

Q. Write a program to input five real numbers and find out average & sum.

Ans:

```
#include<stdio.h>
int main()
{
    int a,b,c,d,e,sum;
    float avg;
    printf("Enter five numbers ");
    scanf("%d %d %d %d %d", &a, &b, &c, &d, &e);
    sum = a+b+c+d+e;
    avg = sum/5;
    printf("\nAverage = %.f\nSum = %.d", avg, sum);
    return 0;
}
```

Output :-

```
Enter five numbers 23 46 73 12 32
Average = 37.200000
Sum = 186
```

Q. Write a program to input radius of a circle, find out its area & circumference.

Ans:

```
#include<stdio.h>
int main()
{
    int radius;
    float area, circumference;
    printf("Enter the radius of a circle ");
    scanf("%d", &radius);
    area = (radius * radius) * 3.14;
    circumference = 2 * radius * 3.14;
    printf("Area = %.f\nCircumference = %.f", area, circumference);
    return 0;
}
```

Output :-

```
Enter the radius of a circle 7
Area = 154.000000
Circumference = 43.982299
```

Q. Write a program to input three sides of a triangle and find out its area & circumference.

Ans:-

```
#include<stdio.h>
#include<math.h>
int main()
{
    int side1, side2, side3, circumference;
    float area, semicircumference;
    printf("Enter sides of a triangle ");
    scanf("%d%d%d", &side1, &side2, &side3);
    circumference = side1 + side2 + side3;
    printf("\nCircumference = %.d", circumference);
    semicircumference = circumference / 2;
    area = sqrt(semicircumference * (semicircumference - side1) * (semicircumference - side2) * (semicircumference - side3));
    printf("\nArea = %.f", area);
    return 0;
}
```

Output:-

Enter sides of a triangle 5 12 13

Circumference = 30.

Area = 30.00000

Q. Write a program to input length & breadth of a rectangle, find out its area & circumference.

Ans:-

```
#include<stdio.h>
int main()
{
    int length, breadth, area, circumference;
    printf("Input length & breadth of rectangle ");
    scanf("%d%d", &length, &breadth);
    area = length * breadth;
    circumference = 2 * (length + breadth);
    printf("\nArea = %.d, Circumference = %.d", area, circumference);
    return 0;
}
```

Output:-

Input length & breadth of rectangle 20 10

Area = 200, Circumference = 60

Q Write a program to input a character. Display its ASCII code.

Ans #include <stdio.h>
int main()
{
 char a;
 printf("Enter a character");
 scanf("%c", &a);
 printf("\nASCII code of %c = %d", a, a);
 return 0;
}

Output :-

Enter a character A
ASCII code of A = 65

Q Write a program to find the simple interest for given principal, rate of interest & no. of years.

Ans #include <stdio.h>
int main()
{
 int p, r, t;
 float SI;
 printf("Enter the value of p, r and t ");
 scanf("%d %d %d", &p, &r, &t);
 SI = (p * r * t) / 100;
 printf("\nSimple interest is %.f", SI);
 return 0;
}

Output :-

Enter the value of p, r and t 1000 4 2
Simple interest is 80.00000

Q Write a program to find compound interest for given principal, rate of interest & no. of years.

Ans #include <stdio.h>
#include <math.h>
int main()
{
 int p, r, t;
 float CI;
 printf("Enter the value of p, r, t ");
 scanf("%d %d %d", &p, &r, &t);

```

CI = p * ((pow(1 + (r / 100)), t) - 1);
printf("CI = %.f", CI);
return 0;
}

```

Output:-

Enter the value of p, r, t 7500 8.16 1

CI = 612.000000

Q→ Write a program to solve a quadratic equation.

Ans:-

```

#include <stdio.h>
#include <math.h>
int main()
{
    int a, b, c, d;
    float root1, root2;
    printf("Enter the value of a, b, c: ");
    scanf("%d%d%d", &a, &b, &c);
    d = (b * b) - (4 * a * c);
    root1 = (-b + sqrt(d)) / (2 * a);
    root2 = (-b - sqrt(d)) / (2 * a);
    printf("Root1 = %.f, Root2 = %.f", root1, root2);
    return 0;
}

```

Output:-

Enter the value of a, b, c: 1 -5 6

Root1 = 2.000000, Root2 = 3.000000

Q→ Write a program to calculate the gross salary (GS) of an employee, input basic salary (BS) through keyboard.

DA is 40% of basic salary (BS)

HRA is 20% of basic salary (BS)

$$GS = BS + DA + HRA$$

Ans:-

```

#include <stdio.h>
int main()
{
    int BS;
    float DA, HRA, GS;
    printf("Input basic salary ");
    scanf("%d", &BS);
    DA = 0.4 * BS;
    HRA = 0.2 * BS;
}

```

```
GS = BS + DA + HRA;  
printf("\nGross salary = %.f", GS);  
return 0;  
}
```

Output :-

Input basic salary 40000
Gross salary = 52000.000000

Q Write a program to calculate distance between two cities. Convert the distance in meters, feet, inches & centimeters.

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

 float distance, meters, feet, inches, centimeters;
 printf("Input the distance");
 scanf("%f", &distance);
 meters = 1000 * distance;
 centimeters = 100 * meters;
 feet = 30.48 * centimeters;
 inch = 0.40 * centimeters;
 printf("\nmeters = %.f, centimeters = %.f, feet = %.f,
 inch = %.f", meters, centimeters, feet, inch);
 return 0;

}

Output :-

Input the distance 15

meters = 15000.000000, centimeters = 1500000.000000, feet = 45720000.000000
inch = 600000.000000

Q Write a program to input temperature of city in Fahrenheit then convert the temp into centigrade.

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

 float fahrenheit, centigrade;
 printf("Input the temperature in fahrenheit ");
 scanf("%f", &fahrenheit); centigrade = 33.8 * fahrenheit;
 printf("Temperature in centigrade = %.f", centigrade);
 return 0;

Output :- Input the temperature in fahrenheit 10.000000
Temperature in centigrade = 338.000000

Q) Write a program to input two numbers. Swap them using third variable.

