Days of week using switch case.

```
#include <stdio.h>

int main() {

  char op;

  double first, second;

  printf("Enter an operator (+, -, *, /): ");

  scanf("%c", &op);

  printf("Enter two operands: ");

  scanf("%lf %lf", &first, &second);


  switch (op) {

    case '+':

      printf("%.1lf + %.1lf = %.1lf", first,
second, first + second);

      break;

    case '-':

      printf("%.1lf - %.1lf = %.1lf", first,
second, first - second);

      break;

    case '*':

      printf("%.1lf * %.1lf = %.1lf", first,
second, first * second);
```

```
    break;
  case '/':
    printf("%.1lf / %.1lf = %.1lf", first,
second, first / second);
    break;
  default:
    printf("Error! operator is not
correct");
 }


 return 0;
}
```

13. C program to check vowel or consonant using switch case

```
#include <stdio.h>
int main()
{
  char ch;
  printf("Enter any alphabet: ");
  scanf("%c", &ch);
  switch(ch)
  {
     case 'a':
        printf("Vowel");
        break;
     case 'e':
        printf("Vowel");
        break;
```

```
    case 'i':
        printf("Vowel");
        break;
    case 'o':
        printf("Vowel");
        break;
    case 'u':
        printf("Vowel");
        break;
    case 'A':
        printf("Vowel");
        break;
    case 'E':
        printf("Vowel");
        break;
    case 'I':
        printf("Vowel");
        break;
    case 'O':
        printf("Vowel");
        break;
    case 'U':
        printf("Vowel");
        break;
    default:
        printf("Consonant");
}
```

```
    return 0;
}
```

14. C program to check positive negative or zero using switch case.

```
#include <stdio.h>
int main()
{
    int num;

    printf("Enter any number: ");
    scanf("%d", &num);

    switch (num > 0)
    {
        case 1:
            printf("%d is positive number.",
num);
        break;
        case 0:
            switch (num < 0)
            {
                case 1:
                    printf("%d is negative
number.", num);
                    break;
                case 0:
                    printf("%d is zero.", num);
```

```
                break;
            }
        break;
    }

    return 0;
}
```

Q 15 C program to check whether a triangle is Equilateral, Isosceles or Scalene.

```
#include <stdio.h>
int main()
{
    int side1, side2, side3;
    printf("Enter three sides of triangle: ");
    scanf("%d%d%d", &side1, &side2, &side3);

    if(side1==side2 && side2==side3)
    {
        printf("Equilateral triangle.");
    }
    else if(side1==side2 || side1==side3 || side2==side3)
    {
        printf("Isosceles triangle.");
    }
    else
```

```
    {
        printf("Scalene triangle.");
    }

    return 0;
}
```

16. C program to print all natural numbers AND sum of it from 1 to n.

```
#include <stdio.h>
int main()
{
    int i, n;
    printf("Enter any number: ");
    scanf("%d", &n);
    printf("Natural numbers from 1 to %d :
\n", n);
    for(i=1; i<=n; i++)
    {
        printf("%d\n", i);
    }

    return 0;
}
```

17. C program to print all even numbers AND sum of it from 1 to n

```
#include <stdio.h>
int main()
{
```

```
   int i, n, sum=0;

   printf("Enter upper limit: ");

   scanf("%d", &n);

   printf("Even numbers from 2 to %d is
:",n);

   for(i=2; i<=n; i+=2)

   {

           printf("%d ",i);

      sum += i;

   }

   printf("\n");

   printf("Sum of all even number
between 1 to %d = %d", n, sum);



   return 0;

}
```

18. C program to print multiplication table of a number

```
#include <stdio.h>

int main() {

  int n, i;

  printf("Enter an integer: ");

  scanf("%d", &n);

  for (i = 1; i <= 10; ++i) {

    printf("%d x %d = %d \n", n, i, n * i);

  }

  return 0;

}
```

19. C program to calculate factorial of a number.

```
#include<stdio.h>

void main(){

   int n,fact=1;

   printf("Enter the number whose factorial is to be found: ");

   scanf("%d",&n);

   while(n>0){

      fact =fact*n;

      n -=1;

   }

   printf("The factorial of the above number is: %d",fact);

}
```

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

```
#include <stdio.h>

int main() {

  int n, reversed = 0, remainder, original;

   printf("Enter an integer: ");

   scanf("%d", &n);

   original = n;

   while (n != 0) {

      remainder = n % 10;

      reversed = reversed * 10 + remainder;

      n /= 10;

   }
```

```
   if (original == reversed)
      printf("%d is a palindrome.",
original);
   else
      printf("%d is not a palindrome.",
original);

   return 0;
}
```

