

GLA University,
Mathura

C Programming Lab File

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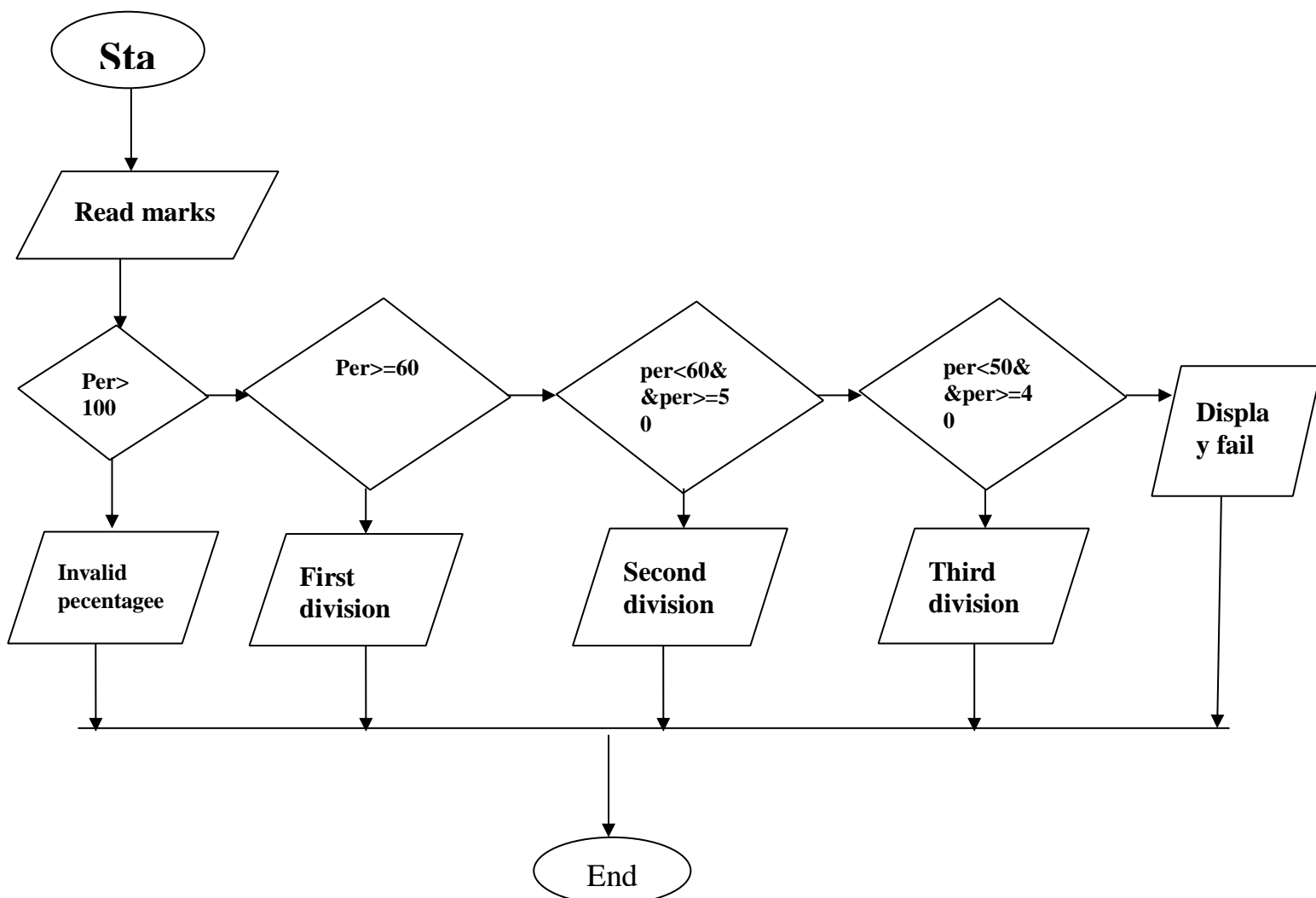
Q.1 Write a program in c to find the division of student.

Ans.

Algorithm:-

- Start
- input percentage
- If per >100 invalid percentage
- If Per >=60 1st division
- If per 50-60 2nd division
- If Per less than 40 fail
- stop

Flowchart:-



```
#include<stdio.h>
#include<conio.h>
Void main()
{
Int per;
Clrscr();
Printf("Enter percentage of student");
Scanf("%d",&per);
If(per>100)
{
Printf("\n invalid percent");
}
else if(per>=60)
{
Printf("\n first division");
}
else if(per<60&&per>=50) {
printf("second division");
}
else if(per<50&&per>=40) {
printf("\m third division");
}
else
{
Printf("\n fail");
}
```

```
getch();
```

```
}
```

Output:-

A screenshot of a terminal window with a black background and white text. The text "Enter percentage of student:60" is displayed on the first line.