Ans:-

```
#include<stdio.h>
int main()
{
    int a,b,c;
    printf("Input two numbers");
    scanf("%d%d", &a, &b);
    c=a;
    a=b;
    b=c;
    printf("\nAfter swapping, a=%d, b=%d", a, b);
    return 0;
}
```

Output:- Input two numbers 4 6

After swapping, a=6, b=4

Q) Write a program to input two numbers. Swap them without using third variable.

Ans:-

```
#include<stdio.h>
int main()
{
    int a,b;
    printf("Input two numbers");
    scanf("%d%d", &a, &b);
    a=a+b;
    b=a-b;
    a=a-b;
    printf("\na=%d, b=%d", a, b);
    return 0;
}
```

Output:- Input two numbers 7 10

a=10, b=7

Q) Write a program to input a five digit number through keyboard. Find out the sum of its digits.

Ans:-

```
#include<stdio.h>
int main()
{
    int number, last_digit, next_digit, total;
```

```

printf("Enter a five digit number");
scanf("%d", &number);
last-digit = number % 10;
total = last-digit;
next-digit = (number / 10) % 10;
total = total + next-digit;
next-digit = (number / 100) % 10;
total = total + next-digit;
next-digit = (number / 1000) % 10;
total = total + next-digit;
next-digit = (number / 10000) % 10;
total = total + next-digit;
printf("\nSum of the five digits = %d", total);
return 0;
}

```

Output:- Enter a five digit number 32761

Sum of the five digits = 19

Q→ Write a program to read the price of an item in rupees & print the output in paise.

Ans:- #include <stdio.h>

```

int main()
{

```

```

    int rupees, paise;
    printf("Enter the price of an item in rupees");
    scanf("%d", &rupees);
    paise = 100 * rupees;
    printf("\nPaise = %d", paise);
    return 0;
}

```

Output-

Enter the price of an item in rupees 75
Paise = 7500

CONDITIONAL OPERATOR

Q→ Write a program to input a number & check it is even or odd.

Ans: #include<stdio.h>

```
int main()
{
    int a;
    printf("Enter a number");
    scanf("%d", &a); printf("\n");
    (a%2==0)?printf("%d is even", a):printf("%d is odd", a);
    return 0;
}
```

Output:- Enter a number 36

36 is even

Q→ Write a program to input a number, test it is +ve or -ve.

Ans: #include<stdio.h>

```
int main()
{
    int a;
    printf("Enter a number");
    scanf("%d", &a); printf("\n");
    (a>0)?printf("The number is positive"):printf("The number
is negative");
    (a==0)?printf("The number is neither positive
nor negative");
    return 0;
}
```

Output: Enter a number 40

The number is positive

Q→ Input an year, test it is a leap year or not.

Ans: #include<stdio.h>

```
int main()
{
    int year;
    printf("Enter an year");
    scanf("%d", &year); printf("\n");
    (year%4==0 && year%100!=0) || (year%400==0)?printf("leap
year"):printf("Not leap year");
    return 0;
}
```

Output:- Enter an year 2002

Not leap year

Q) Write a program to read two numbers & display the larger value.

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

```
{  
    int a,b;  
    printf("Input two numbers ");  
    scanf("%d%d", &a, &b); printf("\n");  
    (a>b)?printf("%d is larger", a):printf("%d is larger", b):(a==b)?  
        printf("No one is larger");  
    return 0;  
}
```

Output:- Input two numbers 7 5
7 is larger

Q) Write a program to read 3 numbers & display the largest value

Ans #include<stdio.h>

```
int main()  
{  
    int a,b,c;  
    printf("Input 3 numbers ");  
    scanf("%d%d%d", &a, &b, &c); printf("\n");  
    (a>b&&a>c)?printf("%d is largest", a):(b>c)?printf("%d is  
        largest", b):printf("%d is largest", c);  
    return 0;  
}
```

Output:- Input 3 numbers 7 6 10

10 is largest

CONTROL STATEMENT:-

Q) Input a number, check if it is even or odd.

Ans #include<stdio.h>

```
int main()  
{  
    int a;  
    printf("Input a number");  
    scanf("%d", &a);  
    if(a%2==0)  
        printf("The number is even");  
    else  
        printf("\nThe number is odd");  
    return 0;  
}
```

Output:- Input a number 23
The number is odd

Q → Input a number. Check if it is +ve or -ve.

Ans- #include <stdio.h>
int main()
{
 int a;
 printf("Input a number");
 scanf("%d", &a); printf("\n");
 if (a > 0)
 printf("The number is positive");
 else if (a < 0)
 printf("The number is negative");
 else
 printf("The number is neither positive nor negative");
 return 0;
}

Output:- Input a number 36

The number is positive

Q → Input an year. Check if it is a leap year or not.

Ans- #include <stdio.h>
int main()
{
 int year;
 printf("Input an year");
 scanf("%d", &year); printf("\n");
 if (((year % 4 == 0) && (year % 100 != 0)) || (year % 400 == 0))
 printf("The year is leap year");
 else
 printf("The year is not leap year");
 return 0;
}

Output:- Input an year 2004

The year is leap year

Q → Input an alphabet. Test if it is a vowel or consonant.

Ans- #include <stdio.h>
int main()
{
 char a;
 printf("Input an alphabet");
 scanf("%c", &a);

```

    "
if(a=='A'||a=='E'||a=='I'||a=='O'||a=='U'||a=='a'||a=='e'||  

    a=='i'||a=='o'||a=='u')
    printf("\n The character is vowel");
else
    printf("\n The character is consonant");
return 0;
}

```

Output :- Input an alphabet b
The character is consonant

Q → Write a program to read two numbers. Display larger value.

