

C Programming Lab Assignment

01

```
// C program to perform all arithmetic operations
#include <stdio.h>

int main()
{
    float a, b, sum = 0, subs = 0, multi = 1, div;
    printf("Enter the the value of a:");
    scanf("%f", &a);

    printf("Enter the the value of b:");
    scanf("%f", &b);

    sum = a + b;

    printf("Sum of a and b is %.2f\n", sum);
    subs = a - b;

    printf("Substraction of a & b is %0.2f\n\n", subs);
    multi = a * b;

    printf("Product of a & b is %0.2f\n", multi);
    div = a / b;
    printf("Division of a & b is %0.2f\n", div);
    return 0;
}
```

02

```
// C program to check alphabet, digit or special character using Conditional operator.
#include<stdio.h>

int main()
{
    char a;
    printf("Enter the number:");
    scanf("%c",&a);
    if((a>='a' && a<='z') || (a>='A' && a<='Z'))
    {
        printf("A is alphabet");
    }
    else if(a>='0' && a<='9')
    {
        printf("A is number");
    }
    else
    {
        printf("A is special character ");
    }
    return 0;
}
```

03

```
// C program to calculate total electricity bill
#include<stdio.h>

int main()
{
    float a,b;
    printf("Enter the amount of unit:");
    scanf("%f",&a);
    b=a*4.22; //Here 4.22 is the charge of electriscity per unit
    printf("The electriscity bill of %.2f unit is %.2f",a,b);
    return 0;
}
```

04

```
// C program to create Simple Calculator AND Days of week using switch case.
#include<stdio.h>
#include<math.h>

int main()
{
    int sum,subst,multi,division,power,operation,days,weeks;
    float a,b,percent;
    printf("Enter the value of a and b: ");
    scanf("%f %f",&a,&b);
    printf("Enter number of Days to calculate week:");
    scanf("%d",&days);
    printf("Enter the operation you want to do 1 for sum, 2 for subtraction, 3
for multiplication and 4 for division,5 to calculate number of weeks:");
    scanf("%d",&operation);

    sum= a+b;
    subst= a-b;
    multi=a*b;
    division=a/b;
    weeks = (days % 365) / 7;

    switch(operation)
    {
        case 1:printf("%d",sum);
        break;
        case 2:printf("%d",subst);
        break;
        case 3:printf("%d",multi);
        break;
        case 4:printf("%d",division);
        case 5:printf("%d",weeks);
        break;
    }

    return 0;
}
```

05

```
// C program to check vowel or consonant using switch case
#include<stdio.h>

int main()
{
    char a;
    printf("Enter the character:");
    scanf("%c",&a);
    switch(a)
    {
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;
}
```

06

```
// C program to check whether a triangle is Equilateral, Isosceles or Scalene.
#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 && a!=c)
    {
        printf("Scalene Triangle");
    }
    else if(a=b && a!=c)
    {
        printf("Isosceles Triangle");
    }
    else if(a=b=c)
    {
        printf("Equilateral Triangle");
    }
    return 0;
}
```

07

```
// C program to check positive negative or zero using switch case.
#include<stdio.h>

int main()
{
    int a;
    printf("Enter the number:");
    scanf("%d",&a);
    switch(a>0)
    {
        case 1:printf("positive");
        break;
    }
    switch(a<0)
    {
        case 1:printf("Negative");
        break;
    }
}
```

```

switch(a=0)
{
    case 0:printf("Zero");
    break;
}

return 0;
}

```

08

```

// C program to print all natural numbers AND sum of it from 1 to n.
#include<stdio.h>

int main()
{
    int a,sum=0;
    printf("Enter the value of nth term:");
    scanf("%d",&a);
    for(int i=1;i<=a;i++)
    {
        printf("%d\n",i);
        sum=sum+i;
    }
    printf("sum of nth term is %d",sum);
    return 0;
}

```

09

```

// C program to print all even numbers AND sum of it from 1 to n
#include<stdio.h>

int main()
{
    int a,sum=0;
    printf("Enter the value of nth term:");
    scanf("%d",&a);
    for(int i=1;i<=a;i++)
    {

```

```

        if(i%2==0)
        {
            printf("%d\n",i);
            sum=sum+i;
        }

    }
    printf("sum of nth term is %d",sum);
    return 0;
}

```

10

```

// C program to print multiplication table of a number.
#include<stdio.h>

int main()
{
    int a,b;
    printf("Enter the number whose table you want to print:");
    scanf("%d",&a);
    for(int i=1;i<=10;i++)
    {
        b=a*i;
        printf("%d\n",b);
    }
    return 0;
}

```

11

```
// C program to calculate factorial of a number.
#include<stdio.h>

int main()
{
    int n,factorial=1;
    printf("Enter the number whose factorial you want print:");
    scanf("%d",&n);
    for(int i=1;i<=n;i++)
    {
        factorial *=i;
    }
    printf("The factoril of %d is %d",n,factorial);
    return 0;
}
```

