

Amity University Noida



Introduction to Computers and Programming in C

ES202

Practical File

Name: Hiyaa Malik

Course: B. Tech AI

Section: 2 AI-X

Enrolment no. :

S.NO.	PROGRAM
1	(a) Write a C program to add two numbers (b) Write a C program to add three numbers
2	(a) Write a C program to find area of circle (b) Write a C program to calculate simple interest
3	Write a C program to print a block F using hash (#), where the F has a height of six characters and width of five and four characters
4	Write a C program that accepts two item's weight (floating points' values) and number of purchase (floating points' values) and calculate the average value of the items
5	(a) Write a C program to swap two variables using a third variable (b) Write a C program to swap two variables without using a third variable
6	(a) Write a C program to convert a given integer (in seconds) to hours, minutes, and seconds. (b) Write a C program to convert specified days into years, weeks, and days.
7	(a) Write a C program to check whether a triangle is Equilateral, scalene, or isosceles (b) Write a C program to check whether a triangle is right angles, obtuse, acute triangle
8	Write a C program to covert temperature from Fahrenheit to Celsius and Celsius to Fahrenheit (User must provide the choice of type of temperature)
9	Write a C program to covert temperature from Fahrenheit to Celsius and Celsius to Fahrenheit (User must provide the choice of type of temperature)
10	(a) Write a C program to check whether a character is an alphabet, digit (b) Write a C program a program to check whether an alphabet is a vowel or consonant
11	(a) Write a C program to find smallest of two numbers (b) Write a C program to find largest of three numbers
12	Write a program in C to implement Simple Calculator
13	Write a program to calculate the root of a Quadratic Equation
14	Write a program to accept a coordinate point in a XY coordinate system and determine in which quadrant the coordinate point lies.
15	Write a program to find gross salary of employee if DA is 40% of basic Salary and HRA is 20% of basic salary. Basic salary will be entered as input by keyboard.
16	Write a program in C to calculate and print the Electricity bill of a given customer. The customer id and unit consumed by the user should be taken from the keyboard and display the total amount to pay to the customer. upto 199-----1.20 200-500-----1.80 Above 500-----2.00 If bill exceeds Rs. 400 then a surcharge of 15% will be charged and the minimum bill should be of Rs. 100/-
17	A library charges a fine for every book returned late. For first 5 days the fine is 50 paisa, for 6-10 days, fine is one rupee and above 10 days, fine is 5 rupees. If you return the book after 30 days your membership will be cancelled. Write a program to accept the number of days the member is late to return the book and display the fine or appropriate message.

18	Write a program to find the factorial of any number
19	Write a program to print Fibonacci sequence 0 1 1 2 3 5 8 13..... N terms and prints the sum of sequence
20	Write a program in C to accept an integer number and find sum of digits
21	Write a program in C to accept an integer numbers and find reverse of this number and check this number for palindrom
22	Write a program in C to accept an integer numbers and to check a number is Armstrong or not
23	Write a program in C to accept an integer numbers and to check a number is Perfect or not.
24	Write a program to find the sum of following series: $S = 2+4+6+8+\dots+N$ terms.
25	Write a program to check a number whether it is prime number or not.
26	Write a program to find the sum of following series: $1 - 1/2 + 1/3 - 1/4 + 1/5 - \dots$ up to n terms.
27	Write a program to find the sum of following series: $1! + 2! + 3! + 4! + \dots + n!$
28	Write a program to find the sum of following series: $S = -1^3 + 3^3 - 5^3 + 7^3 - 9^3 + 11^3 - \dots N$ terms.
29	Write a program to find the sum of following series: $S = 1/1! + 2/2! + 3/3! + \dots 7$ terms.
30	Write a program to convert binary number to decimal number
31	Write a program to find the sum of following series: $S = 1^4 + 3^4 + 5^4 + 7^4 + \dots 100$ terms
32	Write a program in C to print the following pattern: * * * * * * * * *
33	Write a program in C to print the following pattern: 1 2 3 1 2 3 1 2 3
34	Write a program in C to print the following pattern: 1 1 1 2 2 2 3 3 3
35	Write a program in C to print the following pattern: 3 2 1 3 2 1 3 2 1
36	Write a program in C to print the following pattern: 3 3 3 2 2 2 1 1 1
37	Write a program in C to print the following pattern: * * * * * *

38	Write a program in C to print the following pattern: 1 2 2 3 3 3
39	Write a program in C to print the following pattern: 1 1 2 1 2 3
40	Write a program in C to print the following pattern: 3 3 2 3 2 1
41	Write a program in C to print the following pattern: 3 2 2 1 1 1
42	Write a program in C to print the following pattern: * * * * * * * * * * * * * * * *
43	Write a program in C to print the following pattern: 1 1 2 1 1 2 3 2 1 1 2 3 4 3 2 1
44	Write a program in C to print the following pattern: 5 5 4 5 5 4 3 4 5 5 4 3 2 3 4 5 5 4 3 2 1 2 3 2 1
45	Write a program in C to print the following pattern: 1 0 1 1 0 1 0 1 0 1 1 0 1 0 1
46	Write a program to print all prime numbers <= a given number.
47	Write a program to convert Decimal no to Binary No.
48	Write a program to find product, sum, average, max and min from a list of n numbers
49	Write a program in C to display the index of smallest and largest element in 10 integers
50	Write a program in C to display the index of smallest and largest element in 3 X 4 matrix of integers.
51	Write a program in C that accepts N*N matrix as input and print transpose of

	this matrix
52	Write a program to accept two matrices of some order. (Order must be given by user) find out the sum of these matrices and print the sum of matrices
53	Write a program to find out the product/Multiplication of two matrices and print the product matrix. (order of matrices must be given by user)
54	Write a program to accept two matrices of some order. (Order must be given by user) find out the subtraction of these matrices and print the sum of matrices.

Program number: 1

Aim:

- (a) Write a C program to add two numbers
- (b) Write a C program to add three numbers

Code:

```
(a) #include <stdio.h>
#include <conio.h>
void main() {
    int a, b, c;
    printf("Addition of 2 numbers");
    printf("\n Number 1: ");
    scanf("%d",&a);
    printf("\n Number 2: ");
    scanf("%d",&b);
    c = a+b ;
    printf("Sum: %d",c);
    return 0;
}
```

```
Addition of 2 numbers
Number 1: 689
Number 2: 123
Sum: 812
Process returned 8 (0x8)   execution time : 6.354 s
Press any key to continue.
```

```
(b) #include<stdio.h>
```

```
#include<conio.h>
void main(){
    int a, b, c, d;
    printf("Addition of 3 numbers");
    printf("\n Number 1:");
    scanf("%d",&a);
```

```

printf("\n Number 2:");
scanf("%d",&b);
printf("\n Number 3:");
scanf("%d",&c);
d=a+b+c;
printf("\n Sum: %d",d);
return 0;
}

```

```

Addition of 3 numbers
Number 1:39
Number 2:71
Number 3:60
Sum: 170
Process returned 10 (0xA)   execution time : 5.779 s
Press any key to continue.