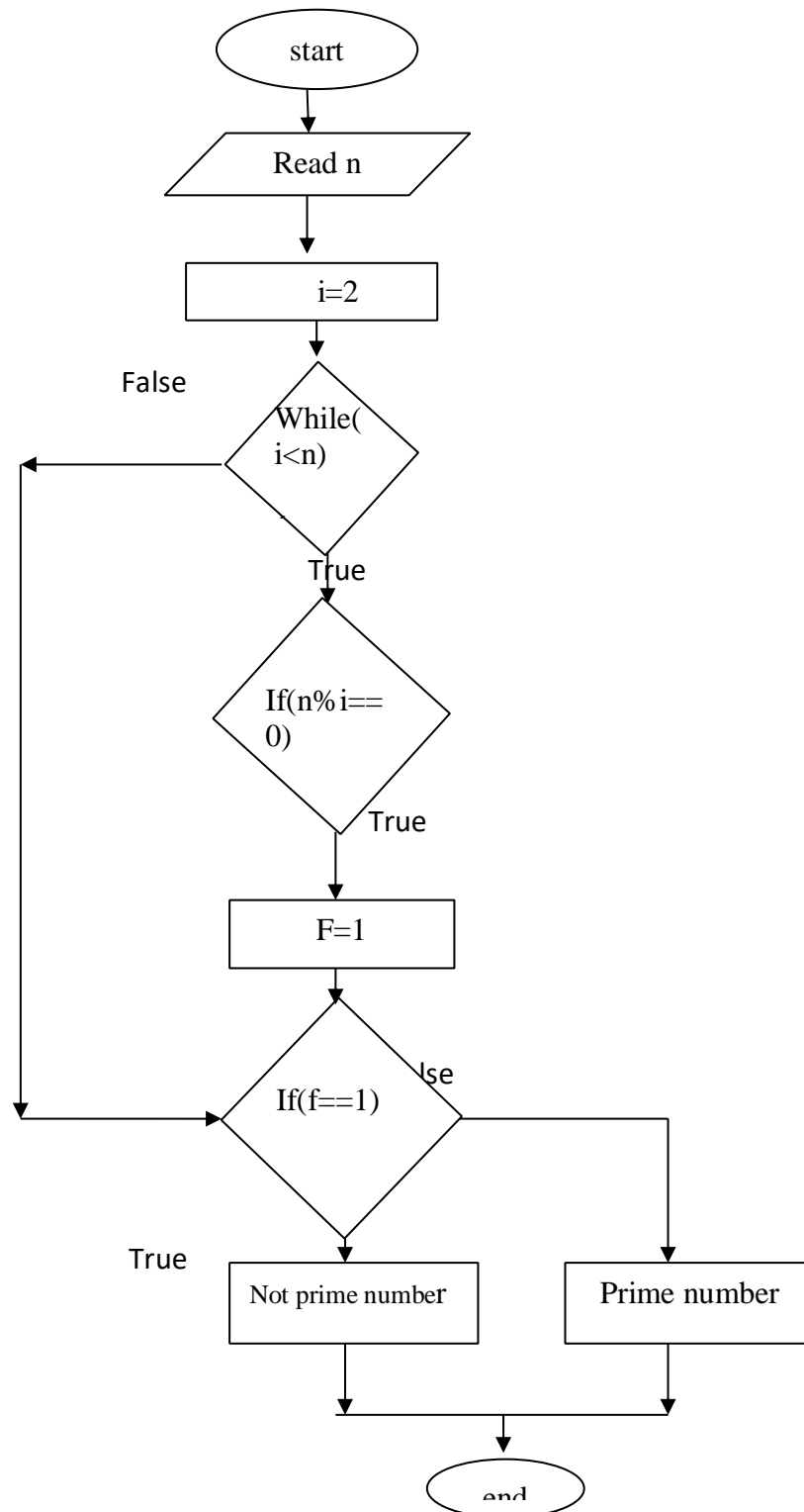
Enter percentage of student:60

First division_

Q.2 Write a program in c to find prime number or not.

Ans.

Flowchart:-



Algorithm:-

- Start
- Read number
- $i=2$
- while($i < n$)
- if($n \% i == 0$)
- $f=1$
- if($f==1$) then print not prime
- else print prime
- end

Code:-

```
#include<stdio.h>

#include<conio.h>

void main()

{

int n,i,f;

f=0;

printf("Enter a number");

scanf("%d",&n);

i=2;

while(i<n)

{

if(n%i==0)

{

f=1;

break;

}

i++;

}

if(f==1)
```

```
printf("\n not a prime number");  
else  
printf("\n prime number");  
}
```

Output:-

```
Enter a number 7
```

```
prime number
```

```
Enter a number 8
```

```
not a prime number
```

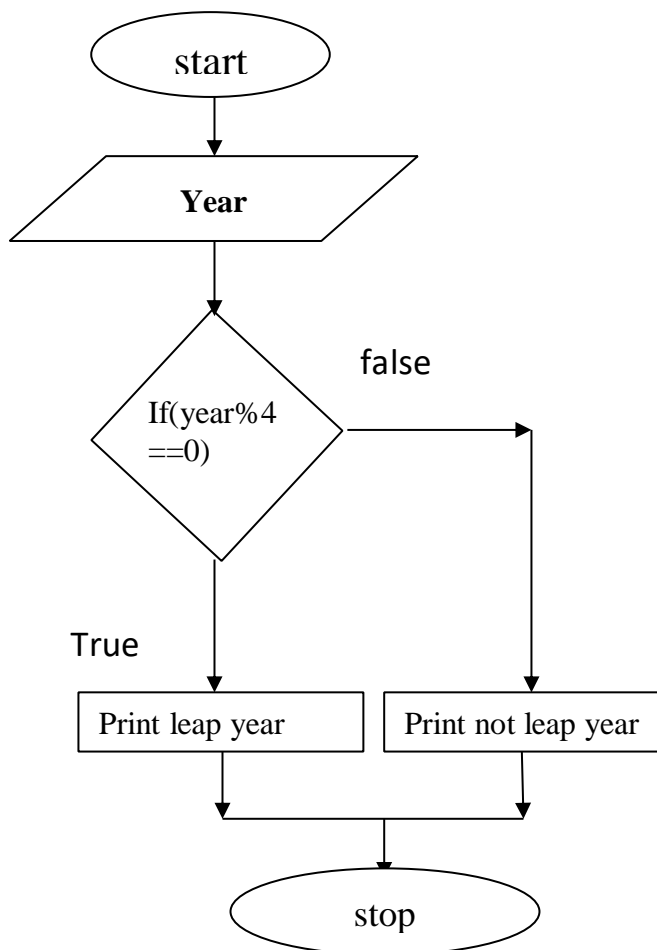
Q.3 Write a program in c to find the leap year.

Ans.

Algorithm:-

- start
- year
- if(year%4==0) then leap year
- else not leap year
- stop

flowchart:-



Code:-

```
#include<stdio.h>

#include<conio.h>

int main()
{
    int year;
    clrscr();
    printf("enter the year :");
    scanf("%d",&year);

    if(year%4==0)
    {
        printf("the year %d is leap year",year);
    }
    else
    {
        printf("the year %d is not leap year",year);
    }

    return 0;

}
```

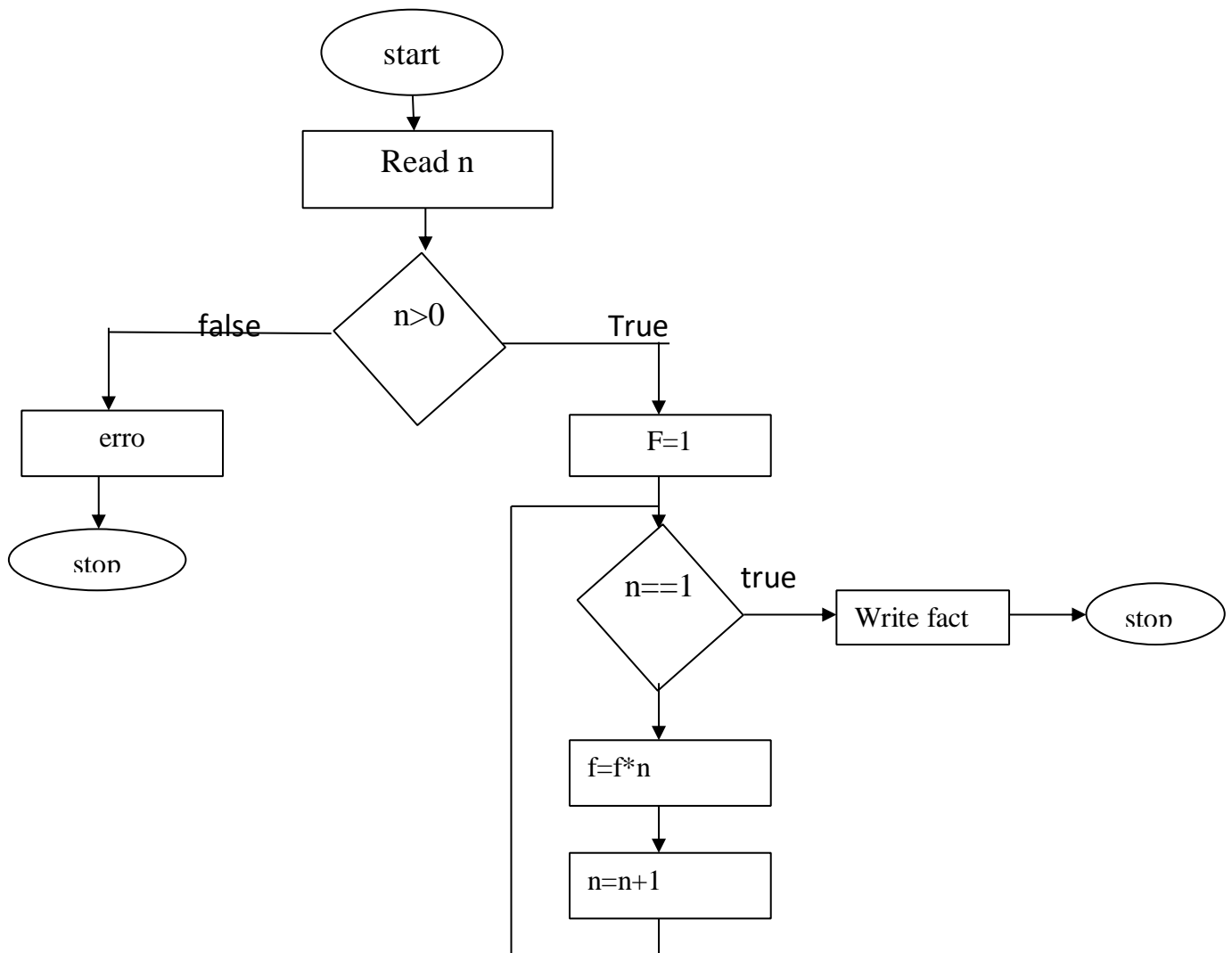
Output:-

```
Enter the year:2022  
The year 2022 is not leap
```

Q.4 Write a program to calculate factorial of a number.