Ans- #include<stdio.h>

```

int main()
{
int a,b;
printf("Input two numbers");
scanf("%d%d", &a, &b); printf("\n");
if(a>b)
    printf("%d is larger", a);
else
    printf("%d is larger", b);
return 0;
}

```

Output :- Input two numbers 7 8
8 is larger

Q → Write a program to read three numbers. Display the largest value.

Ans- #include<stdio.h>

```

int main()
{
int a,b,c;
printf("Input three numbers");
scanf("%d%d%d", &a, &b, &c); printf("\n");
if((a>b)&&(a>c))
    printf("%d is largest", a);
else if(b>c)
    printf("%d is largest", b);
else
    printf("%d is largest", c);
return 0;
}

```

Output - Input three numbers 7 6 10
10 is largest

Q → Solve quadratic equation.

Ans

```
#include<stdio.h>
#include<math.h>
int main()
{
    int a,b,c,d;
    float root1, root2;
    printf("Input value of a,b,c");
    scanf("%d%d%d", &a, &b, &c); printf("\n");
    d = (b * b) - (4 * a * c);
    printf("d = %d", d);
    if(d < 0)
        printf("Roots are imaginary");
    else if(d == 0)
    {
        root1 = (-b + sqrt(d)) / (2 * a);
        printf("Roots are equal");
    }
    else
    {
        root1 = (-b + sqrt(d)) / (2 * a);
        root2 = (-b - sqrt(d)) / (2 * a);
        printf("Roots are real = %.f, %.f", root1, root2);
    }
    return 0;
}
```

Output - Input value of a,b,c 1 - 5 6

Roots are real = 2.000000, 3.000000

Q → Input cost price & selling price of an item. Determine whether the seller has made profit or loss & also calculate profit or loss amount.

Ans

```
#include<stdio.h>
int main()
{
    int CP, SP, profit, loss;
```

```

printf("Input CP and SP value ");
scanf("%d %d", &CP, &SP); printf("\n");
if(SP > CP)
{
    profit = SP - CP;
    printf("Profit = %d", profit);
}
else if(CP > SP)
{
    loss = CP - SP;
    printf("Loss = %d", loss);
}
else
    printf("Neither profit nor loss ");
return 0;
}

```

Output :- Input CP and SP value 130 200
 Profit = 70

Q) Input any character from keyboard to determine whether the character is a capital case letter, a small case letter, a digit, a space or a special symbol.

Ans:-

```

#include<stdio.h>
int main()
{
    char a;
    printf("Input a character ");
    scanf("%c", &a); printf("\n");
    if((a >= 65) && (a <= 90))
        printf("Character is capital");
    else if((a >= 97) && (a <= 122))
        printf("The character is small");
    else if((a >= 48) && (a <= 57))
        printf("Character is a digit");
    else if(a == 32)
        printf("Character is space");
    else
        printf("Character is a special character");
}

```

```
return 0;  
}
```

Output:- Input a character & character is a digit

Q→ Input three marks of a student. Calculate average & grade.

Rules: If $\text{avg} \geq 85$, grade is 'S'

If $\text{avg} \geq 75$ and $\text{avg} < 85$, grade is 'A'

If $\text{avg} \geq 65$ and $\text{avg} < 75$, grade is 'B'

If $\text{avg} \geq 55$ and $\text{avg} < 65$, grade is 'C'

If $\text{avg} \geq 50$ and $\text{avg} < 55$, grade is 'D'

If $\text{avg} < 50$, grade is 'F'.

Ans #include<stdio.h>

```
int main()  
{  
    int mark1, mark2, mark3;  
    float avg;  
    printf("Input three marks of a student");  
    scanf("%d%d%d", &mark1, &mark2, &mark3);  
    if (avg  $\geq 85$ ) avg = (float)(mark1 + mark2 + mark3) / 3; printf("\n");  
    printf("Grade is 'S'");  
    else if ((avg  $\geq 75$ ) && (avg  $< 85$ ))  
        printf("Grade is 'A'");  
    else if ((avg  $\geq 65$ ) && (avg  $< 75$ ))  
        printf("Grade is 'B'");  
    else if ((avg  $\geq 55$ ) && (avg  $< 65$ ))  
        printf("Grade is 'C'");  
    else if ((avg  $\geq 50$ ) && (avg  $< 55$ ))  
        printf("Grade is 'D'");  
    else  
        printf("Grade is 'F'");  
    return 0;  
}
```

Output- Input three marks of a student 10 20 30

Avg = 20.000000

Grade is 'F'

Q7 A cloth showroom has announced the following seasonal discounts on their clothing products.

Purchase amount	Discount		Local items
	Branded cloth	Local items	
0 - 1000	NIL	10%	
1000 - 2000	10%	20%	
2000 - 3000	20%	25%	
Above 3000	25%	50.0%	

Sample run:-

Enter purchase amount of branded clothes: 1200
 Enter purchase amount of local clothes: 4000
 Net amount payable = Rs. 3080
 Total discount = Rs. 2120

Ans // Program for a cloth showroom

```
#include<stdio.h>
int main()
{
    /* Variable declaration */
    float brand_cloth, local_cloth, total_price, brand_discount,
        local_discount, discount_amount, net_amount;
    // Input section
    printf("Enter purchase amount of branded clothes: ");
    scanf("%f", &brand_cloth);
    printf("\nEnter purchase amount of local clothes: ");
    scanf("%f", &local_cloth);
    /* Discount calculation for local clothes */
    if(local_cloth >= 0)
    {
        if(local_cloth >= 3000)
            local_discount = local_cloth * 0.5;
        else if((local_cloth >= 2000) && (local_cloth <= 3000))
            local_discount = local_cloth * 0.25;
        else if((local_cloth >= 1000) && (local_cloth <= 2000))
            local_discount = local_cloth * 0.2;
        else
            local_discount = local_cloth * 0.1;
    }
    else
        printf("\nCloth price can't be negative");
}
```

```

// Discount calculation for branded clothes
if(brand_cloth >= 0)
{
    if(brand_cloth >= 3001)
        brand_discount = brand_cloth * 0.25;
    else if((brand_cloth >= 2001) && (brand_cloth <= 3000))
        brand_discount = brand_cloth * 0.2;
    else if((brand_cloth >= 1001) && (brand_cloth <= 2000))
        brand_discount = brand_cloth * 0.1;
    else
        brand_discount = brand_cloth * 0;
}
else
    printf("\n Cloth price can't negative ");
// Calculation part
total_price = brand_cloth + local_cloth;
discount_amount = local_discount + brand_discount;
net_amount = total_price - discount_amount;
// Output section
printf("\n Net amount payable = Rs. %.f", net_amount);
printf("\n Total discount = Rs. %.f", discount_amount);
return 0;
}