22. C program to find HCF(GCD) AND LCM of two numbers.

```
#include <stdio.h>
int main() {
  int a, b, x, y, t, gcd, lcm;

  printf("Enter two integers\n");
  scanf("%d%d", &x, &y);
   a = x;
  b = y;
  while (b != 0) {
    t = b;
    b = a % b;
    a = t;
  }
  gcd = a;
  lcm = (x*y)/gcd;
  printf("Greatest common divisor of %d
and %d = %d\n", x, y, gcd);
```

```
  printf("Least common multiple of %d
and %d = %d\n", x, y, lcm);

  return 0;

}
```

23. C program to print all prime numbers between 1 to n.

```
#include <stdio.h>

int main()

{

   int i, j, end, isPrime;

   printf("Find prime numbers between 1
to : ");

   scanf("%d", &end);

   printf("All prime numbers between 1
to %d are:\n", end);

   for(i=2; i<=end; i++)

   {

      isPrime = 1;

      for(j=2; j<=i/2; j++)

      {

         if(i%j==0)

         {

            isPrime = 0;

            break;

         }

      }

      if(isPrime==1)

      {
```

```
            printf("%d, ", i);
        }
    }
  return 0;
}
```

24. C program to print all Strong Numbers between 1 to n

```
#include <stdio.h>
int main()
{
    int i, j, cur, lastDigit, end;
    long long fact, sum;
    printf("Enter upper limit: ");
    scanf("%d", &end);
    printf("All Strong numbers between 1 to %d are:\n", end);
    for(i=1; i<=end; i++)
    {
        cur = i;
        sum = 0;
        while(cur > 0)
        {
            fact = 1ll;
            lastDigit = cur % 10;
            for( j=1; j<=lastDigit; j++)
            {
                fact = fact * j;
            }
```

```
            sum += fact;
            cur /= 10;
        }
        if(sum == i)
        {
            printf("%d, ", i);
        }
    }
    return 0;
}
```

25. C program to print Fibonacci series up to n terms.

```
#include <stdio.h>
int main()
{
    int a, b, c, i, terms;
    printf("Enter number of terms: ");
    scanf("%d", &terms);
    a = 0;
    b = 1;
    c = 0;

    printf("Fibonacci terms: \n");
    for(i=1; i<=terms; i++)
    {
        printf("%d, ", c);
```

```
        a = b;
        b = c;
        c = a + b;
    }
                return 0;
}
```

26. C program to print Armstrong numbers from 1 to n.

```
#include <stdio.h>
#include <math.h>
int main()
{
    int num, lastDigit, digits, sum, i, end;
    printf("Enter upper limit: ");
    scanf("%d", &end);

    printf("Armstrong number between 1 to %d are: \n", end);

    for(i=1; i<=end; i++)
    {
        sum = 0;
        num = i;
        digits = (int) log10(num) + 1;
        while(num > 0)
        {
            lastDigit = num % 10;
```

```
            sum = sum + ceil(pow(lastDigit,
digits));
            num = num / 10;
        }
        if(i == sum)
        {
            printf("%d, ", i);
        }
    }
 return 0;
}
```

27.C program to print all Perfect numbers between 1 to n

```
#include <stdio.h>
int main()
{
    int i, j, end, sum;
    printf("Enter upper limit: ");
    scanf("%d", &end);

    printf("All Perfect numbers between 1
to %d:\n", end);
    for(i=1; i<=end; i++)
    {
        sum = 0;
        for(j=1; j<i; j++)
        {
            if(i % j == 0)
```

```
        {
            sum += j;
        }
    }
    if(sum == i)
    {
        printf("%d, ", i);
    }
  }
return 0;
}
```

28. C program to find power of any number using for loop.

```
#include <stdio.h>
int main()
{
  int base, exponent;
  long long power = 1;
  int i;
  printf("Enter base: ");
  scanf("%d", &base);
  printf("Enter exponent: ");
  scanf("%d", &exponent);
  for(i=1; i<=exponent; i++)
  {
    power = power * base;
  }
```

```
  printf("%d ^ %d = %lld", base, exponent,
power);

   return 0;

}
```

29. C program to print ASCII values of all characters.

```
#include <stdio.h>

int main()

{

   int i;

   for(i=0; i<=255; i++)

   {

      printf("ASCII value of character %c =
%d\n", i, i);

   }

return 0;

}
```

30. C program to print Pascal triangle up to n row

```
#include <stdio.h>

int getFactorial(int n);

int main() {

   int row, rows, i, value;


   printf("Enter Number of Rows of
Pascal Triangle\n");

   scanf("%d", &rows);


   for(row = 0; row < rows; row++) {
```

```
      for(i = row; i <= rows; i++)
         printf("  ");

      for(i = 0; i <= row; i++) {
         value =
getFactorial(row)/(getFactorial(i)*getFact
orial(row-i));
         printf("%4d", value);
      }

      printf("\n");
   }
  return 0;
}
int getFactorial(int N){
   if(N < 0){
      printf("Invalid Input: factorial not
defined for \
negative numbers\n");
      return 0;
   }
   int nFactorial = 1, counter;
   for(counter = 1; counter <= N;
counter++){
      nFactorial = nFactorial * counter;
   }
   return nFactorial;
}
```