12

```
// C program to find area of a triangle if base and height are give
#include<stdio.h>

int main()
{
    int base,height,area;
    printf("Enter the the value of base ");
    scanf("%d",&base);
    printf("Enter the the value of height ");
    scanf("%d",&height);
    area=(1*base*height)/2;
    printf("The area of triangle is %.2f",(float)area);

    return 0;
}
```


13

```
// plaidraom (If enter number is equal to the reverse of number than number is palidrome)
```

```
#include<stdio.h>

int main()
{
    int number,temp,rem,sum=0;
    printf("Enter the number:");
    scanf("%d",&number);
    temp=number;
    while(number>0)
    {
        rem =number%10;
        sum=sum*10+rem;
        number/=10;
    }
    if(temp==sum)
    {
        printf("%d is an Palindrome number",temp);
    }
    else
    {
        printf("%d is not an Palindrome number",temp);
    }
    return 0;
}
```

14

```
// C program to count frequency of digits in a given number.
```

```
#include <stdio.h>
#define BASE 10 /* Constant */

int main()
{
    long long num, n;
    int i, lastDigit;
    int freq[BASE];

    /* Input number from user */
    printf("Enter any number: ");
    scanf("%lld", &num);
```

```

    /* Initialize frequency array with 0 */
    for(i=0; i<BASE; i++)
    {
        freq[i] = 0;
    }

    /* Copy the value of 'num' to 'n' */
    n = num;

    /* Run till 'n' is not equal to zero */
    while(n != 0)
    {
        /* Get last digit */
        lastDigit = n % 10;

        /* Remove last digit */
        n /= 10;

        /* Increment frequency array */
        freq[lastDigit]++;
    }

    /* Print frequency of each digit */
    printf("Frequency of each digit in %lld is: \n", num);
    for(i=0; i<BASE; i++)
    {
        printf("Frequency of %d = %d\n", i, freq[i]);
    }

    return 0;
}

```

15

```

// C program to count frequency of digits in a given number.
#include <stdio.h>
#define BASE 10 /* Constant */

int main()
{
    long long num, n;
    int i, lastDigit;
    int freq[BASE];

```

```

/* Input number from user */
printf("Enter any number: ");
scanf("%lld", &num);

/* Initialize frequency array with 0 */
for(i=0; i<BASE; i++)
{
    freq[i] = 0;
}

/* Copy the value of 'num' to 'n' */
n = num;

/* Run till 'n' is not equal to zero */
while(n != 0)
{
    /* Get last digit */
    lastDigit = n % 10;

    /* Remove last digit */
    n /= 10;

    /* Increment frequency array */
    freq[lastDigit]++;
}

/* Print frequency of each digit */
printf("Frequency of each digit in %lld is: \n", num);
for(i=0; i<BASE; i++)
{
    printf("Frequency of %d = %d\n", i, freq[i]);
}

return 0;
}

```

16

```
// Program or code for prime numbers between 1 to n in c language

#include<stdio.h>

int main(){

    int num,i,count,n;
    printf("Enter max range: ");
    scanf("%d",&n);

    for(num = 1;num<=n;num++){

        count = 0;

        for(i=2;i<=num/2;i++){
            if(num%i==0){
                count++;
                break;
            }
        }

        if(count==0 && num!= 1)
            printf("%d ",num);
    }

    return 0;
}
```

17

```
// C program to print all Strong Numbers between 1 to n
#include <stdio.h>
#include <stdbool.h>

int main(void) {
    int n, i, j, last_digit, sum;
    bool is_strong;

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

    printf("All strong numbers between 1 and %d are:\n", n);
```

```

for (i = 1; i <= n; ++i) {
    sum = 0;
    j = i;
    is_strong = true;

    while (j > 0) {
        last_digit = j % 10;
        j /= 10;

        int fact = 1;
        for (int k = 1; k <= last_digit; ++k) {
            fact *= k;
        }

        sum += fact;
    }

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

return 0;
}

```

18

```

// C program to print Fibonacci series up to n terms.
#include<stdio.h>
int main()
{
    int n,a=0,b=1,nxt_term=0;
    printf("enter a no:");
    scanf("%d",&n);
    printf("fibonacci series:%d,%d,",a,b);
    nxt_term=a+b;
    while(nxt_term<=n)
    {
        printf("%d,",nxt_term);
        a=b;
        b=nxt_term;
        nxt_term=a+b;
    }
    return 0;
}

```

```
#include<stdio.h>
#include <math.h>
int main(void) {
    int n, i, num, last_digit, digits, sum, original;
    bool is_armstrong;

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

    printf("All Armstrong numbers between 1 and %d are:\n", n);

    for (i = 1; i <= n; ++i) {
        sum = 0;
        num = i;
        original = num;
        digits = (int)log10(num) + 1;

        while (num > 0) {
            last_digit = num % 10;
            sum += pow(last_digit, digits);
            num /= 10;
        }

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

    printf("\nEnter a number to check if it is an Armstrong number: ");
    scanf("%d", &num);
    original = num;
    sum = 0;
    digits = (int)log10(num) + 1;

    while (num > 0) {
        last_digit = num % 10;
        sum += pow(last_digit, digits);
        num /= 10;
    }

    is_armstrong = (original == sum);
    printf("%d is ", original);
    if (is_armstrong) {
```

```

    printf("an Armstrong number.");
} else {
    printf("not an Armstrong number.");
}

return 0;
}