```

Output:
Enter purchase amount of branded clothes: 1200.000000
Enter purchase amount of local clothes: 4000.000000
Net amount payable = Rs. 3080.000000

Total Discount = Rs. 2120.000000

Q→ Judge the performance of cricketers as per the following rules.

Rules

Average runs > 40 && avg wicket taken > 3

If avg runs > 50

If avg wicket > 4

Else

Performance

ALL ROUNDER

BATTER

BOWLER

Only a fielder

Ans:-

```

#include <stdio.h>
int main()
{
    // Variable declaration
    int total-run, innings, not-out
    float avg-run, avg-wicket, wickets;
    /* Input section */
    printf("\nTotal no. of runs ");
    scanf("%d", &total-run);
    printf("\nNumber of innings played ");
    scanf("%d", &innings);
    printf("\nNo. of not outs ");
    scanf("%d", &not-out);
    printf("\nNumber of wickets ");
    scanf("%f", &wickets);
    /* Calculation section */
    avg-run = (float)(total-run)/(innings - not-out);
    avg-wicket = wickets/innings;
    /* Output part */
    printf("\n Average run = %.f", avg-run);
    printf("\n Average wicket = %.f", avg-wicket);
    /* Conditional part */
    if(avg-run > 40 && avg-wicket > 3)
        printf("\nCricketer is an all rounder");
    else if(avg-run > 50)
        printf("\nCricketer is a Batter");
    else if(avg-wicket > 4)
        printf("\nCricketer is a Bowler");
    else
        printf("\nCricketer is only a fielder");
    return 0;
}

```

Output:- Total no of runs 280

Number of innings played 4

No. of not outs 1

No. of Wickets 2

Average run = 93.330000

Average wicket = 0.500000

Cricketer is a Batter

CASE CONTROL STATEMENT:-

Expt: Write a menu design program to input two numbers and make the following operation according to a choice from user.

1. ADD

2. SUB

3. MUL

4. DIV

ENTER A CHOICE(1,2,3,4)

Program:-

```
#include<stdio.h>
int main()
{
    int a,b,choice;
    printf("Enter two numbers: ");
    scanf("%d%d", &a, &b);
    printf("\n1: Addition");
    printf("\n2: Subtraction");
    printf("\n3: Multiplication");
    printf("\n4: Division");
    printf("\nEnter a choice(1,2,3,4):");
    scanf("%d", &choice);
    switch(choice)
    {
        case 1:
            printf("\nSum = %d", a+b);
            break;
        case 2:
            printf("\nSub = %d", a-b);
            break;
        case 3:
            printf("\nProduct = %d", a*b);
            break;
        case 4:
            printf("\nDiv = %d", a/b);
            break;
    }
}
```

default:

```
    printf("In Wrong choice");
```

}

```
return 0;
```

}

Output:-

Enter two numbers: 10 5

1. Addition
2. Subtraction
3. Multiplication
4. Division

Enter a choice(1,2,3,4): 3

Product = 50

Expt: Input an alphabet, test if it is a vowel or consonant.

Program:-

```
#include<stdio.h>
int main()
{
    char a;
    printf("Enter an alphabet");
    scanf("%c", &a);
    switch(a)
    {
        case 'a':
        case 'e':
        case 'i':
        case 'o':
        case 'u':
        case 'A':
        case 'E':
        case 'I':
        case 'O':
        case 'U':
            printf("%c is vowel", a);
            break;
        default:
            printf("%c is consonant", a);
    }
}
```

Output: Enter an alphabet e
e is vowel

Iteration control statement :-

Expt:- Display all numbers from 1 to n.

Program:

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

Output:-

Enter the value of n 6
1 2 3 4 5 6

Expt:- Add all numbers from 1 to n & display the sum.

Program:-

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

Output:-

Input n value: 5
Sum=15

Expt:- Add all even numbers & multiply all odd numbers from 1 to n.

Program:-

```
#include<stdio.h>
int main()
{
    int a, n, evensum, oddmul;
    printf("Enter the value of n ");
    scanf("%d", &n);
    evensum = 0;
    oddmul = 1;
    for(a=1; a<=n; a++)
    {
        if(a%2 == 0)
            evensum = evensum + a;
        else
            oddmul = oddmul * a;
    }
    printf("\n Sum of all even numbers = %d", evensum);
    printf("\n Multiplication of all odd numbers = %d", oddmul);
    return 0;
}
```

Output:-

Enter the value of n 5

Sum of all even numbers = 6

Multiplication of all odd numbers = 15

Expt:- Input a number. Find out its factorial.

Program:-

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

Output:-

Enter the value of n 4

Factorial = 24

Expt:- Input a number. Add the digits.

Program:-

```
#include<stdio.h>
int main()
{
    int a,n,add;
    printf("Input the value of n ");
    scanf("%d",&n);
    a=0;
    add=0;
    while(n!=0)
    {
        a=n%10;
        add=add+a;
        n=n/10;
    }
    printf("\nAddition of all digits=%d",add);
    return 0;
}
```

Output:-

Input the value of n 234

Addition of all digits = 9

Expt:- Input a number. Count the digits.