```

Program number: 2

Aim:

- (a) Write a C program to find area of circle
- (b) Write a C program to calculate simple interest

Code:

```

(a) #include <stdio.h>
#include <conio.h>
void main () {
float r, area;
printf(" Area of a circle");
printf("\n Enter the radius of the circle:");
scanf("%f",&r);
area = r * r * 3.14;
printf("\n The perimeter of a circle of radius %f is %f",r,area);
}

```

```
Area of a circle
Enter the radius of the circle:7

The area of a circle of radius 7.000000 is 153.860001
Process returned 55 (0x37)    execution time : 5.544 s
Press any key to continue.
```

(b) #include <stdio.h>

```
void main() {
float p, r, t, si;
printf("SIMPLE INTEREST CALCULATOR");
printf("\nEnter the principle amount : ");
scanf("%f", &p);
printf("Enter the rate of interest : ");
scanf("%f", &r);
printf("Enter the time period      : ");
scanf("%f", &t);
si = (p*r*t)/100;
printf("\nThe simple interest on the amount is : %f", si);
}
```

```
SIMPLE INTEREST CALCULATOR
Enter the principle amount : 10000
Enter the rate of interest : 10
Enter the time period      : 2

The simple interest on the amount is : 2000.000000
Process returned 51 (0x33)    execution time : 14.695 s
Press any key to continue.
```

Program number: 3

Aim:

Write a C program to print a block F using hash (#), where the F has a height of six characters and width of five and four characters

Code:

```
void main() {
printf(" #####\n");
printf(" #\n");
printf(" ###\n");
printf(" #\n");
```

```

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

#####
#
####
#
#
#
Process returned 0 (0x0)   execution time : 0.129 s
Press any key to continue.

```

Program number: 4

Aim:

Write a C program that accepts two item's weight (floating points' values) and number of purchase (floating points' values) and calculate the average value of the items

```

# include <stdio.h>

void main() {

float A_wt, B_wt, A_avg, B_avg;

int A_items, B_items;

printf("AVERAGE WEIGHT OF ITEMS");

printf("\n\nEnter total weight of item A (kg) : ");

scanf("%f", &A_wt);

printf("Enter total weight of item B (kg) : ");

scanf("%f", &B_wt);

printf("\nEnter no. of purchases of item A : ");

scanf("%d", &A_items);

printf("Enter no. of purchases of item B : ");

scanf("%d", &B_items);

A_avg = A_wt/A_items;

B_avg = B_wt/B_items;

printf("\nThe average weight of item A and B respectively are %0.2f and %0.2f", A_avg,
B_avg);

}

```

```
AVERAGE WEIGHT OF ITEMS
Enter total weight of item A (kg) : 12
Enter total weight of item B (kg) : 15
Enter no. of purchases of item A : 7
Enter no. of purchases of item B : 9
The average weight of item A and B respectively are 1.71 and 1.67
Process returned 66 (0x42)   execution time : 21.738 s
Press any key to continue.
```

Program number:5

Aim: (a) Write a C program to swap two variables using a third variable
(b) Write a C program to swap two variables without using a third variable

```
(a) #include <stdio.h>
void main(){
    int a, b, temp;
    printf("\nProgram to swap WITH A THIRD VARIABLE");
    printf("\n\nEnter first number : ");
    scanf("%d", &a);
    printf("Enter second number : ");
    scanf("%d", &b);
    temp = a;
    a = b;
    b = temp;
    printf("\nAfter swapping,");
    printf("\na = %d", a);
    printf("\nb = %d\n", b);
}
```

```
Program to swap WITH A THIRD VARIABLE
Enter first number : 45
Enter second number : 78
After swapping,
a = 78
b = 45
Process returned 8 (0x8)   execution time : 15.606 s
Press any key to continue.
```

```
(b) #include <stdio.h>
void main() {
    int a, b;
    printf("\n Program WITHOUT A THIRD VARIABLE");
    printf("\n\nEnter first number : ");
    scanf("%d", &a);
    printf("Enter second number : ");
    scanf("%d", &b);
    a = a + b;
    b = a - b;
    a = a - b;
    printf("\nAfter swapping,");
    printf("\na = %d", a);
    printf("\nb = %d\n", b);
}
```

```
Program WITHOUT A THIRD VARIABLE
Enter first number : 15
Enter second number : 60
After swapping,
a = 60
b = 15
Process returned 8 (0x8)   execution time : 6.870 s
Press any key to continue.
```

Program number: 6

Aim: (a) Write a C program to convert a given integer (in seconds) to hours, minutes, and seconds.

(b) Write a C program to convert specified days into years, weeks, and days.

Note: Ignore leap year.

Test Data :

Number of days : 1329-3 years,33 weeks and 3 days

(c)Write a C program to check whether a number is even or odd

```
(a) #include <stdio.h>
void main(){
    int time, h, m, s;
```

```

printf("SECONDS TO HH:MM:SS FORMAT CONVERSION");
printf("\n\n Enter time in seconds: ");
scanf("%d", &time);
s= time % 60;
time= time - s;
time= time / 60;
m= time % 60;
time= time - m;
time= time / 60 ;
h= time % 60;
printf("\n\n The time in HH:MM:SS format is");
printf("\n HH= %d", h);
printf("\n MM= %d", m);
printf("\n SS= %d", s);
}

```

```

SECONDS TO HH:MM:SS FORMAT CONVERSION
Enter time in seconds: 60606

The time in HH:MM:SS format is
HH= 16
MM= 50
SS= 6
Process returned 7 (0x7)   execution time : 6.376 s
Press any key to continue.

```

(b) #include <stdio.h>

```

void main () {
int days, y, w, d;
printf("CONVERTING DAYS INTO Years:Weeks:Days FORMAT");
printf("\n\n Enter number of days: ");
scanf("%d", &days);
y= days / 365;
days = days % 365;
w= days / 7 ;
days= days % 7;

```

```

d= days;

printf("\n\nYear:weeks:day format--");

printf("\n Years: %d ", y);

printf("\n Weeks: %d ", w);

printf("\n Days: %d", d);

return 0;

}

```

```

CONVERTING DAYS INTO Years:Weeks:Days FORMAT

Enter number of days: 1329

Year:weeks:day format--
Years: 3
Weeks: 33
Days: 3
Process returned 9 (0x9)   execution time : 9.908 s
Press any key to continue.

```

(c) #include <stdio.h>

```

void main(){

int num;

printf("CHECKING FOR EVEN/ODD NUMBERS");

printf("\n\nEnter a number : ");

scanf("%d", &num);

if (num == 0){

printf("\nThe number is zero");

}

else if (num % 2 == 0) {

printf("\nThe number %d is even", num);

}

else

{

printf("\nThe number %d is odd", num);

}

}

```

```
CHECKING FOR EVEN/ODD NUMBERS
Enter a number : 325
The number 325 is odd
Process returned 22 (0x16)    execution time : 4.482 s
Press any key to continue.
```

Program number: 7

Aim: Write a C program to check whether a given year is Leap year or not

```
#include <stdio.h>

int main() {
    int year;
    printf("Checking whether a year is a leap year or not");
    printf("\n\n Enter a year: ");
    scanf("%d", &year);
    if (year % 400 == 0) {
        printf("\n %d is a leap year.", year);
    }
    else if (year % 100 == 0) {
        printf("\n %d is not a leap year.", year);
    }
    else if (year % 4 == 0) {
        printf("\n %d is a leap year.", year);
    }
    else {
        printf("\n %d is not a leap year.", year);
    }
    return 0;
}
```

```
Checking whether a year is a leap year or not
Enter a year: 3000
3000 is not a leap year.
Process returned 0 (0x0)    execution time : 5.429 s
Press any key to continue.
```