```

20

```

//C program to print all Perfect numbers between 1 to n AND
// Check a given number is Perfect numbers or not.
#include <stdio.h>

int main(void) {
    int n, i, j, sum, num;
    bool is_perfect;

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

    printf("All perfect numbers between 1 and %d are:\n", n);

    for (i = 2; i <= n; ++i) {
        sum = 0;
        for (j = 1; j < i; ++j) {
            if (i % j == 0) {
                sum += j;
            }
        }

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

    printf("\nEnter a number to check if it is a perfect number: ");
    scanf("%d", &num);
    sum = 0;
    for (i = 1; i < num; ++i) {
        if (num % i == 0) {
            sum += i;
        }
    }
}

```

```

    is_perfect = (sum == num);
    printf("%d is ", num);
    if (is_perfect) {
        printf("a perfect number.");
    } else {
        printf("not a perfect number.");
    }

    return 0;
}

```

21

```

// C program to find power of any number using for loop
#include <stdio.h>

int main()
{
    int base, exponent;
    int 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 = %d", base, exponent, power);

    return 0;
}

```


22

```
// C program to print ASCII values of all characters
#include <stdio.h>
int main() {
    char c;
    printf("Enter a character: ");
    scanf("%c", &c);
    printf("ASCII value of %c = %d", c, c);

    return 0;
}
```

23

```
// C program to find all angles of a triangle if two angles are given.
#include<stdio.h>
#include<math.h>
int main()
{
    float a,b,c;
    printf("Enter the value of 1st and 2nd angle: ");
    scanf("%f %f",&a,&b);
    c=180-a-b;
    printf( "Third angle is: %f",c);
    return 0;
}
```

24

```
// C program to print Pascal triangle up to n rows
#include<stdio.h>
long factorial(int);
int main()
{
    int i, n, c;
    printf("Enter the number of rows you wish to see in pascal triangle\n");
    scanf("%d", &n);
    for (i = 0; i < n; i++) {
        for (c = 0; c <= (n - i - 2); c++) printf(" ");
        for (c = 0; c <= i; c++) printf("%ld ", factorial(i) / (factorial(c) *
factorial(i - c)));
        printf("\n");
    }
}
```

```

        return 0;
    }
    long factorial(int n) {
        int c;
        long result = 1;
        for (c = 1; c <= n; c++) result = result * c;
        return result;
    }

```

25

```

// C program to find sum of all elements of array
#include<stdio.h>

int main()
{
    int n,sum=0;
    printf("Enter the size of array:");
    scanf("%d",&n);
    int a[n];
    printf("Enter the element of array:");
    for(int i=0;i<n;i++)
    {
        scanf("%d",&a[i]);
    }
    for(int i=0;i<n;i++)
    {
        sum+=a[i];
    }
    printf("sum of Elemnet in array is:%d ",sum);
    return 0;
}

```

26

```

// C program to copy one array to another array.
#include <stdio.h>

int main()
{
    int n;
    printf("Enter the size of array:");
    scanf("%d",&n);
    int a[n];

```

```

printf("Enter the element of array:");
for(int i=0;i<n;i++)
{
    scanf("%d",&a[i]);
}
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;
}

```

27

```

// C program to insert an element in array at specified position.
#include<stdio.h>

int main()
{
    int array[100];
    int position,i,n,value;
    printf("Enter the size of array between 100:");
    scanf("%d",&n);
    printf("Enter the element of array:");
    for(i=0;i<n;i++)
    {
        scanf("%d",&array[i]);
    }
    printf("Enter the position where you want to enter the number:");
    scanf("%d",&position);
    if(position<0||position>n)
    {
        printf("Enter a valid index size:\n");
    }
}

```

```

    else
    {
        printf("Enter the element which you want to insert:");
        scanf("%d",&value);
        for(i=n;i>=position;i--)
            array[i]=array[i-1];

        n++;
        array[position]=value;
        for(i=0;i<n;i++)
        {
            printf("Element in array is:%d\n",array[i]);
        }
    }
    return 0;
}

```

28

```

// C program to delete an element in array at specified position.

#include<stdio.h>

int main()
{
    int n,pos,i;
    printf("Enter the size of array:");
    scanf("%d",&n);
    int a[n];
    printf("Enter the element of array:");
    for(i=0;i<n;i++)
    {
        scanf("%d",&a[i]);
    }
    printf("Enter the position from where you want to delete element:");
    scanf("%d",&pos);
    for(i=pos-1;i<n-1;i++)
    {
        a[i]=a[i+1];
    }
    for(i=0;i<n-1;i++)
        printf("%d ",a[i]);
    return 0;
}