31. C program to find sum of all elements of array.

```
#include<stdio.h>

int main()

{

   int arr[100], size, i, sum = 0;

   printf("Enter array size\n");

   scanf("%d",&size);

   for(i = 0; i < size; i++){

        printf("Enter array elements on
index [%d]\n",i);

        scanf("%d",&arr[i]);

                        }

   for(i = 0; i < size; i++)

        sum = sum + arr[i];

   printf("Sum of the array = %d\n",sum);


   return 0;

}
```

32. C program to copy one array to another array.

```
#include <stdio.h>

int main()

{


   int a[5] = { 3, 6, 9, 2, 5 }, n = 5;

   int b[n], i;

   for (i = 0; i < n; i++) {
```

```
        b[i] = a[i];
    }
    printf("The first array is :");
    for (i = 0; i < n; i++) {
        printf("%d ", a[i]);
    }
    printf("\nThe second array is :");
    for (i = 0; i < n; i++) {
        printf("%d ", b[i]);
    }
    return 0;
}
```

33 C program to insert an element in array at specified position.

```
#include <stdio.h>
 int main()
{ int Array[10], Position, i, Number, Value;
 printf("\nPlease Enter Number of elements in an array\n");
  scanf("%d", &Number);
   printf("\nPlease Enter %d elements of an Array \n", Number);
  for (i = 0; i < Number; i++)
   {
     scanf("%d", &Array[i]);
   }
  printf("\nPlease Enter the location of a Element you want to insert\n");
```

```
 scanf("%d", &Position);

 printf("\nPlease Enter the value of an
Array Emenent to insert\n");

 scanf("%d", &Value);

 for (i = Number - 1; i >= Position - 1; i--)

  {

            Array[i+1] = Array[i];

  }

 Array[Position-1] = Value;

 printf("\n Final Array after Inserting an
Elemnt is:\n");

for (i = 0; i <= Number; i++)

 {printf("%d\t", Array[i]);

 }

return 0;

}
```

34 C program to delete an element in array at specified position

```
#include <stdio.h>

#define MAX_SIZE 100

int main()

{ int arr[MAX_SIZE];

 int i, size, pos;

 printf("Enter size of the array : ");

 scanf("%d", &size);

 printf("Enter elements in array : ");

   for(i=0; i<size; i++)

   { scanf("%d", &arr[i]);
```

```
   }
printf("Enter the element position to
delete : ");
 scanf("%d", &pos);
 if(pos < 0 || pos > size)
   { printf("Invalid position! Please enter
position between 1 to %d", size);}
   else
   { for(i=pos-1; i<size-1; i++)
      {
         arr[i] = arr[i + 1];
      }
 size--;
 printf("\nElements of array after delete
are : ");
 for(i=0; i<size; i++)
      {
         printf("%d\t", arr[i]);
      }
   }
 return 0;
}
```

35 C program to search element in array using Linear Search.

```
#include <stdio.h>
int main(){
   int inputArray[100], elementCount,
counter, num;
```

```
   printf("Enter Number of Elements in
Array\n");

   scanf("%d", &elementCount);

   printf("Enter %d numbers \n",
elementCount);

   for(counter = 0; counter <
elementCount; counter++){

   scanf("%d", &inputArray[counter]); }

   printf("Enter a number to serach in
Array\n");

   scanf("%d", &num);

 for(counter = 0; counter <
elementCount; counter++){

       if(inputArray[counter] == num){

          printf("Number %d found at index
%d\n", num, counter);

          break;

       }

   }



   if(counter == elementCount){

    printf("Number %d Not Present in
Input Array\n", num);

   }

   return 0;

}
```

36 C program to find second largest number and Sorting Using Bubble sort in an array.

```
#include <stdio.h>

int main()

{

	int arr[50], i, Size;

	int first, second;

	printf("\n Please Enter the
Number of elements in an array  :  ");

	scanf("%d", &Size);



	printf("\n Please Enter %d
elements of an Array \n", Size);

	for (i = 0; i < Size; i++)

	{

	scanf("%d", &arr[i]);

   }

first = second = INT_MIN;

for (i = 0; i < Size; i++)

	{

		if(arr[i] > first)

		{

			second = first;

			first = arr[i];

		}

		else if(arr[i] > second &&
arr[i] < first)

		{

			second = arr[i];
```

```
                    }
            }
printf("\n The Largest Number in this
Array =  %d", first);
printf("\n The Second Largest Number in
this Array =  %d", second);
return 0;
}
```