Ans.

Flowchart:-



Algorithm:-

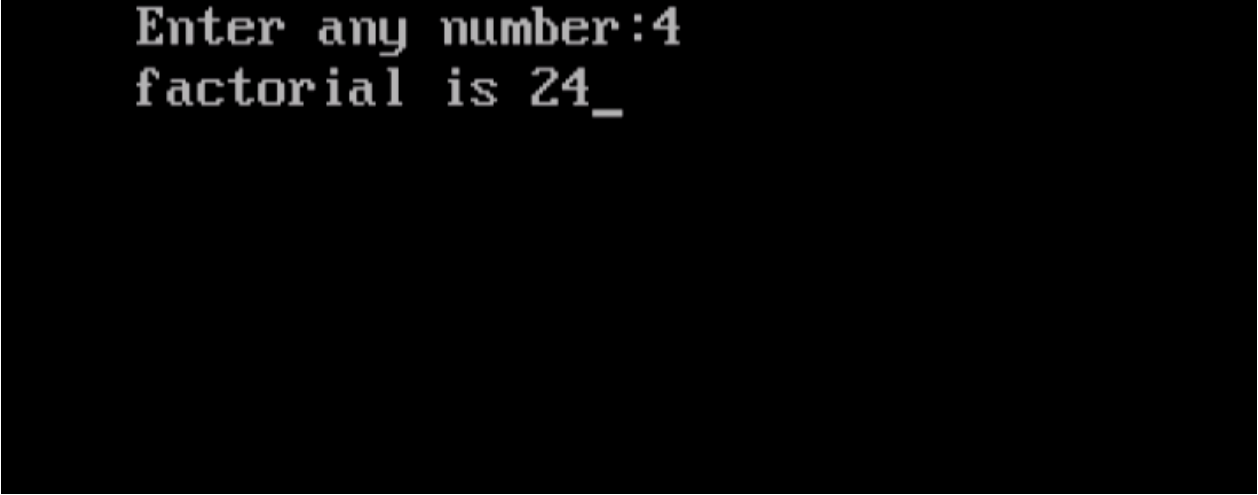
- start
- read n
- if(n>0) then f=1
- if(n==1) then f=f*n and n=n+1
- write fact -stop
- else error
- stop

Code:-

```
#include<stdio.h>
#include<conio.h>
long int facto(int n)
{
    if(n==1)
    {
        return 1;
    }
    else return n*facto(n-1);
}
void main()
{
    long int f;
    int num;
    printf("Enter any number :");
    scanf("%d",&num);
    if(num>0)
    {
        f=facto(num);
        printf("factorial is %d",f);
    }
    else
    {
        printf("\n error:given number is  %d negative",num);
    }
}
```

```
}
```

Output:-



```
Enter any number:4  
factorial is 24_
```

Q. 5 Write a program in c to calculate power using recursion.

Ans.

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

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

```
long int power(int a,int b)
```

```
{
```

```
Long int s=1;
```

```
Int l;
```

```
If(b==0)
```

```
{
```

```
return 0;
```

```
}
```

```
for(i=1;i<=b;i++)
```

```
{
```

```
s=s*a;
```

```
}
```

```
return s;
```

```
}
```

```
Void main()
```

```
{
```

```
long int p;
```

```
int c,d;
```

```
printf("Enter any two number\n");
```

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

```
p=power(c,d);
```

```
printf("\n power is %d",p);
```

```
getch();
```

```
}
```

Output:-

```
Enter any two number:
```

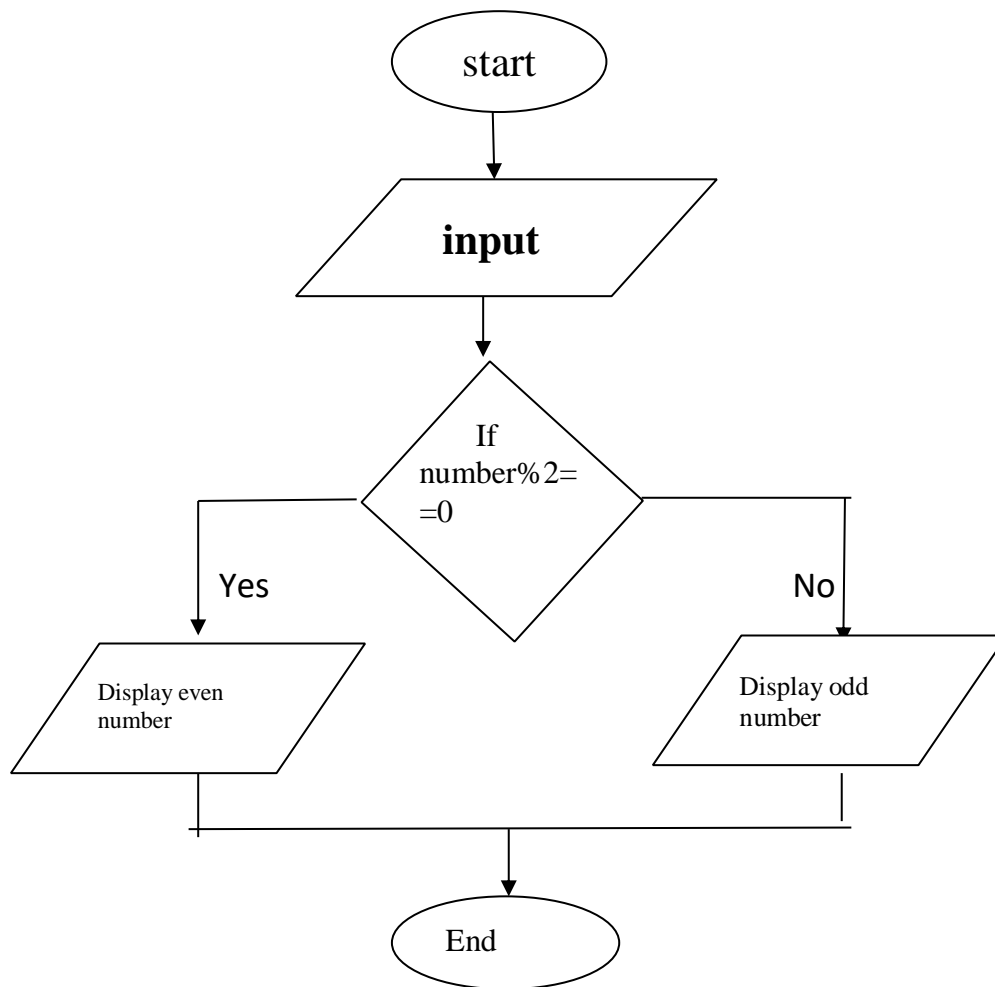
```
2 4
```

```
power is 16_
```

Q.6. Write a program in c to find even or odd numbers.

Ans.