```

```
// C program to search element in array using Linear Search.
#include<stdio.h>

int main()
{
    int n,i,find,count=0;
    printf("Enter the size of array:");
    scanf("%d",&n);
    int a[n];
    printf("Enter the element of array:");
    for(i=0;i<n;i++)
    {
        scanf("%d",&a[i]);
    }
    printf("Enter the number which position you want to find:");
    scanf("%d",&find);
    for(i=0;i<n;i++)
    {
        if (a[i]==find)
        {
            printf("%d",i);
            count++;
        }
    }

    if(count==0)
    {
        printf("Element not found");
    }

    return 0;
}
```

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

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

```
int main()
```

```
{
```

```
    int n,temp;
```

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

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

```
    int a[n];
```

```
    printf("Enter the element of array:");
```

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

```
    {
```

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

```
    }
```

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

```
    {
```

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

```
        {
```

```
            if (a[i]>a[j])
```

```
            {
```

```
                temp=a[i];
```

```
                a[i]=a[j];
```

```
                a[j]=temp;
```

```
            }
```

```
        }
```

```
    }
```

```
    printf("After sorting:\n");
```

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

```
    {
```

```
        printf("%d\n",a[i]);
```

```
    }
```

```
    printf("Second largest number is:%d",a[1]);
```

```
    return 0;
```

```
}
```

31

```
// C program to count total number of duplicate elements in an array.
#include <stdio.h>

int main()
{
    int inputArray[100];
    int i, j, elementCount, count = 0;

    printf("Enter Number of Elements in Array\n");
    scanf("%d", &elementCount);
    printf("Enter %d numbers\n", elementCount);

    for (i = 0; i < elementCount; i++)
    {
        scanf("%d", &inputArray[i]);
    }

    for (i = 0; i < elementCount; i++)
    {
        for (j = i + 1; j < elementCount; j++)
        {
            if (inputArray[i] == inputArray[j])
            {
                count++;
                break;
            }
        }
    }

    printf("Duplicate Element Count : %d\n", count);
    return 0;
}
```

32

```

// C program to perform scalar matrix multiplication
#include<stdio.h>
#include<math.h>

int main()
{   int n;
printf("Enter size of matrix");
    scanf("%d",&n);
    int a[n][n],b[n][n],c[n][n];
    printf("Enter the value in first matrix\n");
    for(int i=0;i<n;i++)
    {
        for(int j=0;j<n;j++)
        {
            scanf("%d",&a[i][j]);
        }
    }
    printf("enter the value in second matrix\n");
    for(int i=0;i<n;i++)
    {
        for(int j=0;j<n;j++)
        {
            scanf("%d",&b[i][j]);
        }
    }
    for(int i=0;i<n;i++)
    {
        for(int j=0;j<n;j++)
        {
            c[i][j]=0;
            for(int k=0;k<n;k++)
            {
                c[i][j]+=a[i][k]*b[k][j];
            }
        }
    }
    for(int i=0;i<n;i++)
    {
        for(int j=0;j<n;j++)
        {
            printf("%d\t",c[i][j]);
        }
        printf("\n");
    }
    return 0;
}

```


33

```
// C program to find sum of main diagonal elements of a matrix.
#include<stdio.h>
#include<math.h>

int main()
{
    int x,a[100][100],sum=0;
    printf("Enter the size of matrix\n");
    scanf("%d",&x);
    printf("Enter the values in matrix\n");
    for(int i=0;i<x;i++){
        for(int j=0;j<x;j++){
            scanf("%d",&a[i][j]);}}
    for(int i=0;i<x;i++){
        for(int j=0;j<x;j++){
            if(i==j){
                sum=sum+a[i][j];}}}
    printf("the sum of elements of diagonal of matix is: %d",sum);
    return 0;
}
```

34

```
// C program to convert days in to years, weeks and days.
#include <stdio.h>

int main()
{
    int days, years, weeks;

    /* Input total number of days from user */
    printf("Enter days: ");
    scanf("%d", &days);

    /* Conversion */
    years = (days / 365);    // Ignoring leap year
    weeks = (days % 365) / 7;
    days = days - ((years * 365) + (weeks * 7));

    /* Print all resultant values */
    printf("YEARS: %d\n", years);
}
```

```
printf("WEEKS: %d\n", weeks);  
printf("DAYS: %d", days);  
  
return 0;  
}
```

35

```
#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(j%2 == 1)  
            {  
                printf("0");  
            }  
            else  
            {  
                printf("1");  
            }  
        }  
  
        printf("\n");  
    }  
  
    return 0;  
}
```

36

```
#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%2 == 1)
            {
                printf("1");
            }
            else
            {
                printf("0");
            }
        }

        printf("\n");
    }

    return 0;
}
```

37

```
#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;
}

```

38

```

// C program to find maximum between three numbers using conditional operator AND
Ternary Operator.
#include<stdio.h>

int main()
{
    int a,b,c;
    printf("Enter a:");
    scanf("%d",&a);
    printf("Enter b:");
    scanf("%d",&b);
    printf("Enter c:");
    scanf("%d",&c);
    if(a>b && a>c)
        printf("A is greater");
    else if (b>a && b>c)
    {
        printf("B is greater");
    }
    else if(c>a && c>b)
    {
        printf("C is greater");
    }
    else if(a=b=c)
    {
        printf("All number are equal");
    }
    return 0;
}