37 C Program Count Number of Duplicate Elements in An ArrayC

```
#include <stdio.h>
int main()
{
 int a[10000],b[10000],i,j,n,c=0 ;
 printf("Enter size of the array : ");
 scanf("%d", &n);
 printf("Enter elements in array : ");
   for(i=0; i<n; i++)
   {
      scanf("%d",&a[i]);
   }  for(i=0; i<n; i++)
   {
       if(a[i]!=-1)
                    {
                       for(j=i+1; j<n; j++)
          {
              if(a[i]==a[j])
```

```
            {
                                    c++;
                                    a[j]=-1;
                            }
                    }
                        }
```

```
   }printf("duplicate numbers in the
array: %d",c);
 return 0;
}
```

38 C program to perform scalar matrix multiplication.

```
#include <stdio.h>
#define SIZE 3
int main()
{
   int A[SIZE][SIZE];
   int x, row, col;
  printf("Enter elements in matrix of size
%dx%d: \n", SIZE, SIZE);
   for(row=0; row<SIZE; row++)
   {
      for(col=0; col<SIZE; col++)
      {
         scanf("%d", &A[row][col]);
```

```
        }
    }
printf("Enter any number to multiply
with matrix A: ");
    scanf("%d", &x);
    for(row=0; row<SIZE; row++)
    {
        for(col=0; col<SIZE; col++)
        {
            A[row][col] = x * A[row][col];
        }
    }
printf("\nResultant matrix c.A = \n");
    for(row=0; row<SIZE; row++)
    {
        for(col=0; col<SIZE; col++)
        {
            printf("%d ", A[row][col]);
        }
        printf("\n");
    }


    return 0;
}
```

39 C Program to find Sum of Diagonal Elements of a Matrix

```
#include<stdio.h>



int main()

{

        int i, j, rows, columns,
a[10][10], Sum = 0;

printf("\n Please Enter Number
of rows and columns  :  ");

scanf("%d %d", &i, &j);

printf("\n Please Enter the
Matrix Elements \n");

 for(rows = 0; rows < i; rows++)

        {

                for(columns =
0;columns < j;columns++)

        {

                scanf("%d",
&a[rows][columns]);

        }

        }



        for(rows = 0; rows < i;
rows++)

        {
```

```
                    Sum = Sum +
a[rows][rows];

            }



            printf("\n The Sum of
Diagonal Elements of a Matrix =
%d", Sum );



            return 0;

}
```

40 C program to check sparse matrix.

```
1 1 0

0 0 2

0 0 0

#include<stdio.h>

#include<stdlib.h>

int main(){

  int row,col,i,j,a[10][10],count = 0;

  printf("Enter row

");

  scanf("%d",&row);

  printf("Enter Column

");

  scanf("%d",&col);

  printf("Enter Element of Matrix1

");
```

```
  for(i = 0; i < row; i++){
    for(j = 0; j < col; j++){
      scanf("%d",&a[i][j]);
    }
  }
  printf("Elements are:
");
  for(i = 0; i < row; i++){
    for(j = 0; j < col; j++){
      printf("%d\t",a[i][j]);
    }
    printf("
");
  }
  for(i = 0; i < row; i++){
    for(j = 0; j < col; j++){
      if(a[i][j] == 0)
        count++;
    }
  }
  if(count > ((row * col)/2))
    printf("Matrix is a sparse matrix ");
  else
    printf("Matrix is not sparse matrix");
}
```

40 C program to check transpose matrix.

```
#include <stdio.h>

int main() {

  int a[10][10], transpose[10][10], r, c;

  printf("Enter rows and columns: ");

  scanf("%d %d", &r, &c);

  printf("\nEnter matrix elements:\n");

  for (int i = 0; i < r; ++i)

  for (int j = 0; j < c; ++j) {

    printf("Enter element a%d%d: ", i + 1, j
+ 1);

    scanf("%d", &a[i][j]);

  }

  printf("\nEntered matrix: \n");

  for (int i = 0; i < r; ++i)

  for (int j = 0; j < c; ++j) {

    printf("%d  ", a[i][j]);

    if (j == c - 1)

    printf("\n");

  }

  for (int i = 0; i < r; ++i)

  for (int j = 0; j < c; ++j) {

    transpose[j][i] = a[i][j];

  }

  printf("\nTranspose of the matrix:\n");

  for (int i = 0; i < c; ++i)

  for (int j = 0; j < r; ++j) {
```

```
   printf("%d  ", transpose[i][j]);
   if (j == r - 1)
   printf("\n");
  }
  return 0;
}
```