Flowchart:-



Algorithm:-

- start
- input number
- if(number%2==0) then it is even number
- else odd number
- end

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

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

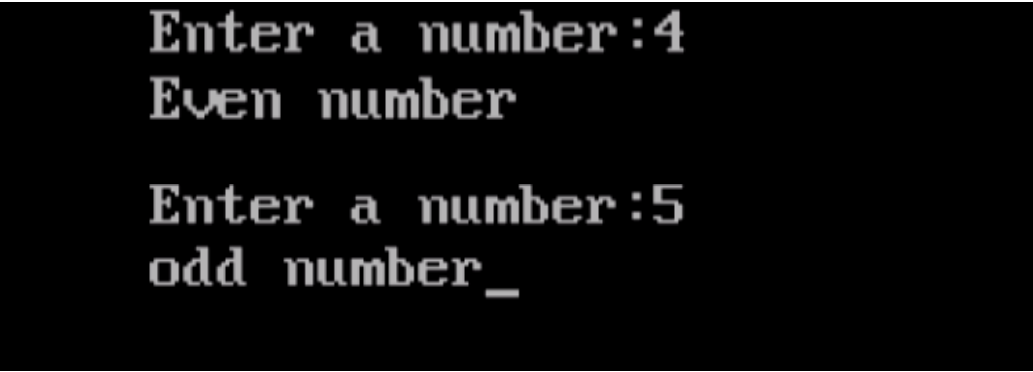
```
Void main()
```

```

{
Int n,r;
Clrscr();
Printf("Enter a number:");
Scanf("%d",&n);
r=n%2;
if(r==0)
{
Printf("Even number");
}
else
{
Printf("odd number");
}
getch();
}

```

Output:-



```

Enter a number:4
Even number

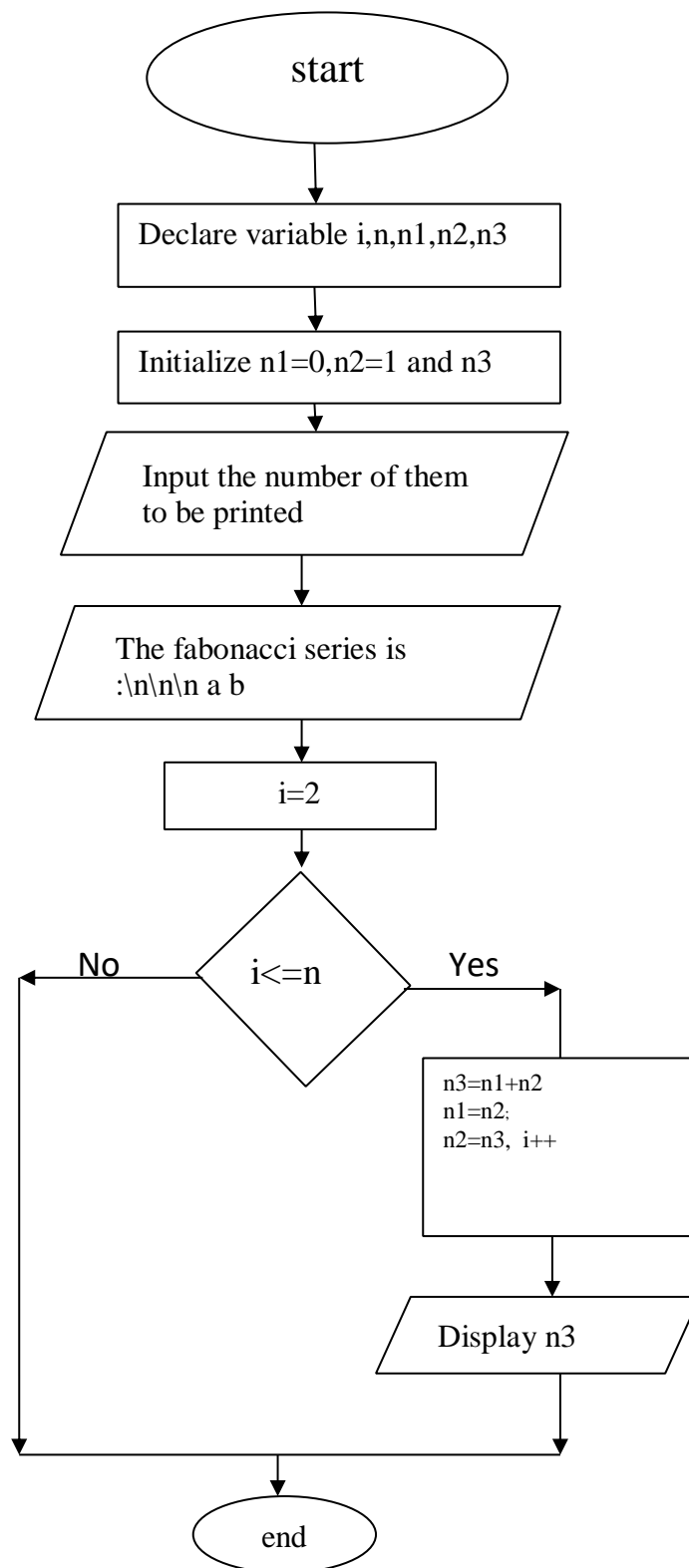
Enter a number:5
odd number_

```

Q.7 Write a program in c to print fabonnaci series.

Ans.

Flowchart:-



Algorithm:-

- start
- declare variable i,n,n1,n2,n3
- initialize n1=0,n2=1 and n3=0
- input number
- i=2
- check i<=n then n3=n1+n2,n1=n2,n2=n3
- display n3
- stop

code:-

```
#include<stdio.h>

#include<conio.h>

Void main()

{
int i,n,n1=0,n2=1,n3;

Clrscr()

Printf("Enter the number:");

Scanf("%d",&n);

Printf("The fibonnaci series :\n");

Printf("%d \n",n2);

for(i=3;i<=n;i++)

{

n3=n1+n2;

printf("%d \n",n3);

n1=n2;

n2=n3;

}
```

```
getch();  
}
```