Program number: 8

- Aim:** (a) Write a C program to check whether a triangle is Equilateral, scalene, or isosceles
(b) Write a C program to check whether a triangle is right angles, obtuse, acute triangle

```
(a) # include <stdio.h>
# include <conio.h>
void main(){
float a, b, c;
printf("CLASSIFICATION OF TRIANGLE ON THE BASIS OF ANGLES");
printf("\n\nEnter first angle : ");
scanf("%f", &a);
printf("Enter second angle : ");
scanf("%f", &b);
printf("Enter third angle : ");
scanf("%f", &c);
if (a +b + c != 180)
printf("\nThe triangle is invalid");
else {
if (a < 90 && b < 90 && c < 90)
printf("\nThe triangle is acute angled triangle");
else if (a == 90 || b == 90 || c == 90)
printf("\nThe triangle is right angled triangle");
else
printf("\nThe triangle is obtuse angled");}
}
```

```
CLASSIFICATION OF TRIANGLE ON THE BASIS OF ANGLES
Enter first angle : 120
Enter second angle : 30
Enter third angle : 30
The triangle is obtuse angled
Process returned 30 (0x1E)  execution time : 11.705 s
Press any key to continue.
```

```
(b) # include <stdio.h>
# include <conio.h>
void main(){
```

```

float a, b, c;

printf("CLASSIFICATION OF TRIANGLE ON THE BASIS OF SIDES");

printf("\n\nEnter first side : ");
scanf("%f", &a);

printf("Enter second side : ");
scanf("%f", &b);

printf("Enter third side : ");
scanf("%f", &c);

if (a+b<c || b+c<a || a+c<b)
    printf("\nThe triangle is invalid");
else{
    if (a==b && b==c)
        printf("\nThe triangle is equilateral");
    else if (a==b || b==c || a==c)
        printf("\nThe triangle is isosceles");
    else
        printf("\nThe triangle is scalene");}
}

```

```

CLASSIFICATION OF TRIANGLE ON THE BASIS OF SIDES
Enter first side : 3
Enter second side : 10
Enter third side : 12
The triangle is scalene
Process returned 24 (0x18)   execution time : 7.113 s
Press any key to continue.

```

Program number: 9

Aim: Write a C program to covert temperature from Fahrenheit to Celsius and Celsius to Fahrenheit (User must provide the choice of type of temperature)

```

#include <stdio.h>

int main(){

float t, f, c;

char u ;

printf("Converting temperatures-celsius to fahrenheit and vice versa");

printf("\n\n Enter magnitude of temperature and select its unit C or F");

```

```

scanf("%f %c",&t ,&u);
if (u=='C') {
    f=(t * 1.8) +32;
    printf("temperature in fahrenheit= %f", f);
}
else {
    c =(t- 32)/ 1.8;
    printf("\n\n temperature in celsius= %f",c);
}
return 0;
}

```

```

Converting temperatures-celsius to fahrenheit and vice versa
Enter magnitude of temperature and select its unit C or F 36C
temperature in fahrenheit= 96.800003
Process returned 0 (0x0) execution time : 11.763 s
Press any key to continue.

```

Program number: 10

Aim: (a) Write a C program to check whether a character is an alphabet, digit
(b) Write a C program a program to check whether an alphabet is a vowel or consonant

```

(a) #include <stdio.h>

void main(){
    char ch;
    printf("CHECKING FOR APLHABET/DIGIT");
    printf("\n\nEnter a character : ");
    scanf("%c", &ch);
    if ((ch >= 'A' && ch <= 'Z') || (ch >= 'a' && ch <= 'z'))
        printf("\nThe character %c is an alphabet", ch);
    else if (ch >= '0' && ch <= '9')
        printf("\nThe character %c is a digit", ch);
    else
        printf("\nThe character %c is a special character", ch);
}

```

```
}
```

```
CHECKING FOR APLHABET/DIGIT
Enter a character : 7
The character 7 is a digit
Process returned 27 (0x1B)    execution time : 2.844 s
Press any key to continue.
```

(b) #include <stdio.h>

```
void main(){
char ch;
printf("CHECKING FOR VOWEL/CONSONANT");
printf("\n\nEnter a character : ");
scanf("%c", &ch);
if ((ch >= 'a' && ch <= 'z') || (ch >= 'A' && ch <= 'Z'))
{
if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' ||
ch == 'u' || ch == 'A' || ch == 'E' || ch == 'I' || ch == 'O' ||
ch == 'U')
printf("\nThe character %c is a vowel", ch);
else
printf("\nThe character %c is a consonant", ch);
}
else
printf("\nThe character %c is not an alphabet", ch);
}
```

```
CHECKING FOR VOWEL/CONSONANT
Enter a character : z
The character z is a consonant
Process returned 31 (0x1F)    execution time : 3.477 s
Press any key to continue.
```

Program number: 11

Aim: (a) Write a C program to find smallest of two numbers

(b) Write a C program to find largest of three numbers

```
(a) #include <stdio.h>
void main() {
    int a, b;
    printf("FINDING GREATEST OF TWO NUMBERS");
    printf("\n\nEnter first number : ");
    scanf("%d", &a);
    printf("Enter second number : ");
    scanf("%d", &b);
    if (a < b)
        printf("\n%d is the greater number out of %d and %d", b, a, b);
    else if (a > b)
        printf("\n%d is the greater number out of %d and %d", a, a, b);
    else
        printf("\nBoth the numbers are equal");
}
```

```
FINDING GREATEST OF TWO NUMBERS
Enter first number : 14
Enter second number : 16
16 is the greater number out of 14 and 16
Process returned 42 (0x2A)   execution time : 4.854 s
Press any key to continue.
```

```
(b) #include <stdio.h>
void main(){
    int a, b, c;
    printf("FINDING SMALLEST OF TWO NUMBERS");
    printf("\n\nEnter first number : ");
    scanf("%d", &a);
    printf("Enter second number : ");
```

```

scanf("%d", &b);
printf("Enter third number :");
scanf("%d", &c);
if (a >= b && a >= c)      // a is largest
printf("\n%d is the largest number out of %d, %d and %d", a, a, b, c);
else if (b >= a && b >= c) // b is largest
printf("\n%d is the largest number out of %d, %d and %d", b, a, b, c);
else if (c >= a && c >= b) // c is largest
printf("\n%d is the largest number out of %d, %d and %d", c, a, b, c);
// '>=' takes care of both greater as well as equal values
}

```

```

FINDING SMALLEST OF TWO NUMBERS
Enter first number : 66
Enter second number : 99
Enter third number : 44
99 is the largest number out of 66, 99 and 44
Process returned 46 (0x2E)   execution time : 6.867 s
Press any key to continue.

```

Program number: 12

Aim: Write a program in C to implement Simple Calculator

```

#include <stdio.h>

void main() {
    float a, b, c;
    int choice;
    printf("SIMPLE CALCULATOR");
    printf("\n\nPress 1 for Addition");
    printf("\n\nPress 2 for Subtraction");
    printf("\n\nPress 3 for Multiplication");
    printf("\n\nPress 4 for Division");
    printf("\n\nPress 5 for Remainder of Division");
    printf("\n\nPress any other no. for Exit");
    printf("\nEnter Choice : ");
    scanf("%d", &choice);

```

```
printf("\nEnter first number :");
scanf("%f", &a);
printf("Enter second number : ");
scanf("%f", &b);
switch(choice)
{
    case 1 : printf("\nADDITION");
        c = a + b;
        printf("\nResult : %0.2f + %0.2f = %0.2f",a,b,c);
        break;
    case 2 : printf("\nSUBTRACTION");
        c = a - b;
        printf("\nResult : %0.2f - %0.2f = %0.2f",a,b,c);
        break;
    case 3 : printf("\nMULTIPLICATION");
        c = a * b;
        printf("\nResult : %0.2f x %0.2f = %0.2f",a,b,c);
        break;
    case 4 : printf("\nDIVISION");
        c = a / b;
        printf("\nResult : %0.2f / %0.2f = %0.2f",a,b,c);
        break;
    case 5 : printf("\nREMAINDER");
        c = (int)a % (int)b;
        printf("\nResult : Remainder of %d / %d = %d", a, b, c);
        break;
    default : printf("\n\nThe desired operation is performed successfully");
}
}
```

```

SIMPLE CALCULATOR
Press 1 for Addition
Press 2 for Subtraction
Press 3 for Multiplication
Press 4 for Division
Press 5 for Remainder of Division
Press any other no. for Exit
Enter Choice : 3

Enter first number : 70
Enter second number : 15

MULTIPLICATION
Result : 70.00 x 15.00 = 1050.00
Process returned 33 (0x21)   execution time : 18.625 s
Press any key to continue.