41. C program to check whether a matrix is Identity matrix or not.

```
#include<stdio.h>
int main()
{
 int i, j, rows, columns, a[10][10], Flag = 1;
  printf("\n Please Enter Number of rows and columns  :  ");
 scanf("%d %d", &i, &j);
 printf("\n Please Enter the Matrix Elements \n");
            for(rows = 0; rows < i; rows++)
            {
                        for(columns = 0; columns < j; columns++)
            {
                        scanf("%d", &a[rows][columns]);
            }
            }

            for(rows = 0; rows < i; rows++)
```

```
        {
                for(columns = 0; columns
< j; columns++)
        {
                if(a[rows][columns] != 1
&& a[columns][rows] != 0)
                {
                        Flag = 0;
                        break;
                        }
                }
        }
        if(Flag == 1)
        {
                printf("\n The Matrix
that you entered is an Identity Matrix ");
        }
        else
        {
                printf("\n The Matrix
that you entered is Not an Identity
Matrix ");
        }


        return 0;
}
```

42 c program to merge two sorted array in ascending order

```
#include <stdio.h>
```

```
void mergeSorted(int src1[], int src2[],
  int newArr[], int n1, int n2)
{
  int i = 0, j = 0, k = 0;
  while (i < n1 && j < n2)
  {
    if (src1[i] <= src2[j])
    {
      newArr[k++] = src1[i++];
    }
    else
    {
      newArr[k++] = src2[j++];
    }
  }
  while (i < n1)
  {
    newArr[k++] = src1[i++];
  }
  while (j < n2)
  {
    newArr[k++] = src2[j++];
  }
}
int main()
{
  int src1[] = {9, 18, 27, 36, 45};
```

```
  int src2[] = {10, 20, 30, 40, 50};
int n1 = sizeof(src1)/sizeof(src1[0]);
  int n2 = sizeof(src2)/sizeof(src2[0]);
  int newArr[n1+n2];
mergeSorted(src1, src2, newArr, n1, n2);
  printf("New array = ");
  for (int i = 0; i < n1+n2; i++) {
    printf("%d ",newArr[i]);
  }
return 0;
}
```

44 C program to check whether a string is palindrome or not without Compare Function of String.

```
#include<stdio.h>

int main()
{
    char string[40];
    int length=0, flag=1,i;
    printf("Enter string:\n");
    gets(string);
   for(i=0;string[i]!='\0';i++)
    {
        length++;
    }
 for(i=0;i< length/2;i++)
    {
```

```
    if( string[i] != string[length-1-i] )
    {
       flag=0;
       break;
    }
  }

  if(flag==1)
  {
    printf("PALINDROME");
  }
  else
  {
    printf("NOT PALINDROME");
  }
  return 0;

}
```

45 C program to count frequency of each character in a string.

```
#include <stdio.h>
#include <string.h>
#define MAX 100
int main(){
  char string[MAX];
```

```
  int i, length;
  int frequency[20];
  printf("enter the string:");
  gets(string);
  length = strlen(string);
  for(i=0; i<20; i++){
    frequency[i] = 0;
  }
  for(i=0; i<length; i++){
    if(string[i]>='a' && string[i]<='z'){
      frequency[string[i] - 97]++;
    }
    else if(string[i]>='A' && string[i]<='Z'){
      frequency[string[i] - 65]++;
    }
  }
printf("Frequency of all characters in
string: ");
  for(i=0; i<20; i++){
    if(frequency[i] != 0){
      printf("'%c' = %d", (i + 97),
frequency[i]);
    }
  }
  return 0;
}
```

46 C program to find diameter, circumference and area of a circle using functions.

```
#include<stdio.h>

#define PI 3.14

int main()

{

  float radius, area, circumference, diameter;

  printf("\n Please Enter the radius of a circle : ");

  scanf("%f",&radius);

 diameter = 2 * radius;

  circumference = 2 * PI * radius;

  area = PI * radius * radius;

 printf("\n Diameter Of a Circle = %.2f\n", diameter);

  printf("\n Circumference Of a Circle = %.2f\n", circumference);

  printf("\n Area Of a Circle = %.2f\n", area);

 return 0;

}
```

48 C program to add two number using pointers.

```
#include<stdio.h>

#include<conio.h>

int main()
```

```
{
   int num1, num2, sum;
   int *ptr1, *ptr2;
   printf("Enter any two Number: ");
   scanf("%d%d", &num1, &num2);
   ptr1 = &num1;
   ptr2 = &num2;
   sum = *ptr1 + *ptr2;
   printf("\nSum of %d and %d is %d",
*ptr1, *ptr2, sum);
   getch();
   return 0;
}
```