```

39

```
#include <stdio.h>

int main()
{
    int i, j, n;
    printf("Enter value of n: ");
    scanf("%d", &n);

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

    return 0;
}

pattern2.c
```

40

```
// C program to check Least Significant Bit (LSB) and MSB of a number using
bitwise operator.
#include<stdio.h>

int main()
{
    int a,b,c=0;
    printf("Enter a:");
    scanf("%d",&a);
    printf("Enter b:");
    scanf("%d",&b);
    c=a;
    a=b;
    b=c;
    printf("Number after swap %d %d",a,b);
    // without third variable
    // a=a+b;
```

```

    // b=a-b;
    // a=a-b;
    // printf("\nNumber after swap without third variable is %d %d",a,b);
    return 0;
}

```

41

```

#include <stdio.h>

int main()
{
    int num;

    /* Input number from user */
    printf("Enter any number: ");
    scanf("%d", &num);

    /* If (num & 1) evaluates to 1 */
    if(num & 1)
        printf("LSB of %d is set (1).", num);
    else
        printf("LSB of %d is unset (0).", num);

    return 0;
}

```

42

```

// 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: :- ");
    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;
}

```

43

```

#include <stdio.h>

#define MAX_SIZE 100
void printArr(int *arr, int size);

int main()
{
    int arr[MAX_SIZE];
    int size;
    int *left = arr;
    int *right;
    printf("Enter size of array: ");
    scanf("%d", &size);

    right = &arr[size - 1];

    printf("Enter elements in array: ");
    while(left <= right)
    {
        scanf("%d", left++);
    }

    printf("\nArray before reverse: ");
    printArr(arr, size);
    left = arr;
    while(left < right)
    {
        *left ^= *right;
        *right ^= *left;
        *left ^= *right;
        left++;
    }
}

```

```

        right--;
    }

    printf("\nArray after reverse: ");
    printArr(arr, size);

    return 0;
}

void printArr(int * arr, int size)
{
    int * arrEnd = (arr + size - 1);
    while(arr <= arrEnd)
    {
        printf("%d, ", *arr);
        arr++;
    }
}

```

43

```

#include <stdio.h>

#define MAX_SIZE 100
void printArr(int *arr, int size);

int main()
{
    int arr[MAX_SIZE];
    int size;
    int *left = arr;
    int *right;
    printf("Enter size of array: ");
    scanf("%d", &size);

    right = &arr[size - 1];

    printf("Enter elements in array: ");

```



```

while(left <= right)
{
    scanf("%d", &arr[left]);
    left++;
}

printf("\nArray before reverse: ");
printArr(arr, size);
left = 0;
right = size - 1;
while(left < right)
{
    *left ^= *right;
    *right ^= *left;
    *left ^= *right;
    left++;
    right--;
}

printf("\nArray after reverse: ");
printArr(arr, size);

return 0;
}

void printArr(int * arr, int size)
{
    int * arrEnd = (arr + size - 1);
    while(arr <= arrEnd)
    {
        printf("%d, ", *arr);
        arr++;
    }
}

```

44

```
// C program to find power and square root of any number.
#include<stdio.h>
#include<math.h>
int main()
{
    float a,b,c;
    printf("Enter a number: ");
    scanf("%f",&a);
    printf("Enter power of function:");
    scanf("%f",&b);
    c=pow(a,b);
    printf( "%.2f",c);

    double number, squareRoot;

    printf("\nEnter number to find square root: ");
    scanf("%lf", &number);

    // computing the square root
    squareRoot = sqrt(number);

    printf("Square root of %.2lf = %.2lf", number, squareRoot);
    return 0;
}
```

45

```
// Swap 2 numbers using Call by Value AND Call by reference.
#include <stdio.h>

void swap(int, int);

int main()
{
    int x, y;

    printf("Enter the value of x and y\n");
    scanf("%d%d",&x,&y);

    printf("Before Swapping\nx = %d\ny = %d\n", x, y);

    swap(x, y);
}
```

```

    printf("After Swapping\nx = %d\ny = %d\n", x, y);

    return 0;
}

void swap(int a, int b)
{
    int temp;

    temp = b;
    b = a;
    a = temp;
    printf("Values of a and b is %d  %d\n",a,b);
}

```

46

```

int main()
{
    int first, second, *p, *q, sum;

    printf("Enter two integers to add\n");
    scanf("%d%d", &first, &second);

    p = &first;
    q = &second;

    sum = *p + *q;

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

    return 0;
}

```

```
// C program to check prime, armstrong and perfect numbers using functions.
#include <stdio.h>
#include <math.h>
int isPrime(int num);
int isArmstrong(int num);
int isPerfect(int num);

int main()
{
    int num;

    printf("Enter any number: ");
    scanf("%d", &num);
    if(isPrime(num))
    {
        printf("%d is Prime number.\n", num);
    }
    else
    {
        printf("%d is not Prime number.\n", num);
    }
    if(isArmstrong(num))
    {
        printf("%d is Armstrong number.\n", num);
    }
    else
    {
        printf("%d is not Armstrong number.\n", num);
    }
    if(isPerfect(num))
    {
        printf("%d is Perfect number.\n", num);
    }
    else
    {
        printf("%d is not Perfect number.\n", num);
    }

    return 0;
}
int isPrime(int num)
{