```

Program number: 13

Aim: Write a program to calculate the root of a Quadratic Equation

```

#include <stdio.h>
#include <math.h>

void main() {
    int a, b, c;
    float det, root1, root2;
    printf("ROOT CALCULATOR FOR A QUADRATIC EQUATION");
    printf("\n\nEnter the coeff. of x^2 : ");
    scanf("%d", &a);
    printf("Enter the coeff. of x : ");
    scanf("%d", &b);
    printf("Enter the constant term : ");
    scanf("%d", &c);
    printf("\nThe equation is : (%d)x^2 + (%d)x + (%d)", a, b, c);
    det = sqrt((b*b)-(4*a*c));
    if (a == 0)
        printf("\nThe equation is not a quadratic equation");
    else
    {
        if (det > 0)
        {
            root1 = (-b + det)/(2*a);

```

```

root2 = (-b - det)/(2*a);

printf("\nThe roots are %0.2f and %0.2f", root1, root2);

}

else if (det == 0)

{

root1 = (float)-b/(2*a);

printf("\nThe root is %0.2f", root1);

}

Else

printf("\nThe roots of the equation are imaginary");

}

printf("\n\nThe roots were successfully computed");

}

```

```

ROOT CALCULATOR FOR A QUADRATIC EQUATION

Enter the coeff. of x^2 : 4
Enter the coeff. of x : 8
Enter the constant term : 2

The equation is : (4)x^2 + (8)x + (2)
The roots are -0.29 and -1.71

The roots were successfully computed
Process returned 38 (0x26)   execution time : 14.894 s
Press any key to continue.

```

Program number: 14

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

```

#include <stdio.h>

void main(){

int quad;

float x, y;

printf("FINDING QUADRANT");

printf("\n\nEnter the x co-ordinate : ");

scanf("%f", &x);

printf("Enter the y co-ordinate : ");

```

```

scanf("%f", &y);
if (x == 0 && y == 0)
quad = 0;
else
{
if (x >= 0 && y >= 0)
printf("\nThe co-ordinate (%0.2f, %0.2f) lies in Quadrant I", x, y);
else if (x <= 0 && y >= 0)
printf("\nThe co-ordinate (%0.2f, %0.2f) lies in Quadrant II", x, y);
else if (x <= 0 && y <= 0)
printf("\nThe co-ordinate (%0.2f, %0.2f) lies in Quadrant III", x, y);
else if (x >= 0 && y <= 0)
printf("\nThe co-ordinate (%0.2f, %0.2f) lies in Quadrant IV", x, y);
}
}

```

```

FINDING QUADRANT
Enter the x co-ordinate : -9
Enter the y co-ordinate : -15
The co-ordinate (-9.00, -15.00) lies in Quadrant III
Process returned 53 (0x35)   execution time : 14.537 s
Press any key to continue.

```

Program number: 15

Aim: Write a program to find gross salary of employee if DA is 40% of basic Salary and HRA is 20% of basic salary. Basic salary will be entered as input by keyboard.

```

#include <stdio.h>
void main(){
long int basic_sal, da, hra, gross_sal;
printf("GROSS SALARY CALCULATOR");
printf("\n\nEnter basic salary : ");
scanf("%d", &basic_sal);
da = basic_sal*0.40;
hra = basic_sal*0.20;
gross_sal = basic_sal - da - hra;
printf("Gross salary : %d", gross_sal);
}

```

```
GROSS SALARY CALCULATOR  
Enter basic salary : 150000  
Gross salary : 60000  
Process returned 20 (0x14)  execution time : 13.264 s  
Press any key to continue.
```

Program number: 16

Aim: Write a program in C to calculate and print the Electricity bill of a given customer. The customer id and unit consumed by the user should be taken from the keyboard and display the total amount to pay to the customer. upto 199-----1.20 200-500-----1.80 Above 500-----2.00 If bill exceeds Rs. 400 then a surcharge of 15% will be charged and the minimum bill should be of Rs. 100/-

```
# include <stdio.h>  
  
void main()  
{  
float unit, bill;  
printf("Enter unit consumption : ");  
scanf("%f", &unit);  
  
if (unit <=199)  
bill = 1.2*unit;  
else if (unit >= 200 && unit <= 500)  
bill = (1.2*199) + (1.8*(unit-199));  
else  
bill = (1.2*199) + (1.8*301) + (2*(unit-500));  
  
if (bill > 400)  
bill = bill + (bill*0.15);  
  
if (bill < 100)  
bill = 100;  
  
printf("\nYour bill for %0.2f units is : %0.2f Rupees", unit, bill);  
}
```

```
Enter unit consumption : 900  
Your bill for 900.00 units is : 1817.69 Rupees  
Process returned 47 (0x2F)  execution time : 29.970 s  
Press any key to continue.
```

Program number: 17

Aim: A library charges a fine for every book returned late. For first 5 days the fine is 50 paisa, for 6-10 days, fine is one rupee and above 10 days, fine is 5 rupees. If you return the book after 30 days your membership will be cancelled. Write a program to accept the number of days the member is late to return the book and display the fine or appropriate message.

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

```

void main()
{
unsigned int days;
float fine;
printf("LIBRARY FINE CALCULATOR");
printf("\n\nEnter the no. of days : ");
scanf("%d", &days);

if (days < 5)
fine = 0.5*days;
else if (days >=6 && days <=10)
fine = (0.5*5) + (1*(days-5));
else if (days > 10 && days <=30)
fine = (0.5*5) + (1*5) + (5*(days-10));
else
fine = (0.5*5) + (1*5) + (5*(days-10));

if (fine >= 107.5)
{
printf("\nWe are sorry to inform you that your library membership has been cancelled.");
printf("\nTo renew the same, contact the authorities.");
}

printf("\nFine amount = %0.2f Rupees", fine);
}

```

```

LIBRARY FINE CALCULATOR
Enter the no. of days : 14
Fine amount = 27.50 Rupees
Process returned 27 (0x1B)   execution time : 5.792 s
Press any key to continue.

```

Program number: 18

Aim: Write a program to find the factorial of any number

```

#include <stdio.h>
int main() {
int n, i;
unsigned long long fact = 1;
printf("Enter an integer: ");
scanf("%d", &n);

// shows error if the user enters a negative integer
if (n < 0)
printf("Error! Factorial of a negative number doesn't exist.");
else {
for (i = 1; i <= n; ++i) {
fact *= i;
}
printf("Factorial of %d = %llu", n, fact);
}

```

```
}
```

```
return 0;
}

Enter an integer: 4
Factorial of 4 = 24
Process returned 0 (0x0)  execution time : 2.177 s
Press any key to continue.
```

Program number: 19

Aim: Write a program to print Fibonacci sequence

0 1 1 2 3 5 8 13..... N terms and prints the sum of sequence

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

```
void main()
{
int a, b, i=1, n, term=0, sum=0;
printf("FIBONACCI SERIES");
printf("\n\nEnter the no. of terms : ");
scanf("%d", &n);
a = 0;
b = 1;
term = a + b;
sum += term;

printf("The series upto %d terms is :- \n0 1 ", n);
while (i<=n-2)
{
sum += term;
printf("%d ", term);
a = b;
b = term;
term = a + b;
i++;
}
printf("\n\nThe sum of fibonacci series upto %d terms is : %d", n, sum);
}
```

```
FIBONACCI SERIES

Enter the no. of terms : 12
The series upto 12 terms is :-
0 1 1 2 3 5 8 13 21 34 55 89

The sum of fibonacci series upto 12 terms is : 232
Process returned 52 (0x34)  execution time : 1.560 s
Press any key to continue.
```

Program number: 20

Aim: Write a program in C to accept an integer numbers and find sum of digits

```

# include <stdio.h>

void main()
{
int n, sum=0, temp;
printf("SUM OF DIGITS");
printf("\n\nEnter the number : ");
scanf("%d", &n);
temp = n;

while (n != 0)
{
sum = sum + n % 10;
n = n / 10;
}
n = temp;
printf("The sum of digits of %d = %d", n, sum);
}

```

```

SUM OF DIGITS
Enter the number : 123
The sum of digits of 123 = 6
Process returned 28 (0x1C) execution time : 10.448 s
Press any key to continue.