49 C program to swap two number using call by reference

```
#include <stdio.h>
void swap(int * num1, int * num2);
int main()
{
   int num1, num2;
  printf("Enter two numbers: ");
   scanf("%d%d", &num1, &num2);
   printf("Before swapping in main n");
   printf("Value of num1 = %d \n",
num1);
   printf("Value of num2 = %d \n\n",
num2);
```

```
   swap(&num1, &num2);

   printf("After swapping in main n");

   printf("Value of num1 = %d \n",
num1);

   printf("Value of num2 = %d \n\n",
num2);

return 0;

}
```

50 C program to copy the contents of one array into another in the reverse order

```
#include <stdio.h>

 void printArray(int arr[], int len)

{

   int i;

   for (i = 0; i < len; i++) {

      printf("%d ", arr[i]);

   }

}

int main()

{

   int original_arr[] = {1, 2, 3, 4, 5};

   int len =
sizeof(original_arr)/sizeof(original_arr[0])
;

   int copied_arr[len], i, j;

  for (i = 0; i < len; i++) {

      copied_arr[i] = original_arr[len - i -
1];
```

```
    } printf("\nOriginal array: ");
    printArray(original_arr, len);
    printf("\nResultant array: ");
    printArray(copied_arr, len);

    return 0;
}
```

LIST OF STAR PATTERN PROGRAMMING EXERCISES

Square star pattern

```
*****
*****
*****
*****
*****
#include<stdio.h
> int main()
{
int n;
  printf("Enter the number of
rows: ");    scanf("%d", &n);
for(int r = 1; r <= n; r++)
  {
    for(int c = 1; c <= n; c++)
    {
      printf("*");
    }
    printf("\n");
```

```
  }


  return 0;
}
```

Right Triangle Star pattern

```
*
**
***
****
*****
#include<stdio.h
> int main()
{
int n;
printf
("Ent
er
the
num
ber
of
rows:
");
scanf
("%d
",
&n);
```

```
  for(int i = 1; i <= n; i++)
  {
    for(int j = 1; j <= i; j++)
    {
      printf("*");
    }
    printf("\n");
  }

  return 0;
}
```

Pyramid Star Pattern

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

```
#include<stdio.h>
int main()
{
int n;

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

  for(int i = 1; i <= n; i++)
  {
```

```
    for(int s = 1; s <= n-i; s++)
printf(" ");      for(int j = 1; j <=
i; j++) printf("*");
printf("\n");

  }


  return 0;
}
```

PYRAMID STAR PATTERN

```
    *
  ***
 *****
*******
#include<stdio.h
> int main()
{
int n;


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


  for(int i = 1; i <= n; i++)
  {
    for(int j = 1; j <= n; j++)
    {
```

```
        if(j <= n-i) printf("
");         else printf("* ");


      }

      printf("\n");

   }


   return 0;

}
```

INVERTED PYRAMID STAR
PATTERN

```
*****

 ****

  ***

   **

    *
#include<stdio.h

> int main()

{

int n;


   printf("Enter number of rows:

");    scanf("%d", &n);


   for(int i = 1; i <= n; i++)

   {

      for(int j = 1; j <= n; j++)
```

```
    {         if(j < i)
printf(" ");
else printf("*");
    }
    printf("\n");
  }

  return 0;
}
```

HOLLOW SQUARE STAR PATTERN

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

```
#include <stdio.h>

int main() {

  int size = 5;

  for (int i = 0; i < size;
i++) {    for (int j = 0; j <
size; j++) {
```

```
     if (i == 0 || i == size - 1) {
printf("*");
     }
else {

       if (j == 0 || j == size - 1) {
printf("*");
       }
else {
printf(" ");
       }
     }
   }
   printf("\n");
 }
 return 0;
}
```

HOLLOW RHOMBUS STAR
PATTERN

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

```
#include <stdio.h>
#include <conio.h>
```

```
int main()
{    int
i,j,n;
char ch;


   printf("Enter number of
rows: ");
scanf("%d%c",&n,&ch);
printf("Enter the symbol: ");
ch=getchar();


   for(i=1;i<=n;i++)
   {
      for(j=1;j<=n-i;j++)
      {
printf(" ");
      }


if(i==1 || i==n)
          for(j=1;j<=n;j++)
          {
             printf("%c",ch);
          }
else
              {
          for(j=1;j<=n;j++)
          {
```

```
            if(j==1 ||
j==n)
printf("%c",ch);
else
printf(" ");
          }
       }
       printf("\n");

   }



   return 0;
}
```

RHOMBUS STAR PATTERN

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

```
#include<stdio.h
> int main()
{    int i, j, k,
rows;
   printf("Enter Rhombus Star Pattern
Rows =  ");    scanf("%d", &rows);
```

```
   printf("Rhombus Star
Pattern\n");     for(i = rows; i >=
1; i--)
   {
      for(j = 1; j <= i - 1; j++)
      {
printf(" ");
      }
      for(k = 1; k <= rows; k++)
      {
printf("*");
      }
      printf("\n");
   }
   return 0;
}
```