Program:-

```
#include<stdio.h>
int main()
{
    int a,n,count;
    printf("Enter the value of n ");
    scanf("%d",&n);
    count=0;
    while(n>0)
    {
        a=n%10;
        count=count+1;
        n=n/10;
    }
}
```

```
printf("\n Number of digits=%d", count);
return 0;
}
```

Output:-

Enter the value of n 767

Number of digits =3

Expt:- Input a number. Reverse it.

Program:-

```
#include<stdio.h>
int main()
{
    int a, n, reverse;
    printf("Input the value of n ");
    scanf("%d", &n); printf("\n");
    reverse = 0;
    while(n > 0)
    {
        a = n % 10;
        reverse = (reverse * 10) + a;
        n = n / 10;
    }
    printf("Reverse of the number is %d", reverse);
    return 0;
}
```

Output:-

Input the value of n 236

Reverse of the number is 632

Expt:- Input a number. Check it is a palindrome or not.

Program:-

```
#include<stdio.h>
int main()
{
    int a, n, n1, rev;
    printf("Input the value of n ");
    scanf("%d", &n);
    printf("\n");
    rev = 0;
    n1 = n;
    while(n > 0)
    {
```

```

a = n % 10;
rev = (rev * 10) + a;
n = n / 10;
}
if (n1 == rev)
    printf("Palindrome");
else
    printf("Not a palindrome");
return 0;
}

```

Output:-

Input the value of n 434
Palindrome

Expt:- Input a number. Check if it is Armstrong or not.
Program

```

#include <stdio.h>
#include <math.h>
int main()
{
    int a, n, n1, r;
    printf("Input a number:");
    scanf("%d", &n); printf("\n");
    n = 0;
    n1 = n;
    while (n > 0)
    {
        a = n % 10;
        r = r + pow(a, 3);
        n = n / 10;
    }
    if (n1 == r)
        printf("Armstrong");
    else
        printf("Not Armstrong");
    return 0;
}

```

Output:-

Input a number: 371
Not Armstrong

Expt:- Input a number. Check if it is strong or not.

Program:-

```
#include<stdio.h>
int main()
{
    int a,n,n1,fact,sum;
    printf("Input a number");
    scanf("%d", &n);
    n1=n;
    sum=0;
    while(n!=0)
    {
        a=n%10;
        fact=1;
        while(a>0)
        {
            fact=fact*a;
            a=a-1;
        }
        sum=sum+fact;
        n=n/10;
    }
    if(n1==sum)
        printf("\n The number is strong");
    else
        printf("\n The number is not strong");
    return 0;
}
```

Output:-

Input a number 145

The number is strong

Expt:- Input a number. Check if it is a nelson or not.

Program:-

```
#include<stdio.h>
int main()
{
    int a,b,sum,c,d;
    printf("Input a number");
    scanf("%d", &a);
    sum=0;
```

```

for( ; a>=111 && a<=999;)
{
    if(a%111==0) {
        printf("\nEnter number is Nelson number");
        break;
    }
    else {
        printf("Enter number is not Nelson number");
        break;
    }
}
return 0;
}

```

Output :- Input a number 333
 Enter number is Nelson number

Expt :- Input a number. Check if it is a prime or not.

Program :-

```

#include<stdio.h>
int main()
{
    int a,n; printf("Enter number"); scanf("%d",&n);
    for(a=2; a<=n; a++)
    {
        if(n%a==0)
            break;
    }
    if(a==n)
        printf("\nPrime number");
    else
        printf("\nNot a prime number");
    return 0;
}

```

Output :-
 Enter number 8
 Not a prime number

Expt :- Input a number. Check if it is perfect or not.

Program :-

```
#include<stdio.h>
int main()
{
    int a, n, sum;
    printf("Input a number");
    scanf("%d", &n);
    sum = 0;
    for(a=1; a<=n/2; a++)
    {
        if(n%a==0)
            sum = sum + a;
    }
    if(sum == n)
        printf("\nThe number is perfect.");
    else
        printf("\nThe number is not perfect.");
    return 0;
}
```

Output :-

Input a number 28

The number is perfect.

Expt :- Generate a Fibonacci sequence of n numbers.

Program :-

```
#include<stdio.h>
int main()
{
    int x1, x2, x3, a, n;
    printf("Input a number");
    scanf("%d", &n);
    x1 = 0;
    x2 = 1;
    printf("x1=%d", x1);
    printf("x2=%d", x2);
    for(a=2; a<n; a++)
    {
```

```

x3 = x1+x2; printf("In fibonacci series is"),  

printf("%d", x3);  

x1=x2;  

x2=x3;  

}  

return 0;
}

```

Output:-

Input a number 8
 +-----
 1
 2
 3
 5
 8
 13

Expt:- Input a number, display following format.
 e.g. number=123, output is 1 2 3

Program:-

```

#include<stdio.h>
int main()
{
    int n, k, rem=0, store=0;
    printf("Enter any number!");
    scanf("%d", &n);
    while(n!=0)
    {
        rem=n%10;
        store=store*10+rem;
        n=n/10;
    }
    while(store!=0)
    {
        k=store%10;
        printf("%d\n", k);
        store/=10;
    }
    return 0;
}

```

Output:- Enter any number 346

3
 4
 6

Expt: Input a range, find out square, cube & display in following format.