```

Program number: 21

Aim: . Write a program in C to accept an integer numbers and find reverse of this number and check this number for palindrom

```

# include <stdio.h>

void main()
{
int n, temp, r, m=0, i=0;
printf("Pallindrome");
printf("\n\nEnter the number : ");
scanf("%d", &n);
temp = n;

while (n != 0)
{
r = n % 10;
m = (10*m) + r;
n = n / 10;
i++;
}
n = temp;

if (n == m)

```

```

printf("The number %d is a palindrome", n);
else
printf("The number is not a palindrome, reverse of %d = %d", n, m);
}

```

```

Palindrome
Enter the number : 45
The number is not a palindrome, reverse of 45 = 54
Process returned 50 (0x32)    execution time : 4.043 s
Press any key to continue.

```

Program number: 22

Aim: Write a program in C to accept an integer numbers and to check a number is Armstrong or not

```

#include <stdio.h>

void main()
{
int n, temp, r, m=0, i=0;
printf("ARMSTRONG NUMBER");
printf("\n\nEnter the number : ");
scanf("%d", &n);
temp = n;

while (n != 0)
{
r = n % 10;
m = m + (r*r*r);
n = n / 10;
}

n = temp;
if (n == m)
printf("The number %d is an armstrong number", n);
else
printf("The number %d is not an armstrong number", n);
}

```

```

ARMSTRONG NUMBER
Enter the number : 39
The number 39 is not an armstrong number
Process returned 40 (0x28)    execution time : 4.115 s
Press any key to continue.

```

Program number: 23

Aim: Write a program in C to accept an integer numbers and to check a number is Perfect or not

```
# include <stdio.h>

void main()
{
int n, temp, r, m = 1, i;
printf("PERFECT NUMBER");
printf("\n\nEnter the number : ");
scanf("%d", &n);
temp = n;

for (i=2; i<=(n/2); i++)
{
r = n % i;
if (r == 0)
m += i;
}

n = temp;

if (n == m)
printf("The number %d is a perfect number", n);
else
printf("The number %d is not a perfect number", n);
}
```

```
PERFECT NUMBER
Enter the number : 81
The number 81 is not a perfect number
Process returned 37 (0x25)   execution time : 1.876 s
Press any key to continue.
```

Program number: 24

Aim: Write a program to find the sum of following series: $S = 2+4+6+8+\dots+N$ terms.

```
# include <stdio.h>

void main()
{
int n, sum=0, i;
printf("SUM OF SERIES 2+4+6+8... TILL N TERMS");
printf("\n\nEnter the no. of terms : ");
scanf("%d", &n);
for (i=1; i<=n; i++)
{
```

```

sum += 2*i;
}
printf("The sum of the series 2+4+6+8... till %d terms = %d", n, sum);
}

```

SUM OF SERIES 2+4+6+8... TILL N TERMS

```

Enter the no. of terms : 20
The sum of the series 2+4+6+8... till 20 terms = 420
Process returned 52 (0x34)    execution time : 5.088 s
Press any key to continue.

```

Program number: 25

Aim: Write a program to check a number whether it is prime number or not.

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

```

void main()
{
int n, i, r, flag = 0;
printf("CHECKING FOR PRIME NUMBERS");
printf("\n\nEnter the number : ");
scanf("%d", &n);

for (i=2; i<n; i++)
{
r = n%i;
if (r == 0)
{
flag = 1;
break;
}
}
if (flag == 1)
printf("The number %d is not a prime number", n);
else
printf("The number %d is a prime number", n);
}
```

CHECKING FOR PRIME NUMBERS

```

Enter the number : 97
The number 97 is a prime number
Process returned 31 (0x1F)    execution time : 3.573 s
Press any key to continue.

```

Program number: 26

Aim: Write a program to find the sum of following series: $1 - 1/2 + 1/3 - 1/4 + 1/5 - \dots$ up to n terms.

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

```

# include <math.h>

void main()
{
int i, n;
float sum=0;
printf("SUM OF SERIES : 1 - 1/2 + 1/3 - 1/4 + 1/5... UPTO N TERMS");
printf("\n\nEnter the no. of terms : ");
scanf("%d", &n);
for (i=1; i<=n; i++)
{
sum += pow(-1,i-1)/i;
}
printf("The sum of series : 1 - 1/2 + 1/63 - 1/4 + 1/5... upto %d terms : %f", n, sum);
}

```

```

SUM OF SERIES : 1 - 1/2 + 1/3 - 1/4 + 1/5... UPTO N TERMS
Enter the no. of terms : 7
The sum of series : 1 - 1/2 + 1/63 - 1/4 + 1/5... upto 7 terms : 0.759524
Process returned 73 (0x49)    execution time : 11.090 s
Press any key to continue.

```

Program number: 27

Aim: Write a program to find the sum of following series: $1! + 2! + 3! + 4! + \dots + n!$

```

# include <stdio.h>
void main()
{
int i, j, n;
long fact, sum=0;
printf("SUM OF SERIES : 1! + 2! + 3! + 4! + 5!... UPTO N TERMS");
printf("\n\nEnter the no. of terms : ");
scanf("%d", &n);

for (i=1; i<=n; i++)
{
fact=1;
for (j=1; j<=i; j++)
fact = fact*j;
sum += fact;
}
printf("Sum of series : 1! + 2! + 3! + 4! + 5!... %d terms : %ld", n, sum);
}

```

```

SUM OF SERIES : 1! + 2! + 3! + 4! + 5!... UPTO N TERMS
Enter the no. of terms : 8
Sum of series : 1! + 2! + 3! + 4! + 5!... 8 terms : 46233
Process returned 57 (0x39)    execution time : 5.075 s
Press any key to continue.

```

Program number: 28

Aim: Write a program to find the sum of following series: $S = -1^3 + 3^3 - 5^3 + 7^3 - 9^3 + 11^3 - \dots \dots \dots N$ terms.

```
# include <stdio.h>
# include <math.h>
void main()
{
long sum=0;
int i, n;
printf("SUM OF SERIES : -1^3 + 3^3 - 5^3 + 7^3 - 9^3... UPTO N TERMS");
printf("\n\nEnter the no. of terms : ");
scanf("%d", &n);

for (i=1; i<=n; i++)
{
sum += pow(-1,i)*pow((2*i-1),3);
}
printf("The sum of the series -1^3 + 3^3 - 5^3 + 7^3 - 9^3... till %d terms = %ld",n , sum);
}

SUM OF SERIES : -1^3 + 3^3 - 5^3 + 7^3 - 9^3... UPTO N TERMS
Enter the no. of terms : 6
The sum of the series -1^3 + 3^3 - 5^3 + 7^3 - 9^3... till 6 terms = 846
Process returned 72 (0x48)   execution time : 3.804 s
Press any key to continue.
```

Program number: 29

Aim: Write a program to find the sum of following series: $S = 1/1! + 2/2! + 3/3! + \dots \dots \dots 7$ terms.

```
# include <stdio.h>

void main()
{
int i, j, n;
double sum=0, fact;
printf("SUM OF SERIES : 1/1! + 2/2! + 3/3! + 4/4! + 5/5!... UPTO N TERMS");
printf("\n\nEnter the no. of terms : ");
scanf("%d", &n);

for (i=1; i<=n; i++)
{
fact=1;
for (j=1; j<=i; j++)
fact = fact*j;
printf("%0.1f, ", fact);
```

```

sum += i/fact;
}
printf("Sum of series : 1/1! + 2/2! + 3/3! + 4/4! + 5/5!... upto %d terms = %lf", n, sum);
}
SUM OF SERIES : 1/1! + 2/2! + 3/3! + 4/4! + 5/5!... UPTO N TERMS
Enter the no. of terms : 7
1, 2, 6, 24, 120, 720, 5040, Sum of series : 1/1! + 2/2! + 3/3! + 4/4! + 5/5!... upto 7 terms = 2.718056
Process returned 75 (0x4B) execution time : 2.492 s
Press any key to continue.