NUMBER PATTERN 1

```
11111
11111
11111
11111
11111
#include <stdio.h>

int main()
{    int rows,
cols, i, j;
```

```
   printf("Enter number of
rows: ");     scanf("%d", &rows);
printf("Enter number of
columns: ");     scanf("%d",
&cols);

   for(i=1; i<=rows; i++)
   {
      for(j=1; j<=cols; j++)
      {
printf("1");
      }

      printf("\n");
   }

   return 0;
}
```

NUMBER PATTERN 2

```
11111
00000
11111
00000
11111
#include <stdio.h>
```

```
int main()
{
```

```
    int rows, cols, i, j;




    scanf("%d", &rows);


    scanf("%d", &cols);


    for(i=1; i<=rows; i++)
    {
        for(j=1; j<=cols; j++)
        {
            if(i%2 == 1)
            {
printf("1");
            }
else
            {
printf("0");
            }
        }


        printf("\n");
    }


    return 0;
}
```

NUMBER PATTERN 3

01010

01010

01010

01010

01010

```
#include <stdio.h>

int main()
{    int rows,
cols, i, j;

   scanf("%d", &rows);

   scanf("%d", &cols);

   for(i=1; i<=rows; i++)
   {
      for(j=1; j<=cols; j++)
      {
         if(j%2 == 1)
         {
printf("0");
         }
else
         {
printf("1");
         }
      }
```

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

    return 0;
}
```

NUMBER PATTERN 4

11111

10001

10001

10001

11111

```
#include
<stdio.h> int
main(){
  int rows, cols, i, j;



    scanf("%d", &rows);

    scanf("%d", &cols);

    for(i=1; i<=rows; i++)
    {
        for(j=1; j<=cols; j++)
        {
```

```
        if(i==1 || i==rows || j==1 ||
j==cols)

        {

printf("1");

        }

else

        {

printf("0");

        }

      }


      printf("\n");

   }


   return 0;

}
```

NUMBER PATTERN 5

11111

11111

11011

11111

11111

```
#include <stdio.h>

int main()
{    int rows, cols, i, j;    int centerRow, centerCol;


   printf("Enter number of rows: ");    scanf("%d", &rows);
printf("Enter number of columns: ");    scanf("%d", &cols);


   centerRow = (rows + 1) / 2;    centerCol = (cols + 1) / 2;

   for(i=1; i<=rows; i++)
   {
      for(j=1; j<=cols; j++)
      {
         if(centerCol == j && centerRow == i)
         {              printf("0");
         }
         else if(cols%2 == 0 && centerCol+1 == j)
         {
            if(centerRow == i || (rows%2 == 0 && centerRow+1 == i))
               printf("0");              else
printf("1");
         }
         else if(rows%2 == 0 && centerRow+1 == i)
```

```
        {
            if(centerCol == j || (cols%2 == 0 && centerCol+1 == j))                printf("0");
else                printf("1");          }          else
        {             printf("1");
        }
      }

      printf("\n");
   }

   return 0;
}
```

NUMBER PATTERN 6

10101

01010

10101

01010

10101

```
#include <stdio.h>

int main()
{    int rows, cols, i, j, k;

   printf("Enter number of rows: ");    scanf("%d", &rows);
printf("Enter number of columns: ");    scanf("%d", &cols);
```

```
    k = 1;


    for(i=1; i<=rows; i++)
    {
        for(j=1; j<=cols; j++)
        {           if(k == 1)
            {               printf("1");
            }           else
            {               printf("0");
            }
             k *= -1;
        }


        if(cols % 2 == 0)
        {           k *= -1;
        }


        printf("\n");
    }


    return 0;
}
```

NUMBER PATTERN 7

11011

11011

00000

11011

11011

```
#include <stdio.h>


int main()
{
   int rows, cols, i, j;     int centerRow, centerCol;


   printf("Enter number of rows: ");     scanf("%d", &rows);
printf("Enter number of columns: ");     scanf("%d", &cols);


   centerRow = (rows+1) / 2;     centerCol = (cols+1) / 2;


   for(i=1; i<=rows; i++)
   {
      for(j=1; j<=cols; j++)
      {


         if(centerCol == j || centerRow == i)
         {               printf("0");
         }
         else if((cols%2 == 0 && centerCol+1 == j) || (rows%2 == 0 && centerRow+1 == i))
         {


            printf("0");
         }           else
```

```
        {               printf("1");
        }
      }

      printf("\n");
   }

   return 0;
}
```

NUMBER PATTERN 8

10001

01010

00100

01010

10001

```
#include <stdio.h>

int main()
{    int rows, cols, i, j;