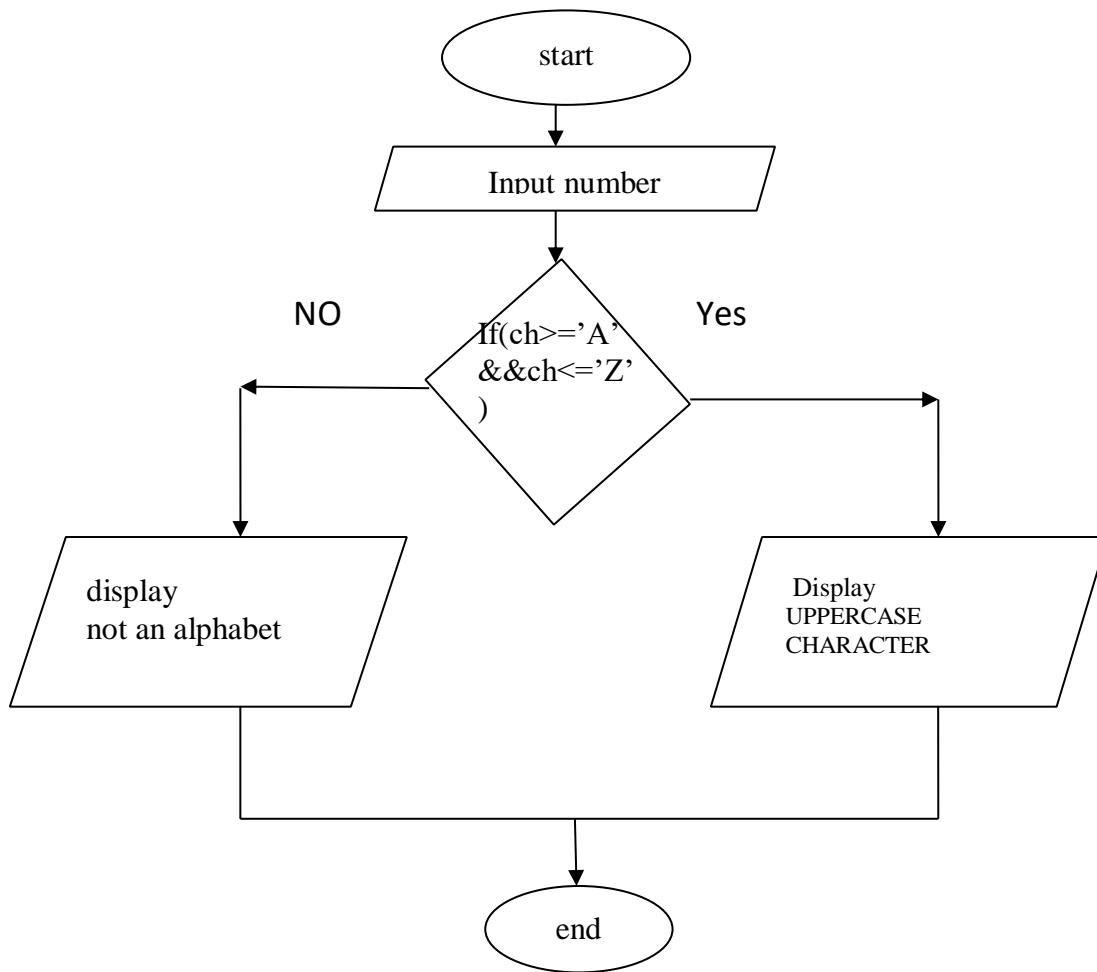
Output:-

```
Enter the number:10  
The Fibonnaci series:  
1  
1  
2  
3  
5  
8  
13  
21  
34
```

Q.8 Write a Function to check uppercase letter.

Ans.

Flowchart :-



Algorithm:-

- start
- input number
- if(ch>='A' && ch<='Z') it is true then display UPPERCASE CHARACTER
- else not an alphabet
- end

Code:-

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

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



```
Void characcheck(char ch)
{
If(ch>='A'&&ch<='Z')
{
Printf("UPPERCASE CHARACTER\n");
}
Else
Printf("is not an alphabet\n");
}
Int main()
{
char c;
printf("Enter any character\n");
scanf("%c",&c);
characcheck(c);
getch();
return 0;
}
```

Output:-

enter any character

J

UPPERCASE CHARACTER

—

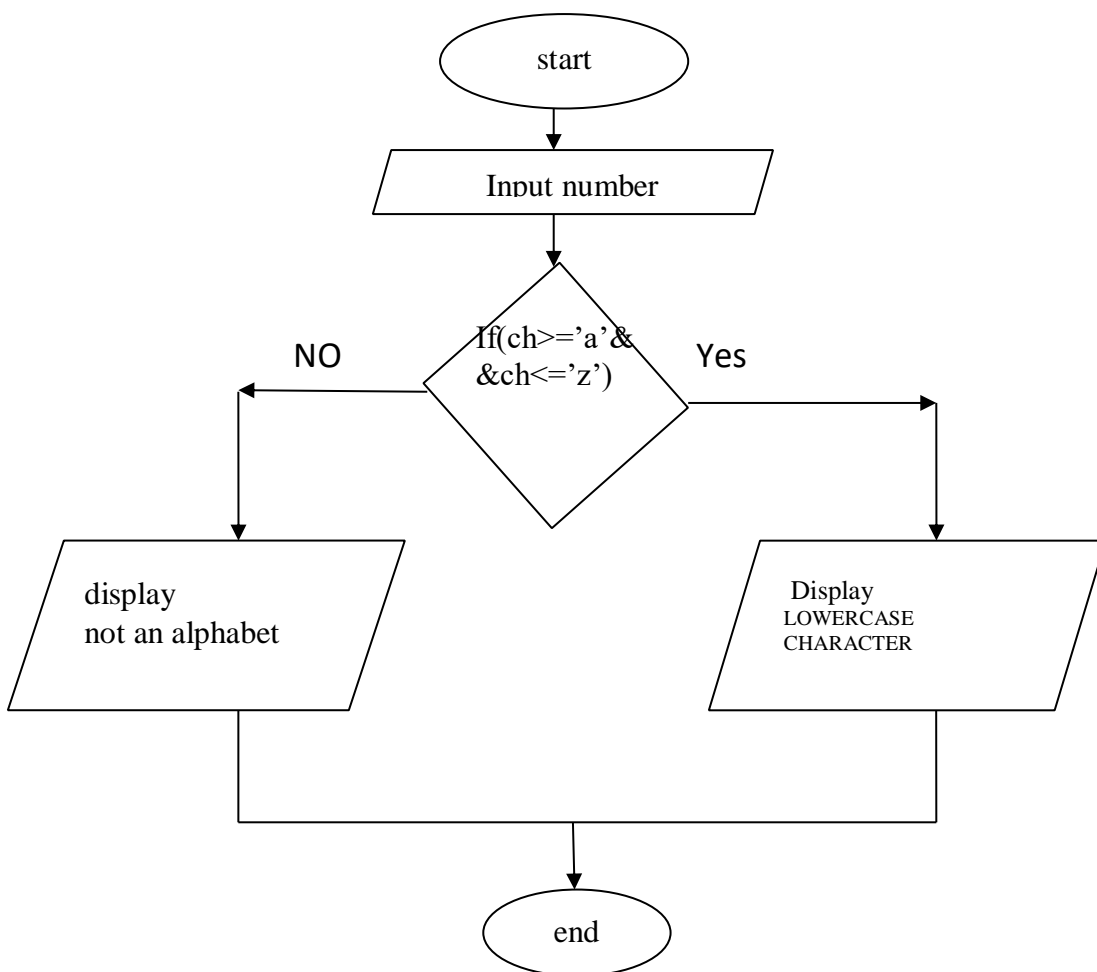
Q.9 Write a program in c to function to check lowercase letter.

Ans.

Algorithm:-

- start
- input number
- if(ch>='a' && ch<='z') it is true then display LOWERCASE CHARACTER.
- else not an alphabet
- end

Flowchart:-



Code:-

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

```
#include<conio.h>

Void characcheck(char ch)
{
If(ch>='a'&&ch<='z')
Printf("LOWERCASE CHARACTER\n");
Else
Printf("is not an alphabet\n");
}

Int main()
{
char c;
printf("Enter any character\n");
scanf("%c",&c);
characcheck(c);
getch();
return 0;
}
```