```

Program number: 30

Aim: Write a program to convert binary number to decimal number

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

```

int main()
{
    int binary, decimal = 0, base = 1, remainder;
```

```

printf("Enter the Binary Number = ");
scanf("%d", &binary);
```

```

int temp = binary;
while(temp > 0)
{
    remainder = temp % 10;
    decimal = decimal + remainder * base;
    temp = temp / 10;
    base = base * 2;
}
```

```

printf("The Binary Value = %d\n", binary);
printf("The Decimal Value = %d\n", decimal);
```

```
return 0;
```

}

```
Enter the Binary Number = 10101
The Binary Value = 10101
The Decimal Value = 21

Process returned 0 (0x0) execution time : 10.151 s
Press any key to continue.
```

Program number: 31

Aim: Write a program to find the sum of following series: $S = 1^4 + 3^4 + 5^4 + 7^4 + \dots$ 100 terms

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

void main()
{
long long sum=0;
int i;

for (i=1; i<=100; i++)
{
sum += pow((2*i-1),4);
}
printf("The sum of the series 1^4 + 3^4 + 5^4 + 7^4... till 100 terms = %lld", sum);
}
```

```
The sum of the series 1^4 + 3^4 + 5^4 + 7^4... till 100 terms = 31997333380
Process returned 75 (0x4B)   execution time : 0.076 s
Press any key to continue.
```

Program number: 32

Aim: Write a program in C to print the following pattern:

* * *

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

```
void main()
{
int i, j;
printf("PATTERN 1\n\n");
for (i=0; i<3; i++)
```

```

{
for (j=0; j<3; j++)
printf("*");
printf("\n");
}

PATTERN 1
***  

***  

***  

Process returned 10 (0xA)   execution time : 0.058 s
Press any key to continue.

```

Program number: 33

Aim: Write a program in C to print the following pattern:

```

1 2 3
1 2 3
1 2 3

```

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

```

void main()
{
int i, j;
printf("PATTERN 2\n\n");
for (i=1; i<=3; i++)
{
for (j=1; j<=3; j++)
printf("%d", j);
printf("\n");
}
}
```

```

PATTERN 2
123
123
123
Process returned 10 (0xA)   execution time : 0.054 s
Press any key to continue.

```

Program number: 34

Aim: Write a program in C to print the following pattern:

```

1 1 1
2 2 2
3 3 3

```

```
# include <stdio.h>

void main()
{
int i, j;
printf("PATTERN 3\n\n");
for (i=1; i<=3; i++)
{
for (j=1; j<=3; j++)
printf("%d", i);
printf("\n");
}
}
```

```
PATTERN 3
111
222
333
Process returned 10 (0xA)    execution time : 0.088 s
Press any key to continue.
```

Program number: 35

Aim: Write a program in C to print the following pattern:

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

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

```
void main()
{
int i, j;
printf("PATTERN 4\n\n");
for (i=1; i<=3; i++)
{
for (j=3; j>=1; j--)
printf("%d", j);
printf("\n");
}
}
```

```
PATTERN 4
321
321
321
Process returned 10 (0xA)    execution time : 0.086 s
Press any key to continue.
```

Program number: 36

Aim: Write a program in C to print the following pattern:

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

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

```
void main()  
{  
int i, j;  
printf("PATTERN 5\n\n");  
for (i=3; i>=1; i--)  
{  
for (j=1; j<=3; j++)  
printf("%d", i);  
printf("\n");  
}  
}
```

```
PATTERN 5  
333  
222  
111  
Process returned 10 (0xA)  execution time : 0.053 s  
Press any key to continue.
```

Program number: 37

Aim: Write a program in C to print the following pattern:

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

```
# include <stdio.h>  
void main()  
{  
int i, j;  
printf("PATTERN 6\n\n");  
for (i=1; i<=3; i++)  
{  
for (j=1; j<=i; j++)  
printf("*");  
printf("\n");  
}
```

```
PATTERN 6
*
**
***

Process returned 10 (0xA)  execution time : 0.043 s
Press any key to continue.
```

Program number: 38

Aim: Write a program in C to print the following pattern:

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

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

```
void main()
{
int i, j;
printf("PATTERN 7\n\n");
for (i=1; i<=3; i++)
{
for (j=1; j<=i; j++)
printf("%d", i);
printf("\n");
}
}
```

```
PATTERN 7
1
22
333

Process returned 10 (0xA)  execution time : 0.057 s
Press any key to continue.
```

Program number: 39

Aim: Write a program in C to print the following pattern:

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

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

```
void main()
{
int i, j;
printf("PATTERN 8\n\n");
for (i=1; i<=3; i++)
{
```

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

```
PATTERN 8
1
12
123

Process returned 10 (0xA)  execution time : 0.049 s
Press any key to continue.
```

Program number: 40

Aim: Write a program in C to print the following pattern:

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

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

```
void main()
{
int i, j, k=3;
printf("PATTERN 9\n\n");
for (i=1; i<=3; i++)
{
k=3;
for (j=1; j<=i; j++)
printf("%d", k--);
printf("\n");
}
```

```
PATTERN 9
3
32
321

Process returned 10 (0xA)  execution time : 0.048 s
Press any key to continue.
```

Program number: 41

Aim: Write a program in C to print the following pattern:

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

```

#include <stdio.h>
void main()
{
int i, j, k=3;
printf("PATTERN 10\n\n");
for (i=1; i<=3; i++)
{
for (j=1; j<=i; j++)
printf("%d", k);
printf("\n");
k--;
}
}

```

PATTERN 10

3
22
111

Process returned 10 (0xA) execution time : 0.049 s
Press any key to continue.

Program number: 42

Aim: Write a program in C to print the following pattern:

```

*
* *
* * *
* * * *
* * * * *

#include <stdio.h>
int main() {
int i, space, rows, k = 0;
printf("Enter the number of rows: ");
scanf("%d", &rows);
for (i = 1; i <= rows; ++i, k = 0) {
for (space = 1; space <= rows - i; ++space) {
printf(" ");
}
while (k != 2 * i - 1) {
printf("* ");
++k;
}
printf("\n");
}
return 0;
}
```

```
Enter the number of rows: 4
      *
     * * *
    * * * * *
   * * * * * *

Process returned 0 (0x0)  execution time : 1.453 s
Press any key to continue.
```

Program number: 43

Aim: Write a program in C to print the following pattern:

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

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

```
void main()
{
int i, j;
printf("PATTERN 12\n\n");
for (i=1; i<=4; i++)
{
for (j=1; j<=(4-i); j++)
printf(" ");
for (j=1; j<=i; j++)
printf("%d", j);
for (j=(i-1); j>=1; j--)
printf("%d", j);
printf("\n");
}
```

```
PATTERN 12
      1
     121
    12321
   1234321

Process returned 10 (0xA)  execution time : 0.053 s
Press any key to continue.
```

Program number: 44

Aim: Write a program in C to print the following pattern:

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