   printf("Enter number of rows: ");    scanf("%d", &rows);
printf("Enter number of columns: ");    scanf("%d", &cols);

   for(i=1; i<=rows; i++)
   {
      for(j=1; j<=cols; j++)
```

```
        {
            if(i == j || (j == (cols+1) - i))
            {               printf("1");
            }           else
            {               printf("0");
            }
        }

        printf("\n");
    }

    return 0;
}
```

NUMBER PATTERN 9

01110

10001

10001

10001

01110

```
#include <stdio.h>

int main()
{    int i, j, rows, cols;
```

```
   printf("Enter rows: ");     scanf("%d", &rows);
printf("Enter columns: ");     scanf("%d", &cols);

   for(i=1; i<=rows; i++)
   {
      for(j=1; j<=cols; j++)
      {
         if((i==1 || i==rows) && (j==1 || j==cols))
         {               printf("0");
         }
         else if(i==1 || i==rows || j==1 || j==cols)
         {
            printf("1");
         }           else
         {

            printf("0");
         }
      }

      printf("\n");
   }

   return 0;
}
```

NUMBER PATTERN 10

11111

22222

33333

44444

55555

```
#include <stdio.h>

int main()
{    int rows, cols, i, j;



   printf("Enter number of rows: ");    scanf("%d", &rows);
printf("Enter number of columns: ");    scanf("%d", &cols);

   for(i=1; i<=rows; i++)
   {
      for(j=1; j<=cols; j++)
      {
         printf("%d", i);
      }
      printf("\n");
   }

   return 0;
}
```

NUMBER PATTERN 11

12345

12345

12345

12345

12345

```
#include <stdio.h>

int main()
{    int rows, cols, i, j;    printf("Enter number of rows: ");
scanf("%d", &rows);    printf("Enter number of columns: ");
scanf("%d", &cols);

   for(i=1; i<=rows; i++)
   {
      for(j=1; j<=cols; j++)
      {
         printf("%d", j);
      }

      printf("\n");
   }

   return 0;
}
```

NUMBER PATTERN 12

12345

23456

34567

45678

56789

```
#include <stdio.h>

int main()
{    int rows, cols, i, j;

   printf("Enter number of rows: ");    scanf("%d", &rows);
printf("Enter number of columns: ");    scanf("%d", &cols);

   for(i=1; i<=rows; i++)
   {
      for(j=i; j < i+cols; j++)
      {
         printf("%d", j);
      }

      printf("\n");
   }

   return 0;
}
```

NUMBER PATTERN 13

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

```
#include <stdio.h>


int main()
{    int rows, cols, i, j, k;



   printf("Enter number of rows: ");    scanf("%d", &rows);
printf("Enter number of columns: ");    scanf("%d", &cols);


   k = 1;    for(i=1; i<=rows; i++)
   {
      for(j=1; j<=cols; j++, k++)
      {
         printf("%-3d", k);
      }


      printf("\n");
   }


   return 0;
}
```

NUMBER PATERN 14

55555

54444

54333

54322

54321

```
#include <stdio.h>

int main()
{    int rows, cols, i, j;



   printf("Enter number of rows: ");    scanf("%d", &rows);
printf("Enter number of columns: ");    scanf("%d", &cols);

   for(i=1; i<=rows; i++)
   {
      for(j=cols; j>cols-i; j--)
      {
         printf("%d", j);
      }

      for(j=1; j<=cols-i; j++)
      {
         printf("%d", (rows - i + 1));
      }
```

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

    return 0;
}
```

NUMBER PATTERN 15

```
12345
23455
34555
45555
55555
```

```
#include <stdio.h>
int main()
{    int rows, cols, i, j;

    printf("Enter number of rows: ");    scanf("%d", &rows);
printf("Enter number of columns: ");    scanf("%d", &cols);

    for(i=1; i<=rows; i++)
    {
        for(j=i; j<=cols; j++)
        {
            printf("%d", j);
        }
```

```
        for(j=i; j>1; j--)
        {
            printf("%d", cols);
        }

        printf("\n");
    }

    return 0;
}
```

NUMBER PATTERN 16

12345

23451

34521

45321

54321

```
#include <stdio.h>

int main()
{    int rows, cols, i, j;

    printf("Enter number of rows: ");    scanf("%d", &rows);
printf("Enter number of columns: ");    scanf("%d", &cols);
```

```
    for(i=1; i<=rows; i++)
    {
        for(j=i; j<=cols; j++)
        {
            printf("%d", j);
        }

        for(j=i-1; j>=1; j--)
        {
            printf("%d", j);
        }

        printf("\n");
    }

    return 0;
}
```