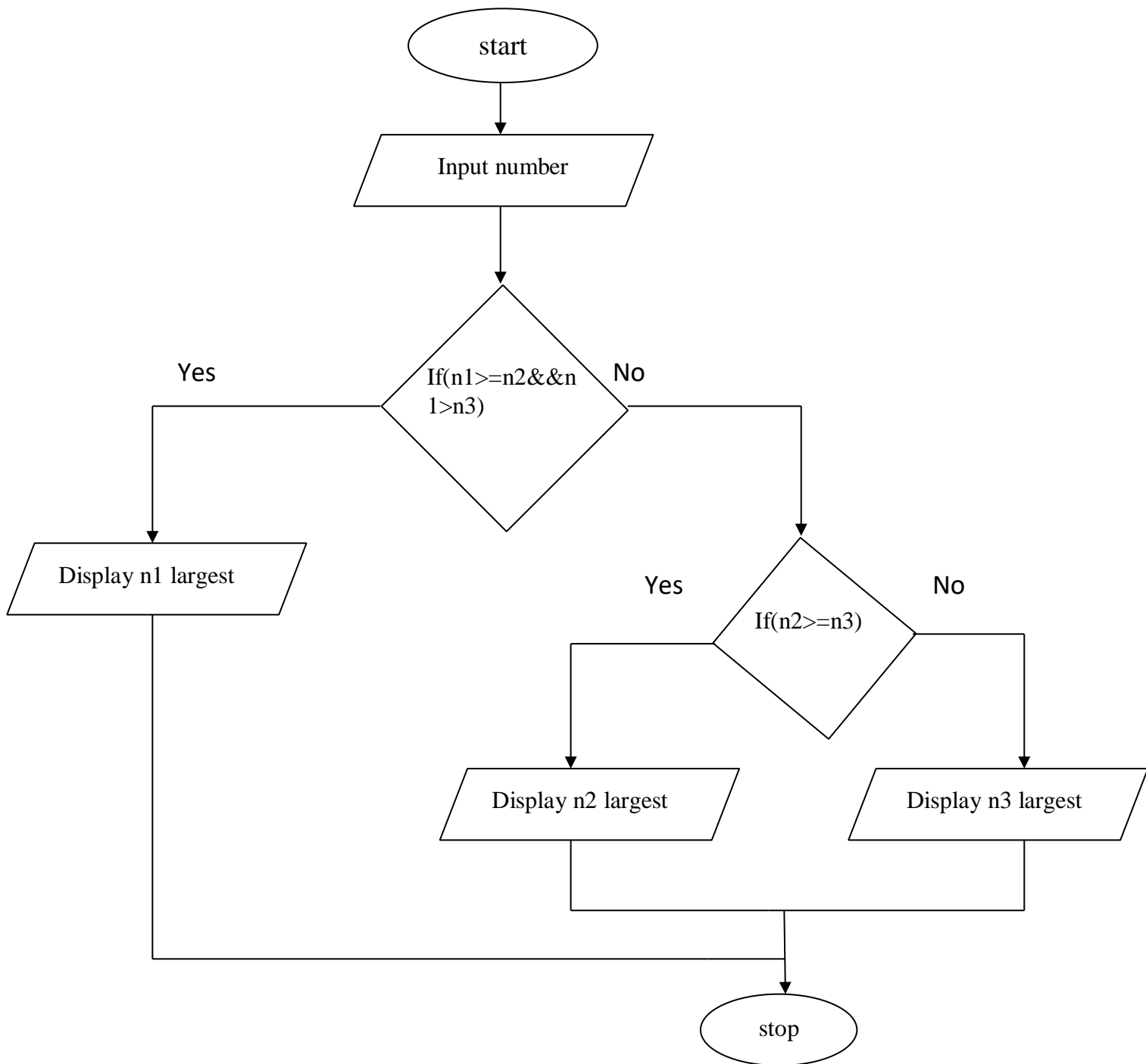
Output:-

```
enter any character
j
LOWERCASE CHARACTER
_
```

Q,10 Find the greater of the three numbers

Ans.

Flowchart:-



Algorithm:-

- start

- input numbers
- check condition if(n1>=n2&& n1>=n3) it is true then display n1 largest
- if(

Code:-

```
#include<stdio.h>

#include<conio.h>

Int main()
{
    Int n1,n2,n3;
    Printf("Enter three numbers:");
    Scanf("%d%d%d",&n1,&n2,&n3);
    If(n1>=n2)
    {
        If(n1>=n3)
        Printf("\n n1 largest");
        else
        printf("\n n3 largest");
    }
    else
    {
        If(n2>=n3)
        Printf("\n n2 largest",n2);
        else
        {
            Printf("\n n3 largest",n3);
        }
    }
    return 0;
```

```
}
```

Output:-

```
Enter three number:10 20 30
```

```
n3 largest_
```

Q.11 Write a program in c to type casting implicit explicit.

Ans.


```
#include<stdio.h>
#include<conio.h>
Void main()
{
Int x=10;
Float y=10.4;
Int z;
Float w;
z=x+y;//implicit
w=(float)x+y;// explicit
printf(“%d\n”,z);
printf(“%f”,w);
getch();
}
```

Output:-



```
20
20.400000
```

Q.12 Write program to display number 1 to 10 in octal, decimal and hexadecimal system.

Ans.

```

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

void main()
{
    Int l;
    Clrscr();
    Printf("\n This program is to print 1 to 10 numbers in different number system.\n\n");
    Printf("\n |-----|-----|-----|");
    Printf("\n | Decimal number system|octal number system|hexadecimal number system|");
    for(i=1;i<=10;i++)
    {
        Printf("\n|      %d      |      %o      |      %x      |",i,i,i);
    }
    Printf("\n|-----|-----|-----|");
    Getch();
}

```

Output:-

```

This program is to print 1 to 10 numbers in different number system.

|-----|-----|-----|
|Decimal system|Octal number system|Hexadecimal number system|
|-----|-----|-----|
|      1      |      1      |      1      |
|      2      |      2      |      2      |
|      3      |      3      |      3      |
|      4      |      4      |      4      |
|      5      |      5      |      5      |
|      6      |      6      |      6      |
|      7      |      7      |      7      |
|      8      |     10      |      8      |
|      9      |     11      |      9      |
|     10      |     12      |      a      |
|-----|-----|-----|

```

Q.13 write program to generate following pattern

a)

ABCDEFGG

ABC EFG

AB FG

A G

Ans.

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

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

```
Void main()
```

```
{
```

```
Char c;
```

```
Clrscr();
```

```
for(c='A';c<='G';c++)
```

```
{
```

```
printf(" %c ",c);
```

```
}
```

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

```
for(c='A';c<='G';c++)
```

```
{
```

```
If(c=='D')
```

```
{
```

```
printf(" ",c);continue;}
```

```
printf(" %c ",c);
```

```
}
```

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

```
for(c='A';c<='G';c++)
```

```
{
```

```
If(c>='C'&& c<='E')
```

```
{
```

```
printf(" ",c);continue;}
```

```
printf(" %c ",c);
```

```
}
```

```
Printf("\n");
```

```

For(c='A';c<='G';c++)
{
If(c>='B'&& c<='F')
{
printf(" ",c);continue;}
printf(" %c ",c);
}
printf("\n\n");
getch();
}

```

Output

```

A B C D E F G
A B C E F G
A B F G
A G

```

b).

1

1 2

1 2 3

1 2 3 4

Ans.

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

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

```
Void main()
```

```
{
```

```
Int l,j;
```

```
Clrscr();
```

```
for(i=1;i<=4;i++)
```

```
{
```

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

```
{
```

```
printf(" %d",j);
```

```
}
```

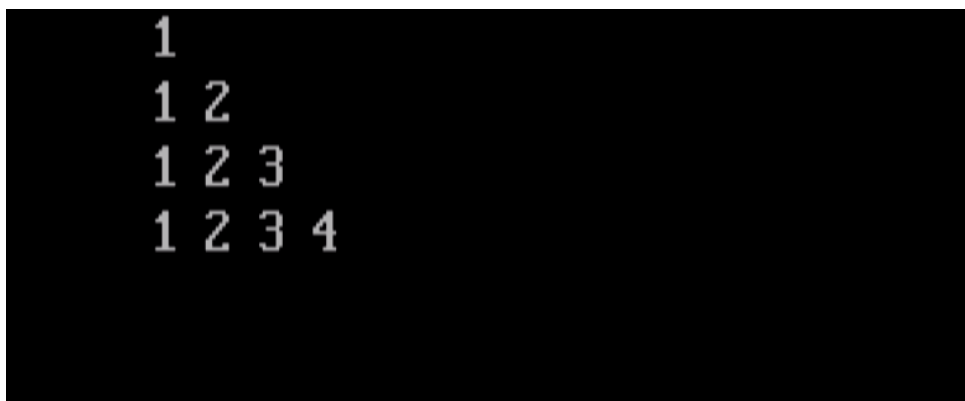
```
printf("\n");
```

```
}
```

```
getch();
```

```
}
```

Output :-



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

c).