```

```

    int i;

    for(i=2; i<=num/2; i++)
    {
        if(num%i == 0)
        {
            return 0;
        }
    }

    return 1;
}

int isArmstrong(int num)
{
    int lastDigit, sum, originalNum, digits;
    sum = 0;

    originalNum = num;
    digits = (int) log10(num) + 1;
    while(num > 0)
    {
        lastDigit = num % 10;
        sum = sum + round(pow(lastDigit, digits));
        num = num / 10;
    }

    return (originalNum == sum);
}

int isPerfect(int num)
{
    int i, sum, n;
    sum = 0;
    n = num;

    for(i=1; i<n; i++)
    {
        if(n%i == 0)
        {
            sum += i;
        }
    }

    return (num == sum);
}

```

```
}
```

48

```
// C program to find diameter, circumference and area of a circle using functions
#include<stdio.h>
#include<math.h>

double getDiameter(double radius);
double getCircumference(double radius);
double getArea(double radius);

int main()
{
    float radius, dia, circ, area;

    printf("Enter radius of circle: ");
    scanf("%f", &radius);

    dia = getDiameter(radius);
    circ = getCircumference(radius);
    area = getArea(radius);

    printf("Diameter of the circle = %.2f units\n", dia);
    printf("Circumference of the circle = %.2f units\n", circ);
    printf("Area of the circle = %.2f sq. units", area);

    return 0;
}

double getDiameter(double radius)
{
    return (2 * radius);
}

double getCircumference(double radius)
{
    return (2 * 3.14* radius);
}

double getArea(double radius)
{
    return (3.14* radius * radius);
}
```

```

    printf("Frequency of %c = %d", ch, count);
    return 0;
}

```

49

```

// C program to count frequency of each character in a string
#include <stdio.h>
int main() {
    char str[1000], ch;
    int count = 0;

    printf("Enter a string: ");
    fgets(str, sizeof(str), stdin);

    printf("Enter a character to find its frequency: ");
    scanf("%c", &ch);

    for (int i = 0; str[i] != '\0'; ++i) {
        if (ch == str[i])
            ++count;
    }

    printf("Frequency of %c = %d", ch, count);
    return 0;
}

```

50

```

// 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;
}

```

51

```

//All Operations of String
#include <stdio.h>
void displayString(char str[]);

int main()
{
    char str[50];
    printf("Enter string: ");
    fgets(str, sizeof(str), stdin);
    displayString(str);    // Passing string to a function.
    return 0;
}

void displayString(char str[])
{
    printf("String Output: ");
    puts(str);
}

```



```
// C program to merge two sorted array in ascending order
#include <stdio.h>

#define ARRAY_SIZE_1 5
#define ARRAY_SIZE_2 8
#define MERGED_ARRAY_SIZE (ARRAY_SIZE_1 + ARRAY_SIZE_2)

int main(void) {
    int array_1[ARRAY_SIZE_1] = {1, 3, 5, 7, 9};
    int array_2[ARRAY_SIZE_2] = {2, 4, 6, 8, 10, 12, 14, 16};
    int merged_array[MERGED_ARRAY_SIZE];
    int i = 0, j = 0, k = 0;

    while (i < ARRAY_SIZE_1 && j < ARRAY_SIZE_2) {
        if (array_1[i] < array_2[j]) {
            merged_array[k] = array_1[i];
            i++;
        } else {
            merged_array[k] = array_2[j];
            j++;
        }
        k++;
    }

    while (i < ARRAY_SIZE_1) {
        merged_array[k] = array_1[i];
        i++;
        k++;
    }

    while (j < ARRAY_SIZE_2) {
        merged_array[k] = array_2[j];
        j++;
        k++;
    }

    for (i = 0; i < MERGED_ARRAY_SIZE; i++) {
        printf("%d ", merged_array[i]);
    }
    printf("\n");

    return 0;
}
```

```
// C program to check whether a matrix is Identity matrix or not
#include<stdio.h>
#include<math.h>

int main()
{
    int x,a[100][100],sum=0;
    printf("Enter the size of matrix\n");
    scanf("%d",&x);
    printf("Enter the values in matrix\n");
    for(int i=0;i<x;i++){
        for(int j=0;j<x;j++){
            scanf("%d",&a[i][j]);}}
    for(int i=0;i<x;i++){
        for(int j=0;j<x;j++)
        {
            if (i==j)
            {
                if(a[i][j]!=1)
                {
                    sum++;
                }
            }
            else
            {
                if(a[i][j]!=0)
                {
                    sum++;
                }
            }
        }
    }

    if(sum==0)
    printf("Matrix is identity matrix");
    else
    printf("The matrix is not identity matrix");
    return 0;
}
```

```
// C program to check sparse AND transpose matrix
#include<stdio.h>

int main()
{
    int n,m,i,j;
    printf("Enter the size of 1st and 2nd array respectively:");
    scanf("%d %d",&n,&m);
    int a[n][m],b[n][m];
    printf("Enter the element of array:");
    for(i=0;i<n;i++)
    {
        for( j=0;j<m;j++)

            scanf("%d",&a[i][j]);
    }
    for(int i=0;i<n;i++)
    {
        for ( j=0;j<m;j++)
        {
            printf("%d ",a[i][j]);
        }
        printf("\n");
    }
    for(int i=0;i<n;i++)
    {
        for ( j=0;j<m;j++)
        {
            b[j][i]=a[i][j];
        }
    }

    printf("Transpose of Matrix\n");
    for(int i=0;i<m;i++)
    {
        for ( j=0;j<n;j++)
        {
            printf("%d ",b[i][j]);
        }
        printf("\n");
    }
}
```

```

    }

    return 0;
}