NUMBER	SQUARE	CUBE
--------	--------	------

Program:-

```
#include<stdio.h>
int main()
{
    int i, n, square, cube;
    printf("Enter a range");
    scanf("%d", &n); printf("\n");
    printf("NUMBER\tSQUARE\tCUBE\n");
    for(i=1; i<=n; i++)
    {
        square = i*i;
        cube = i*i*i;
        printf("%d\t%d\t%d", i, square, cube);
        printf("\n");
    }
    return 0;
}
```

Output:- SQUARE Enter a range 3

NUMBER	SQUARE	CUBE
1	1	1
2	4	8
3	9	27

Expt: Printf{ multiplication table of n number from 2 to 12.

```
#include<stdio.h>
int main()
{
    int i, j, c;
    for(i=2; i<=12; i++)
    {
        for(j=1; j<=10; j++)
        {
            c = i*j;
            printf("%d * %d = %d", i, j, c);
            printf("\t");
        }
        printf("\n");
    }
    return 0;
}
```

Output:- $2 * 1 = 2 \quad 2 * 2 = 4 \quad 2 * 3 = 6 \quad 2 * 4 = 8 \quad 2 * 5 = 10 \quad 2 * 6 = 12$
 $2 * 7 = 14 \quad 2 * 8 = 16 \quad 2 * 9 = 18 \quad 2 * 10 = 20 \quad 3 * 1 = 3 \quad 3 * 2 = 6 \quad 3 * 3 = 9$
 $3 * 4 = 12 \quad 3 * 5 = 15 \quad 3 * 6 = 18 \quad 3 * 7 = 21 \quad 3 * 8 = 24 \quad 3 * 9 = 27 \quad 3 * 10 = 30$

$4 * 1 = 4$	$4 * 2 = 8$	$4 * 3 = 12$	$4 * 4 = 16$	$4 * 5 = 20$	$4 * 6 = 24$
$4 * 7 = 28$	$4 * 8 = 32$	$4 * 9 = 36$	$4 * 10 = 40$	$5 * 1 = 5$	$5 * 2 = 10$
$5 * 3 = 15$	$5 * 4 = 20$	$5 * 5 = 25$	$5 * 6 = 30$	$5 * 7 = 35$	$5 * 8 = 40$
$5 * 9 = 45$	$5 * 10 = 50$	$6 * 1 = 6$	$6 * 2 = 12$	$6 * 3 = 18$	$6 * 4 = 24$
$6 * 5 = 30$	$6 * 6 = 36$	$6 * 7 = 42$	$6 * 8 = 48$	$6 * 9 = 54$	$6 * 10 = 60$
$7 * 1 = 7$	$7 * 2 = 14$	$7 * 3 = 21$	$7 * 4 = 28$	$7 * 5 = 35$	$7 * 6 = 42$
$7 * 7 = 49$	$7 * 8 = 56$	$7 * 9 = 63$	$7 * 10 = 70$	$8 * 1 = 8$	$8 * 2 = 16$
$8 * 3 = 24$	$8 * 4 = 32$	$8 * 5 = 40$	$8 * 6 = 48$	$8 * 7 = 56$	$8 * 8 = 64$
$8 * 9 = 72$	$8 * 10 = 80$	$9 * 1 = 9$	$9 * 2 = 18$	$9 * 3 = 27$	$9 * 4 = 36$
$9 * 5 = 45$	$9 * 6 = 54$	$9 * 7 = 63$	$9 * 8 = 81$	$9 * 10 = 90$	$10 * 1 = 10$
$10 * 2 = 20$	$10 * 3 = 30$	$10 * 4 = 40$	$10 * 5 = 50$	$10 * 6 = 60$	$10 * 7 = 70$
$10 * 8 = 80$	$10 * 9 = 90$	$10 * 10 = 100$	$11 * 1 = 11$	$11 * 2 = 22$	$11 * 3 = 33$
$11 * 4 = 44$	$11 * 5 = 55$	$11 * 6 = 66$	$11 * 7 = 77$	$11 * 8 = 88$	$11 * 9 = 99$
$11 * 10 = 110$	$12 * 1 = 12$	$12 * 2 = 24$	$12 * 3 = 36$	$12 * 4 = 48$	$12 * 5 = 60$
$12 * 6 = 72$	$12 * 7 = 84$	$12 * 8 = 96$	$12 * 9 = 108$	$12 * 10 = 120$	

Expt:- Read an integer number & find out the sum of all the digits till it reduces to a single digit.

e.g. $n = 1256$, sum = $1 + 2 + 5 + 6 = 14$
sum = $1 + 4 = 5$

Program:-

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

Output:- Enter a number 76
Sum=4

Expt:- Find out the sum of following series.

$$(i) \text{Sum} = 1^2 + 2^2 + 3^2 + 4^2 + \dots + n^2$$

Program:-

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

Output:- Enter a number 3
Sum = 14

$$(ii) \text{Sum} = 1 - \frac{1}{1!} + \frac{2}{2!} - \frac{3}{3!} + \frac{4}{4!} - \dots \frac{n}{n!}$$

Program:-

```
#include<stdio.h>
int main()
{
    int i, n, a;
    float sum, fact;
    printf("Enter a number");
    scanf("%d", &n); printf("\n");
    sum = 1;
    for(i=1; i<=n; i++)
    {
        fact = 1;
        if(i > 2)
        {
            for(a=1; a<=i; a++)
                fact = fact * a;
            sum = sum - (i / fact);
        }
        else
        {
            for(a=1; a<=i; a++)
                fact = fact * a;
            sum = sum + (i / fact);
        }
    }
}
```

```

    }
}

printf("Sum = %.f", sum);
return 0;
}

```

Output:- Enter a number 2

$$\text{Sum} = 1.000000$$

(iii) $\text{Sum} = x + x^2/2! + x^4/4! + \dots + x^n/n!$

Program:-

```

#include <stdio.h>
#include <math.h>
int main()
{
    int a, i, n, x;
    float sum, fact;
    printf("Enter x and n values");
    scanf("%d%d", &x, &n);
    sum = x;
    for(i=1; i<=n; i++)
    {
        fact = 1;
        if(i > 2 == 0)
        {
            for(a=1; a<=i; a++)
                fact = fact * a;
            sum = sum + (pow(x, i) / fact);
        }
    }
    printf("\nSum = %.f", sum);
    return 0;
}

```

Output:- Enter x and n values 2 2

$$\text{Sum} = 4.000000$$

(iv) $\text{Sum} = x - x^3/3! + x^5/5! - x^7/7! + \dots + x^n/n!$

Program:-

```

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

```

```

int i, n, a, b, x;
float sum, fact;
printf("Enter two numbers ");
scanf("%d %d", &x, &n);
sum = 0;
for(i=1; i<=n; i++)
{
    fact = 1;
    if(i%2 != 0)
    {
        for(a=1; a<=i; a++)
            fact = fact * a;
        b = (i-1)/2;
        if(b%2 == 0)
            sum = sum + (pow(x, i) / fact);
        else
            sum = sum - (pow(x, i) / fact);
    }
}
printf("\n Sum = %.f", sum);
return 0;
}

```

Output:- Enter two numbers 2 3
 Sum = 0.666667

Expt:- Write a program to print all prime nos. from 1 to n.