*

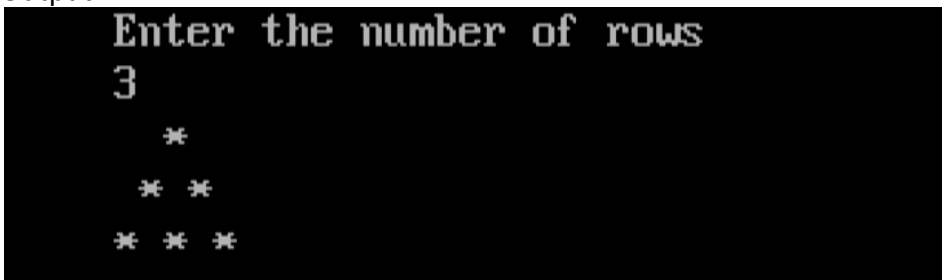
* *

* * *

Ans.

```
#include<stdio.h>
#include<conio.h>
Void main( )
{
    Int n;
    Int r,j,k;
    Clrscr ( );
    Printf("Enter the number of rows\n");
    Scanf("%d",&n);
    for(r=1;r<=n;r++){
        for(j=n-r;j>=1;j--){
            printf(" ")
        }
        for(k=1;k<=r;k++){
            printf("* ");
        }
        Printf("\n");
    }
    getch( );
}
```

Output:-



```
Enter the number of rows
3
  *
 * *
* * *
```

d).

1

1 1

1 2 1

1 3 3 1

1 4 6 4 1

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

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

```
void main()
```

```
{
```

```
Clrscr();
```

```
Int row,col,space,n,no;
```

```
Printf("enter any number:")
```

```
Scanf("%d",&no)
```

```
for(row=0;row<no;row++)
```

```
{
```

```
{
```

```
printf("");
```

```
}
```

```
n=1; for(col=0;col<=row;col++) {
```

```
printf("%d",n);
```

```
n=n*(row-col)/(col+1);
```

```
}
```

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

```
}
```

```
getch();
```

```
}
```

Output:-

```
Enter any number:5
1
11
121
1331
14641
```

Q.14 Write a program to input from user (5 subjects) sum,average.

Ans.

```
#include<stdio.h>
#include<conio.h>
Void main()
{
Int marks,sub,count,sum=0;
Float avg=0.0;
Printf("Enter number of subjets\n");
Scanf("%d",&sub);
Printf("Enter %d Subjects marks\n",sub);
For(count=1;count<=sub;count++)
{
Scanf("%d",&marks);
Sum=sum+marks;
}
Avg=sum/sub;
Printf("sum=%d\nAverage =%0.2f\n",sum,avg);
getch();
}
```


Output:-

```
Enter number of subject
5
Enter 5 Subjects marks
80
74
87
86
78
sum=405
Average=81.00
—
```

Q.15 Write a program to print student marksheet.

Ans.

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

Struct student
{
    Char name[50];
    Int marks[5];
    Long int rollno;
};

Int main()
{
    Clrscr();
    Struct student a;
    Int i,sum=0,per;
    Printf("Enter student name:");
    Gets(a.name);
    Printf("\nEnter student roll no.:");
    Scanf("%d",&a.rollno);
```

```

Printf("\n Enter student marks\n");
For(i=0;i<5;i++)
{
Printf("\n Enter %d subject marks:"i+1);
Scanf("%d",&a.marks[i]);
}
For(i=0;i<5;i++)
Sum=sum+a.marks[i];
Per=sum/5;
Clrscr();
Printf("\n STUDENT NAME      :%s",a.name);
Printf("\n STUDENT ROLL NO.   :%ld",a.rollno);
Printf("\n OBTAINED MARKS     :500");
Printf("\n TOTAL MARKS         :%d",sum);
Printf("\n PERCENTAGE           :%d",per);
Printf("\n DIVISION              : ");
if(per>100)
{
Printf("\n invalid percent");
}
else if(per>=60)
{
Printf("\n first division");
}
else if(per<60&&per>=50) {
printf("second division");
}

```

```
}  
else if(per<50&&per>=40) {  
printf("\n third division");  
}  
else  
{  
Printf("\n You are fail");  
}  
getch();  
return 0;  
}
```

Output:-

```
Enter student name:Aryan Dewangan  
Enter roll number :2201800453  
Enter student marks:  
Enter 1 subject marks:80  
Enter 2 subject marks:74  
Enter 3 subject marks:87  
Enter 4 subject marks:86  
Enter 5 subject marks:78_
```

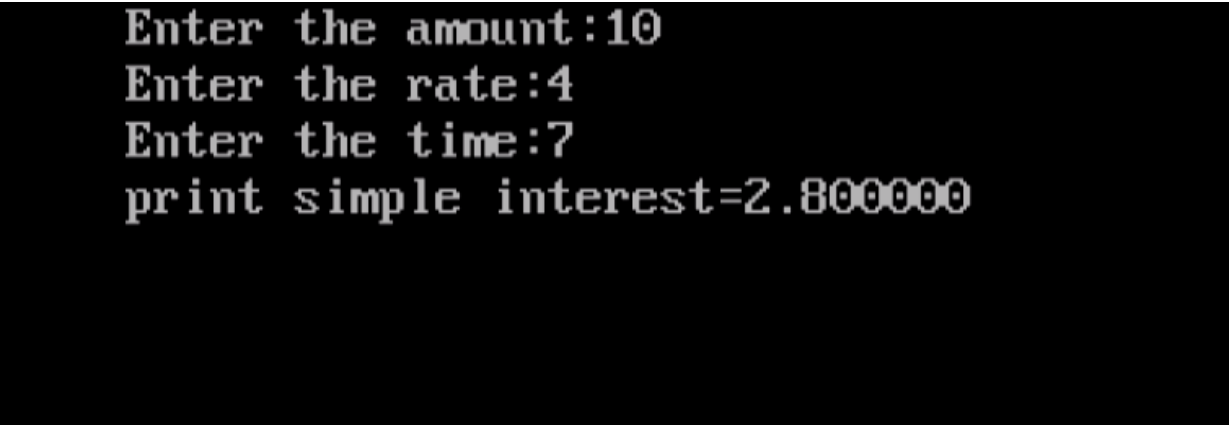
STUDENT NAME	:Aryan Dewangan
STUDENT ROLL NO.	:839110405
OBTAINED MARKS	:500
TOTAL MARKS	:405
PERCENTAGE	:81
DIVISION	:First division_

Q16. Write a program to calculate simple interest.

Ans.