```

55

```

#include<stdio.h>
int main ()
{
    int n,arm=0,r,c;
    printf("enter the any number:");
    scanf("%d",&n);
    c=n;
    while(n>0)
    {
        r=n%10;
        arm=(r*r*r)+arm;
        n=n/10;
    }
    if(c==arm)
        printf("it is a armstrong number ");
    else
        printf("it is not armstrong number");
    return 0;
}

```

56

```

#include<stdio.h>
int main()
{
    float a[14], sum=0, avg;
    int i,n;

    printf("Enter Size of An Array : ");
    scanf("%d",&n);
    printf("Enter array elements or numbers:\n");
    for(i=0; i< n; i++)
    {
        printf("Enter element a[%d] = ",i);
        scanf("%f", &a[i]);
    }
}

```

```

}
for(i=0; i< n; i++)
{
    sum = sum + a[i];
}

avg = sum/n;
printf("Sum is %f\n", sum);
printf("Average is %f", avg);

return 0;
}

```

57

```

#include <stdio.h>
int main()
{
    int a[100], i, j, temp, n;
    printf("enter the size of array: \n");
    scanf("%d", &n);
    printf("enter the elements: \n");
    for (i = 0; i < n; i++)
        scanf("%d", &a[i]);
    for (i = 0; i < n - 1; i++)
    {
        for (j = 0; j < n - i - 1; j++)
        {
            if (a[j] > a[j + 1])
            {
                temp = a[j];
                a[j] = a[j + 1];
                a[j + 1] = temp;
            }
        }
    }
    printf("sorted array are :\n");
    for (i = 0; i < n; i++)
        printf("%d\n", a[i]);

    return 0;
}
//bubble shorting

```

58

```
#include<stdio.h>
int main ()
{
    int km,m,cm,ft,inch;
    printf("enter the distance kilometer :");
    scanf("%d",&km);
    m=km*1000;
    cm=km*100000;
    inch=km*39370;
    ft=km*3280;
    printf("distance in cm=%d\n",cm);
    printf("distance in m=%d\n",m);
    printf("distance in inch=%d\n",inch);
    printf("distance in ft=%d\n",ft);
    return 0;
}
```

59

```
#include <stdio.h>
int main() {
    int num, i;
    printf("enter the number:");
    scanf("%d",&num);
    printf("Factors of %d are:",num);
    for (i=1;i<=num;++i)
    {
        if (num%i==0)
        {
            printf("%d",i);
        }
    }
    return 0;
}
```

60

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

{
    int a,b,x,y,t,gcd,lcm;

    printf("Enter the number x=");
    scanf("%d",&x);
    printf("Enter the number y=");
    scanf("%d",&y);

    a=x;
    b=y;

    while (b!= 0)
    {
        a=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;
}
```

61

```
#include<stdio.h>
int main ()
{
    int a[100],i,num,size,pos;
    printf("enter the size:");
    scanf("%d",&size);
    printf("enter array element:\n");
    for(i=0;i<size;i++)
    {
        scanf("%d",&a[i]);
    }
    printf("insert element you want to insert in array:");
```

```

scanf("%d",&num);

printf("in which pos you want to insert:");
scanf("%d",&pos);
for(i=size-1;i>=pos-1;i--)
{
    a[i+1]=a[i];
}
a[pos-1]=num;
size++;

printf("updated array is:");
for(i=0;i<size;i++)
{
    printf("%d\t",a[i]);
}
return 0;
}

```

62

```

#include<stdio.h>
int main ()
{
    int a[3][3],b[3][3],c[3][3],i,j;
    for(i=0;i<3;i++)
    for(j=0;j<3;j++)
    {
        printf("\n enter value for 1st array:");
        scanf("%d",&a[i][j]);
    }
    printf("enter the value for second matrix:");
    for(i=0;i<3;i++)
    for(j=0;j<3;j++)
    {
        printf("\n enter value for 2d array:");
        scanf("%d",&b[i][j]);
    }
    printf("\n first matrix is:");
    for(i=0;i<3;i++)
    {
        printf("\n");
    }
}

```