```

#include <stdio.h>

void main()
{
int i, j;
printf("PATTERN 13\n\n");
for (i=1; i<=5; i++)
{
for (j=1; j<=(5-i); j++)
printf(" ");
for (j=1; j<=i; j++)
printf("%d", (6-j));
for (j=(i-1); j>=1; j--)
printf("%d", (6-j));
printf("\n");
}
}

```

```

PATTERN 13
      5
     545
    54345
   5432345
  543212345

Process returned 10 (0xA)  execution time : 0.085 s
Press any key to continue.

```

Program number: 45

Aim: Write a program in C to print the following pattern:

```

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

```

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

```

void main()
{
int i, j, a=1, b=0, zero=0;
printf("PATTERN 12\n\n");
for (i=1; i<=5; i++)
{
if (i%2 == 0)
{
for (j=1; j<=i; j++)
if (j%2 != 0)
printf("0");
else
printf("1");
}
}

```

```

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

```

PATTERN 14

```

1
01
101
0101
10101

Process returned 10 (0xA)   execution time : 0.042 s
Press any key to continue.

```

Program number: 46

Aim: Write a program to print all prime numbers <= a given number.

```

#include <stdio.h>
int isPrime(int num);
void printPrimes(int lowerLimit, int upperLimit);
int main()
{
int lowerLimit, upperLimit;
printf("Enter the lower and upper limit to list primes: ");
scanf("%d%d", &lowerLimit, &upperLimit);
printPrimes(lowerLimit, upperLimit);
return 0;
}

void printPrimes(int lowerLimit, int upperLimit)
{
printf("All prime number between %d to %d are: ", lowerLimit, upperLimit);
while(lowerLimit <= upperLimit)
{
if(isPrime(lowerLimit))
{
printf("%d, ", lowerLimit);
}
lowerLimit++;
}
}

int isPrime(int num)

```

```
{
int i;
for(i=2; i<=num/2; i++)
{
if(num % i == 0)
{
return 0;
}
}
return 1;
}
```

```
Enter the lower and upper limit to list primes: 1 30
All prime number between 1 to 30 are: 1, 2, 3, 5, 7, 11, 13, 17, 19, 23, 29,
Process returned 0 (0x0)    execution time : 6.605 s
Press any key to continue.
```

Program number: 47

Aim: Write a program to convert Decimal no to Binary No.

```
#include<stdio.h>
#include<stdlib.h>
int main()
{
int a[10],n,i;
system ("cls");
printf("Enter the number to convert: ");
scanf("%d",&n);
for(i=0;n>0;i++)
{
a[i]=n%2;
n=n/2;
}
printf("\nBinary of Given Number is=");
for(i=i-1;i>=0;i--)
{
printf("%d",a[i]);
}
return 0;
}
```

```
Enter the number to convert: 1459
Binary of Given Number is=10110110011
Process returned 0 (0x0)    execution time : 4.669 s
Press any key to continue.
```

Program number: 48

Aim: Write a program to find product, sum, average, max and min from a list of n numbers.

```
#include <stdio.h>
int main()
{
int n,i;
int a[5];
int p=1;
int s=0;
int max;
int min;
float avg;

printf("Enter the number of elements : \n");
scanf("%d",&n);
printf("Enter the one dimensional array : ");

for(i=0;i<n;i++)
{
    scanf("%d",&a[i]);

}
printf("\n One dimensional array : ");

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

for(i=0;i<n;i++)
{
    p=p*a[i];
    s=s+a[i];
}

avg=s/n;
{

printf("\n");
printf("\nSum of an array = %d",s);
printf("\nProduct of an array = %d",p);

printf("\nAverage of an array = %f",avg);
printf("\n");
max=a[0];
for(i=1;i<n;i++)
{
}
```

```

if(a[i]>max)
{
max=a[i];

}
}
printf("Largest of an array is %d",max);
printf("\n");

min=a[0];
for(i=1;i<n;i++)
{
if(a[i]<min)
{
min=a[i];

}
}
printf("Smallest of the array is %d",min);
printf("\n");

return 0;
}
}

```

```

Enter the number of elements :
4
Enter the one dimensional array : 12 14 16 18
One dimensional array : 12141618
Sum of an array = 60
Product of an array = 48384
Average of an array = 15.000000
Largest of an array is 18
Smallest of the array is 12

Process returned 0 (0x0)   execution time : 10.225 s
Press any key to continue.

```

Program number: 49

Aim: Write a program in C to display the index of smallest and largest element in 10 integers

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

```

int main()
{
int a[50],i,n=10,large,small;
printf("\nNumber of elements : 10");
printf("\nInput the array elements : ");
for(i=0;i<n;++i)
scanf("%d",&a[i]);

large=small=a[0];

```

```

for(i=1;i<n;++i)
{
if(a[i]>large)
large=a[i];

if(a[i]<small)
small=a[i];
}

printf("\nThe smallest element is %d\n",small);
printf("\nThe largest element is %d\n",large);

return 0;
}

```

```

Number of elements : 10
Input the array elements : 1 2 3 4 5 6 7 8 9 0

The smallest element is 0
The largest element is 9

Process returned 0 (0x0)   execution time : 10.275 s
Press any key to continue.

```

Program number: 50

Aim: Write a program in C to display the index of smallest and largest element in 3 X 4 matrix of integers.

```

#include<stdio.h>
#include<conio.h>
void main()
{
int mat[10][10];
int i, j, row=3, col=4, small, big;
printf("Order of the matrix : 3 X 4");
printf("\nEnter the elements of the matrix : \n\n");
for(i = 0; i < row; i++)
for(j = 0; j < col; j++)
scanf("%d", &mat[i][j]);
big = mat[0][0];
small = mat[0][0];
for(i = 0; i < row; i++)
{
for(j = 0; j < col; j++)
{
if(mat[i][j] < small)
small = mat[i][j];
}
}

```

```

if(mat[i][j] > big)
big = mat[i][j];
}
}
printf("\nThe smallest element in the matrix is : %d\n",small);
printf("The biggest element in the matrix is : %d", big);
getch();
}

```

```

Order of the matrix : 3 X 4
Enter the elements of the matrix :

1 2 3 4
2 3 4 5
3 4 5 6

The smallest element in the matrix is : 1
The biggest element in the matrix is : 6

```

Program number: 51

Aim: Write a program in C that accepts N*N matrix as input and print transpose of this matrix

```

#include <stdio.h>

void main()
{
int A[10][10], B[10][10], r, c, i, j;
printf("TRANSPOSE OF A MATRIX");
printf("\n\nEnter the order of the matrix :- \n");
printf("Enter no. of rows : ");
scanf("%d", &r);
printf("Enter no. of columns : ");
scanf("%d", &c);

printf("\nEnter the matrix (say A):-\n");
for (i=0; i<r; i++)
{
for (j=0; j<c; j++)
{
printf("Enter element A[%d][%d] : ", i, j);
scanf("%d", &A[i][j]);
}
}

printf("\nMatrix A :-\n");
for (i=0; i<r; i++)
{
for (j=0; j<c; j++)
{

```

```

printf("%d\t", A[i][j]);
}
printf("\n");
}

for (i=0; i<c; i++)
{
for (j=0; j<r; j++)
B[i][j] = A[j][i];
}

printf("\nTranspose of Matrix A :-\n");
for (i=0; i<c; i++)
{
for (j=0; j<r; j++)
{
printf("%d\t", B[i][j]);
}
printf("\n");
}
}
}

```

```

TRANSPOSE OF A MATRIX

Enter the order of the matrix :-
Enter no. of rows : 2
Enter no. of columns : 2

Enter the matrix (say A):-
Enter element A[0][0] : 1
Enter element A[0][1] : 2
Enter element A[1][0] : 3
Enter element A[1][1] : 4