Program:-

```

#include<stdio.h>
int main()
{
    int i, j, n;
    printf("Enter number range ");
    scanf("%d", &n); printf("\n");
    for(i=2; i<=n; i++)
    {
        for(j=2; j<=i; j++)
        {
            if(i%j == 0)
                break;
        }
    }
}

```

```
        }  
        if(j==i)  
            printf("\t\t%d", i);  
    }  
    return 0;  
}
```

Output:- Enter number range 12
2 2 3 5 7 11

Pattern / pyramid :-

Program:-

```
#include<stdio.h>  
int main()  
{  
    int a,b;  
    for(a=1;a<=5;a++)  
    {  
        for(b=1;b<=a;b++)  
            printf("%d", b);  
        printf("\n");  
    }  
    return 0;  
}
```

Output:-

```
1  
1 2  
1 2 3  
1 2 3 4  
1 2 3 4 5  
1 2
```

Program:-

```
#include<stdio.h>  
int main()  
{  
    int i,j;  
    for(i=1;i<=5;i++)  
    {  
        for(j=i;j>=1;j--)  
            printf("%d", j);  
        printf("\n");  
    }  
    return 0;  
}
```

Output :-

```

    1
    2 1
    3 2 1
    4 3 2 1
    5 4 3 2 1
  
```

Program :-

```

#include<stdio.h>
int main()
{
    int i, j;
    for (i=5; i>=1; i--)
    {
        for (j=i, j<=5; j++)
            printf("%d", j);
        printf("\n");
    }
    return 0;
}
  
```

Output :-

```

    5
    4 5
    3 4 5
    2 3 4 5
    1 2 3 4 5
  
```

Program :-

```

#include<stdio.h>
int main()
{
    int i, j;
    for (i=1; i<=5; i++)
    {
        for (j=1; j<=6-i; j++)
            printf("%d", j);
        printf("\n");
    }
    return 0;
}
  
```

Output :-

```

    12345
    1234
    123
    12
    1
  
```

Program :-

```

#include<stdio.h>
int main()
{
    int i, j;
    for (i=1; i<=5; i++)
  
```

```
{  
    for(j=5; j>=i; j--)  
        printf("%d",j)  
        printf("\n");  
}  
return 0;  
}
```

Output:- 5 4 3 2 1
5 4 3 2
5 4 3
5 4
5

Program:-

```
#include<stdio.h>  
int main()  
{  
    int i,j;  
    for(i=1; i<=5; i++)  
    {  
        for(j=1; j<=i; j++)  
            printf("*");  
        printf("\n");  
    }  
    return 0;  
}
```

Output:- *
* *
* * *
* * * *
* * * * *

Program:-

```
#include<stdio.h>  
int main()  
{  
    int i,j,a;  
    for(i=1; i<=5; i++)  
    {  
        for(j=1; j<=i; j++)  
        {  
            a=i*j;  
            printf("%d",a);  
        }  
        printf("\n");  
    }  
    return 0;  
}
```

Output :-

1
0 0
1 1 1
0 0 0 0
1 1 1 1 1

Program:-

```
#include<stdio.h>
int main()
{
    int i,j,a;
    for(i=1;i<=5;i++)
    {
        for(j=1; j<=i;j++)
        {
            a=j%2;
            printf("%d",a);
        }
        printf("\n");
    }
    return 0;
}
```

Output :-

1
1 0
1 0 1
1 0 1 0
1 0 1 0 1

Program:-

```
#include<stdio.h>
int main()
{
    int i,j,a;
    a=0;
    for(i=1;i<=4;i++)
    {
        for(j=1;j<=i;j++)
        {
            a++;
            printf("%d",a);
        }
        printf("\n");
    }
    return 0;
}
```

Output :-

1
2 3
4 5 6
7 8 9 10

Program:-

```
#include<stdio.h>
int main()
{
    int i, j;
    for(i=1; i<=9; i++)
    {
        for(j=1; j<=i; j++)
            printf("%d", j);
        printf("\n");
        i = i + 1;
    }
    return 0;
}
```

Output:-

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

Program:-

```
#include<stdio.h>
int main()
{
    int i, j, s;
    for(i=1; i<=5; i++)
    {
        for(s=1; s<=5-i; s++)
            printf(" ");
        for(j=1; j<=i; j++)
            printf("%d", j);
        printf("\n");
    }
    return 0;
}
```

Output:-

```
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
```

Program:-

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

```

for(i=5; i>=1; i--)
{
    for(s=1; s<=i-1; s++)
        printf(" ");
    for(j=i; j<=i; j++)
        printf("%d", j);
    printf("\n");
}
return 0;
}

```

Output:-

```

      5
     45
    345
   2345
  12345

```

Program:-

```

#include<stdio.h>
int main()
{
    int i,j,s;
    for(i=1; i<=5; i++)
    {
        for(s=0; s=i-1; s++)
            printf(" ");
        for(j=i; j<=5; j++)
            printf("%d", j);
        printf("\n");
    }
    return 0;
}

```

Output:- 1 2 3 4 5

```

  2 3 4 5
  3 4 5
  4 5
  5

```

Program:-

```

#include<stdio.h>
int main()
{
    int i,j,s;
    for(i=1; i<=5; i++)
    {
        for(s=0; s=i-1; s++)
            printf(".");
    }
}
```

```

for(i=1; i<=6-i; i++)
    printf("%d", i);
printf("\n");
}
return 0;
}