```

        for(j=0;j<0;j++)
        printf("%d\t",a[i][j]);
    }
    printf("\n second matrix is:");
    for(i=0;i<3;i++)
    {
        printf("\n");
        for(j=0;j<3;j++)
        printf("%d\t",b[i][j]);
    }
    for(i=0;i<3;i++)
    for(j=0;j<3;j++)
    c[i][j]=a[i][j]+b[i][j];
    printf("\n addition of matrix is:");
    for(i=0;i<3;i++)
    {
        printf("\n");
        for(j=0;j<3;j++)
        printf("%d\t",c[i][j]);
    }
    return 0;
}

```

63

```

#include<stdio.h>
int main(){
int a[3][3],i,j;
for(i=0;i<3;i++)
for(j=0;j<3;j++){
printf("Enter Element at %d%d position",i+1,j+1);
scanf("%d",&a[i][j]);

}
for(i=0;i<3;i++){
for(j=0;j<3;j++){
printf(" %d ",a[i][j]);
}
printf("\n");

}
return 0;

}

```

64

```
#include<stdio.h>
int main ()
{
    int num,sum=0,sqr,rem;
    printf("enter the  number :");
    scanf("%d",&num);
    sqr=num*num;
    while(sqr!=0)
    {
        rem=sqr%10;
        sum=sum+rem;
        sqr=sqr/10;
    }
    if (num==sum)
    printf("the given number is neon number is %d\n",num);
    else
    printf("the given number is not neon number is %d\n",num);
}
//neon number
```

65

```
#include <stdio.h>
int main()
{
    int n, reversed = 0, remainder, original;
    printf("Enter the any number : ");
    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;
}
//palendrom
```

66

```
#include <stdio.h>
int main()
{
    int id;
    int pass;
    printf("Enter Your id:");
    scanf("%d", &id);
    switch (id)
    {
        case 1111:
            printf("Enter your password: ");
            scanf("%d", &pass);
            switch (pass)
            {
                case 0000:
                    printf("Welcome to piyush mishra world ");
                    break;

                default:
                    printf("Password is incorrect:");
                    break;
            }
            break;
        default:
            printf("Id is incorrect");
            break;
    }
    return 0;
}
```

67

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

    return 0;
}
```

68

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

return 0;
}
```

69

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

```

int n,sum=0,i;
printf("enter the any number :");
scanf("%d",&n);
for(i=1; i<n;i++)
{
    {
        if(n%i==0)

            sum=sum+i;
    }
}
if (sum==n)
printf("the given number is perfect number is %d\n",n);
else
printf("the given number is not perfect number is %d\n",n);
}
// perfect no.

```

70

```

#include <stdio.h>
int main()
{
    int a[100], n,i,j,temp,flag=0;
    printf("enter the size of array;");
    scanf("%d",&n);
    for (i= 0;i<n;i++)
    {
        printf("enter the array elements:");
        scanf("%d",&a[i]);
    }

    for(j=0;j<n-i-1;j++)
    {
        if (a[j] > a[j + 1])
        {
            temp=a[j];
            a[j] = a[j + 1];
            a[j + 1] =temp;
            flag = 1;
        }
        if (flag==0)
        {
            break;
        }
    }
}

```

```

    }
}
printf("Sorted Array:");
for (i=0;i<n;i++)
    printf("%dn", a[i]);
return 0;
}

```

71

```

#include<stdio.h>
int main ()
{
    int x,y,temp;
    printf("enter the number x = ");
    scanf("%d",&x);
    printf("entwr the number y = ");
    scanf("%d",&y);

    temp=x;
    x=y;
    y=temp;

    printf("swap of number x is = %d\n",x);
    printf("swap of number y is = %d\n",y);

    return 0;
}

```

73

```

#include<stdio.h>
int main ()
{
    int a,i;
    printf("enter the table number :");
    scanf("%d",&a);
    for(i=1;i<=10;i++)
    {
        printf("%d*%d is %d\n",a,i,a*i);
    }
}

```

```
return 0;
}
```

74

```
#include <stdio.h>
int main()
{
    int a[100], n,i,j,temp,flag=0;
    printf("Enter the array size");
    scanf("%d",&n);
    printf("enter the array elemnts");
    scanf("%d",&a[i]);
    for (i=0;i<n;i++)
        scanf("%d",&a[i]);
    for (i=0;i<n-1;i++)
    {
        for(j=0;j<n-i-1;j++)
        {
            if (a[j] > a[j + 1])
            {
                temp=a[j];
                a[j] = a[j + 1];
                a[j + 1] =temp;
                flag = 1;
            }
            if (flag==0)
            {
                break;
            }
        }
    }
    printf("Sorted Array:");
    for (i=0;i<n;i++)
        printf("%dn", a[i]);
    return 0;
}
```

75

```
#include<stdio.h>
int main ()
{
    int age;
    printf("enter the age:");
    scanf("%d",&age);
    if(age>=90){
        printf("you can not drive;");
    }
    else{
        (" you can drive");}
    return 0;
}
```