Matrix A :-
1      2
3      4

Transpose of Matrix A :-
1      3
2      4

Process returned 2 (0x2)  execution time : 13.991 s
Press any key to continue.

```

Program number: 52

Aim: Write a program to accept two matrices of some order. (Order must be given by user) find out the sum of these matrices and print the sum of matrices.

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

```

void main()
{
int A[10][10], B[10][10], C[10][10], r, c, i, j;
printf("ADDITION OF TWO MATRICES");
printf("\n\nEnter the order of the matrix :-\n");
printf("Enter no. of rows : ");
scanf("%d", &r);

```

```

printf("Enter no. of columns : ");
scanf("%d", &c);

printf("\nEnter first matrix A :-\n");
for (i=0; i<r; i++)
{
for (j=0; j<c; j++)
{
printf("Enter element A[%d][%d] : ", i, j);
scanf("%d", &A[i][j]);
}
}

printf("\nEnter second matrix B :-\n");
for (i=0; i<r; i++)
{
for (j=0; j<c; j++)
{
printf("Enter element B[%d][%d] : ", i, j);
scanf("%d", &B[i][j]);
}
}

printf("\nMatrix A :-\n");
for (i=0; i<r; i++)
{
for (j=0; j<c; j++)
{
printf("%d\t", A[i][j]);
}
printf("\n");
}

printf("\nMatrix B :-\n");
for (i=0; i<r; i++)
{
for (j=0; j<c; j++)
{
printf("%d\t", B[i][j]);
}
printf("\n");
}

for (i=0; i<r; i++)
for (j=0; j<c; j++)
C[i][j] = A[i][j] + B[i][j];

printf("\nThe sum of matrix A and B :-\n");
for (i=0; i<r; i++)
{

```

```

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

```

ADDITION OF TWO MATRICES

```

Enter the order of the matrix :-
Enter no. of rows : 2
Enter no. of columns : 2

Enter first matrix A :-
Enter element A[0][0] : 1
Enter element A[0][1] : 2
Enter element A[1][0] : 3
Enter element A[1][1] : 4

Enter second matrix B :-
Enter element B[0][0] : 5
Enter element B[0][1] : 6
Enter element B[1][0] : 7
Enter element B[1][1] : 8

Matrix A :-
1      2
3      4

Matrix B :-
5      6
7      8

The sum of matrix A and B :-
6      8
10     12

```

Program number: 53

Aim: Write a program to find out the product/Multiplication of two matrices and print the product matrix. (order of matrices must be given by user)

```

#include <stdio.h>
#include <stdlib.h>

void main()
{
int A[10][10], B[10][10], C[10][10], r1, c1, r2, c2, i, j, k;
printf("SUBTRACTION OF TWO MATRICES");
printf("\n\nEnter the order of the matrix A :- \n");
printf("Enter no. of rows : ");
scanf("%d", &r1);
printf("Enter no. of columns : ");
scanf("%d", &c1);

printf("\nEnter the order of the matrix B :- \n");
printf("Enter no. of rows : ");
scanf("%d", &r2);
printf("Enter no. of columns : ");
scanf("%d", &c2);

```

```

if (c1 != r2)
{
printf("\nThe multiplication for the entered orders is illegal !!");
exit(0);
}
else
{
printf("\nEnter first matrix A :-\n");
for (i=0; i<r1; i++)
{
for (j=0; j<c1; j++)
{
printf("Enter element A[%d][%d] : ", i, j);
scanf("%d", &A[i][j]);
}
}

printf("\nEnter second matrix B :-\n");
for (i=0; i<r2; i++)
{
for (j=0; j<c2; j++)
{
printf("Enter element B[%d][%d] : ", i, j);
scanf("%d", &B[i][j]);
}
}

printf("\nMatrix A :-\n");
for (i=0; i<r1; i++)
{
for (j=0; j<c1; j++)
{
printf("%d\t", A[i][j]);
}
printf("\n");
}

printf("\nMatrix B :-\n");
for (i=0; i<r2; i++)
{
for (j=0; j<c2; j++)
{
printf("%d\t", B[i][j]);
}
printf("\n");
}

for (i=0; i<r1; i++)
for (j=0; j<c2; j++)
C[i][j] = 0;

```

```

for (i=0; i<r1; i++)
for (j=0; j<c2; j++)
for (k=0; k<c2; k++)
C[i][j] = C[i][j] + A[i][k]*B[k][j];

printf("\nThe product of matrix A and B :-\n");
for (i=0; i<r1; i++)
{
for (j=0; j<c2; j++)
{
printf("%d\t", C[i][j]);
}
printf("\n");
}
}

```

SUBTRACTION OF TWO MATRICES

```

Enter the order of the matrix A :-
Enter no. of rows : 2
Enter no. of columns : 2

Enter the order of the matrix B :-
Enter no. of rows : 2
Enter no. of columns : 3

Enter first matrix A :-
Enter element A[0][0] : 1
Enter element A[0][1] : 2
Enter element A[1][0] : 3
Enter element A[1][1] : 4

Enter second matrix B :-
Enter element B[0][0] : 1
Enter element B[0][1] : 2
Enter element B[0][2] : 3
Enter element B[1][0] : 4
Enter element B[1][1] : 5
Enter element B[1][2] : 6

Matrix A :-
1      2
3      4

Matrix B :-
1      2      3
4      5      6

The product of matrix A and B :-
1129106793      12      15
19      26      33

```

Program number: 54

Aim: Write a program to accept two matrices of some order. (Order must be given by user) find out the subtraction of these matrices and print the sum of matrices.

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

```
void main()
{
```

```

int A[10][10], B[10][10], C[10][10], r, c, i, j;
printf("SUBTRACTION OF TWO MATRICES");
printf("\n\nEnter the order of the matrix :- \n");
printf("Enter no. of rows : ");
scanf("%d", &r);
printf("Enter no. of columns : ");
scanf("%d", &c);

printf("\nEnter first matrix A :-\n");
for (i=0; i<r; i++)
{
for (j=0; j<c; j++)
{
printf("Enter element A[%d][%d] : ", i, j);
scanf("%d", &A[i][j]);
}
}

printf("\nEnter second matrix B :-\n");
for (i=0; i<r; i++)
{
for (j=0; j<c; j++)
{
printf("Enter element B[%d][%d] : ", i, j);
scanf("%d", &B[i][j]);
}
}

printf("\nMatrix A :-\n");
for (i=0; i<r; i++)
{
for (j=0; j<c; j++)
{
printf("%d\t", A[i][j]);
}
printf("\n");
}

printf("\nMatrix B :-\n");
for (i=0; i<r; i++)
{
for (j=0; j<c; j++)
{
printf("%d\t", B[i][j]);
}
printf("\n");
}

for (i=0; i<r; i++)
for (j=0; j<c; j++)

```

```
C[i][j] = A[i][j] - B[i][j];
```

```
printf("\nThe difference of matrix A and B :-\n");
for (i=0; i<r; i++)
{
for (j=0; j<c; j++)
{
printf("%d\t", C[i][j]);
}
printf("\n");
}
```

SUBTRACTION OF TWO MATRICES

```
Enter the order of the matrix :-
Enter no. of rows : 2
Enter no. of columns : 2
```

```
Enter first matrix A :-
Enter element A[0][0] : 3
Enter element A[0][1] : 5
Enter element A[1][0] : 7
Enter element A[1][1] : 9
```

```
Enter second matrix B :-
Enter element B[0][0] : 2
Enter element B[0][1] : 4
Enter element B[1][0] : 6
Enter element B[1][1] : 8
```

```
Matrix A :-
3      5
7      9
```

```
Matrix B :-
2      4
6      8
```

```
The difference of matrix A and B :-
1      1
1      1
```