```

Output:-

1	2	3	4	5
	1	2	3	4
		1	2	3
			1	2
				1

Program:-

```

#include <stdio.h>
int main()
{
    int i, j, s;
    for(i=1; i<=5; i++)
    {
        for(s=1; s<=5-i; s++)
            printf(" ");
        for(j=1; j<=i; j++)
            printf("1");
        printf("\n");
    }
    return 0;
}

```

Output:-

1						
	1	1				
		1	1	1		
			1	1	1	
				1	1	1
					1	1

Program:-

```

#include <stdio.h>
int main()
{
    int i, j, s;
    for(i=5; i>=1; i--)
    {
        for(s=0; s<=5-i; s++)
            printf(" ");
    }
}

```

```

for(i=i; i<=2*i-1; i++)
    printf("%d", i);
printf("\n");
}
return 0;
}

```

Output:- 56789

```

4567
345
23
1

```

Program:-

```

#include <stdio.h>
int main()
{
int i,j,s;
for(i=1; i<=5; i++)
{
    for(s=1; s<=5-i; s++)
        printf(" ");
    for(j=1; j<=i; j++)
        printf("%d", j);
    for(j=i-1; j>=1; j--)
        printf("%d", j);
    printf("\n");
}
return 0;
}

```

Output:-

```

      1
     12 1
    123 21
   1234 321
  12345 4321

```

Program:-

```

#include <stdio.h>
int main()
{
int i,j,s;
for(i=1; i<=5; i++)

```

```

    {
        for(s=0; s<=i-1; s++)
            printf(" ");
        for(j=i; j<=5; j++)
            printf("%d", j);
        for(j=4; j>=i; j--)
            printf("%d", j);
        printf("\n");
    }
    return 0;
}

```

Output :-

123454321
2345432
34543
454
5

Program:-

```

#include <stdio.h>
int main()
{
    int i,j,s;
    for(i=1; i<=5; i++)
    {
        for(s=0; s<=i-1; s++)
            printf(" ");
        for(j=1; j<=5-i; j++)
            printf("%d", j);
        for(j=5-i; j>=1; j--)
            printf("%d", j);
        printf("\n");
    }
    return 0;
}

```

Output →

123454321
1234321
12321
121
1

Program:-

```
#include<stdio.h>
int main()
{
    int i, j, s;
    for(i=1; i<=5; i++)
    {
        for(j=1; j<=6-i; j++)
            printf("%d", j);
        for(s=1; s<=2*i-3; s++)
            printf(" ");
        if(i==1)
            printf("\b");
        for(j=6-i; j>=1; j--)
            printf("%d", j);
        printf("\n");
    }
    return 0;
}
```

Output:- 123454321
 1234 4321
 123 321
 12 21
 1 1

Program:-

```
#include<stdio.h>
int main()
{
    int i, j, s;
    for(i=5; i>=1; i--)
    {
        for(j=1; j<=6-i; j++)
            printf("%d", j);
        for(s=2*i-3; s>=1; s--)
            printf(" ");
        if(i==1)
            printf("\b");
        for(j=6-i; j>=1; j--)
            printf("%d", j);
        printf("\n");
    }
}
```

```
    }  
    return 0;  
}
```

Output:-

```
    1  
    1 2  
    1 2 3  
    1 2 3 4  
    1 2 3 4 5
```

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

Program:-

```
#include<stdio.h>  
int main()  
{  
    int i,j;  
    for(i=1; i<=5; i++)  
    {  
        for(j=1; j<=i; j++)  
            printf("%d",j);  
        printf("\n");  
    }  
    for(i=1; i<=5; i++)  
    {  
        for(j=1; j<=5-i; j++)  
            printf("%d",j);  
        printf("\n");  
    }  
    return 0;  
}
```

Output:-

```
    1  
    1 2  
    1 2 3  
    1 2 3 4  
    1 2 3 4 5  
    1 2 3 4  
    1 2 3  
    1 2  
    1
```

Program:-

```
#include<stdio.h>  
int main()  
{  
    int i,j,s;  
    for(i=1; i<=5; i++)
```

```

{ for(s=0; s<=i-1; s++)
    printf(" ");
    for(j=1; j<=6-i; j++)
        printf("%d", j);
    printf("\n");
}
for(i=1; i<=4; i++)
{
    for(s=4-i; s>=0; s--)
        printf(" ");
    for(j=1; j<=i+1; j++)
        printf("%d", j);
    printf("\n");
}
return 0;
}

```

Output:- 1 2 3 4 5

```

      1 2 3 4
      1 2 3
      1 2
      1
      1 2
      1 2 3
      1 2 3 4
      1 2 3 4 5

```

Program:-

```

#include <stdio.h>
int main()
{
    int i, j, s;
    for(i=1; i<=5; i++)
    {
        for(s=1; s<=5-i; s++)
            printf(" ");
        for(j=1; j<=i; j++)
            printf("%d", j);
        for(j=i-1; j>=1; j--)
            printf("%d", j);
        printf("\n");
    }
    for(i=1; i<=4; i++)

```

```

2
for(s=1; s<=i; s++)
    printf(" ");
for(j=1; j<=5-i; j++)
    printf("%d", j);
for(j=4-i; j>=1; j--)
    printf("%d", j);
printf("\n");
}
return 0;
}

```

Output:-

```

1 2 1
1 2 3 2 1
1 2 3 4 3 2 1
1 2 3 4 5 4 3 2 1
1 2 3 4 3 2 1
1 2 3 2 1
1

```

Program:-

```

#include <stdio.h>
int main()
{
int i, s;
char j;
for(i=1; i<=5; i++)
{
    for(s=1; s<=5-i; s++)
        printf(" ");
    for(j=65; j<=64+i; j++)
        printf("%c", j);
    for(j=63+i; j>=65; j--)
        printf("%c", j);
    printf("\n");
}
return 0;
}

```

Output:-

```

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

```