```
#include<stdio.h>
#include<conio.h>
Void main()
{
float amt,rate,time,si;
clrscr();
printf("Enter the amount:");
scanf("%f",&amt);
printf("Enter the rate:");
scanf("%f",&rate);
printf("Enter the time:");
scanf("%f",&time);
si=(amt*rate*time/100);
printf("\nSimple interest= %f",si);
getch();
}
```

Output:-



```
Enter the amount:10
Enter the rate:4
Enter the time:7
print simple interest=2.800000
```

Q.17 Write a program in which you declare variable of all data types supported by C language. Get input from user and print the value of each variable with alignment left, right and column width 10. For real numbers print their values with two digits right to the decimal.

Ans.

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

void main() {

char c;

int i;

float f;

double k;

printf("Enter any character:");

scanf("%c",&c);

printf("\n Enter any number i=");

scanf("%d",&i);

printf("\n Enter any real no. f=");

scanf("%f",&f);

printf("\n Enter any double float value k=");

scanf("%lf",&k);

printf("\n %10c",c);

printf("\n %010d",i);

printf("\n %.2f",f);

printf("\n %10.2lf",k);

getch();

}
```

Output:-

```
C:\TURBOC3\BIN>TC
Enter any character:a
Enter any number i=5
Enter any real no. f=3.3

Enter any double float value k=5.25

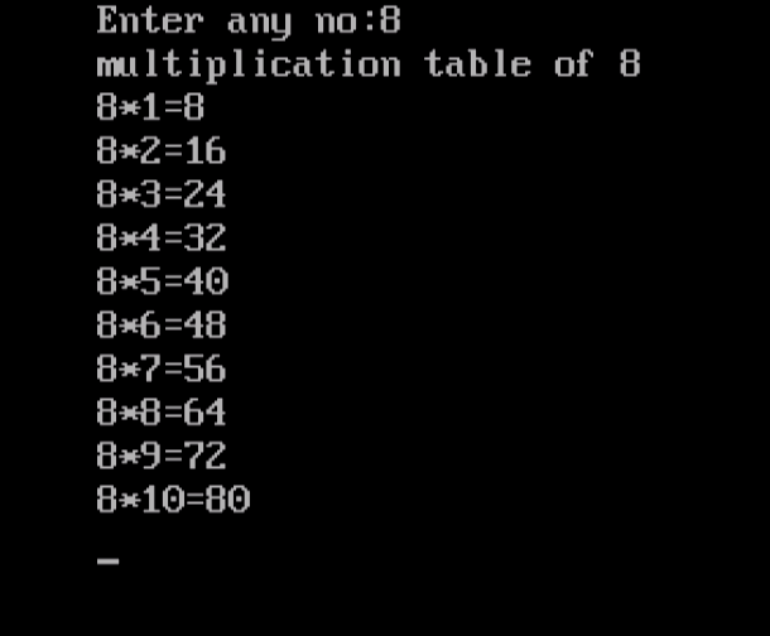
          a
0000000005
3.300000
      5.25_
```

Q.18. Write a program to demonstrate multiplication table input from user till 10.

Ans.

```
#include<stdio.h>
#include<conio.h>
Void main()
{
    Int n,l;
    Clrscr();
    Printf("Enter any no:");
    Scanf("%d",&n);
    Printf("Multiplication table of %d\n",n);
    For(i=1;i<=10;i++)
    {
        Printf("%d*%d=%d\n",n,i,(n*i));
    }
    getch();
}
```

Output:-



```
Enter any no:8
multiplication table of 8
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
—
```


Q. 19. Write a program to demonstrate addition of two matrix.

Ans.

```
#include<stdio.h>
#include<conio.h>
Void main()
{
Int a[3][3],b[3][3],c[3][3],l,j;
Clrscr();
Printf("enter the element of the first matrix\n");
For(i=0;i<3;i++)
{
For(j=0;j<3;j++)
{
Scanf("%d",&a[i][j]);
}
}
Printf("enter the element of second matrix\n");
For(i=0;i<3;i++)
{
For(j=0;j<3;j++)
{
Scanf("%d",&a[i][j]);
}
}
Printf("The first matrix is\n");
For(i=0;i<3;i++)
{
For(j=0;j<3;j++)
{
printf("%d\t",&a[i][j]);
}
}
Printf("\n");

Printf("The second matrix is\n");
For(i=0;i<3;i++)
```

```

{
For(j=0;j<3;j++)
{
printf("%d\t",&b[i][j]);
}
Printf("\n");
}
For(i=0;i<3;i++)
{
For(j=0;j<3;j++)
{
C[i][j]=a[i][j]+b[i][j];
}
}
Printf("The addition of two matrix\n");
For(i=0;i<3;i++)
{
For(j=0;j<3;j++)
{
printf("%d\t",c[i][j]);
}
Printf("\n");
}
getch();
}

```

Output:-

```

Enter the element of 1st matrix
1 2 3 4 5 6 7 8 9
Enter the element of 2nd matrix
1 2 3 4 5 6 7 8 9
The 1st matrix is
1      2      3
4      5      6
7      8      9
The 2nd matrix is
1      2      3
4      5      6
7      8      9
The addition of two matrix is
2      4      6
8      10     12
14     16     18
-

```

Q.20. Write a program to multiplication of two matrix.

Ans.

```
#include<stdio.h>
#include<conio.h>
Void main()
{
    Int a[3][3],b[3][3],c[3][3],l,j,k;
    Clrscr();
    Printf("enter the element of the first matrix\n");
    For(i=0;i<3;i++)
        For(j=0;j<3;j++)
            Scanf("%d",&a[i][j]);
    Printf("enter the element of second matrix\n");
    For(i=0;i<3;i++)
        For(j=0;j<3;j++)
            Scanf("%d",&a[i][j]);
    Printf("The first matrix is\n");
    For(i=0;i<3;i++)
    {
        For(j=0;j<3;j++)
        {
            printf("%d\t",&a[i][j]);
        }
        Printf("\n");
    }
    Printf("The second matrix is\n");
    For(i=0;i<3;i++)
    {
        For(j=0;j<3;j++)
        {
            printf("%d\t",&b[i][j]);
        }
        Printf("\n");
    }
    For(i=0;i<3;i++)
    {
        For(j=0;j<3;j++)
```

```

    {
        C[i][j]=0;
        For(k=0;k<3;k++)
        {
            C[i][j]=c[i][j]+a[i][k]*b[k][j];
        }
    }
}
printf("Multiplication of two matrix\n");
for(i=0;i<3;i++)
{
    for(j=0;j<3;j++)
        printf("%d\t",c[i][j]);
    Printf("\n");
}
getch();
}

```

Output:-

```

Enter the element of 1st matrix
1 1 1 1 1 1 1 1
Enter the element of 2nd matrix
1 1 1 1 1 1 1 1
The first matrix is
1      1      1
1      1      1
1      1      1
The second matrix is
1      1      1
1      1      1
1      1      1
Multiplication of two matrix
3      3      3
3      3      3
3      3      3

```

Q.21 Write a program to get input from user and check matrix then matrix multiplication or print not matrix.

Ans.

```
#include<stdio.h>
#include<conio.h>
#include<stdlib.h>
Void main()
{
Int a[2][2],b[2][2],c[2][2];
Int r1,c1,r2, c2,i,j,k;
Printf("Enter the row and column of 1st matrix\n");
Scanf("%d%d",&r1,&c1);
Printf("Enter the row and column of 2nd matrix\n");
Scanf("%d%d",&r2,&c2);
If(c1!=r2)
{
Printf("\n Matrices are not multiplicable");
Exit(0);
}
Printf("\n Enter the element of first matrix\n");
for(i=0;i<r1;i++)
{
for(j=0;j<c1;j++)
{
Scanf("%d",&a[i][j]);
}
}
printf("\n enter the element of second matrix\n");
for(i=0;i<r2;i++)
{
for(j=0;j<c2;j++)
{
Scanf("%d",&b[i][j]);
}
}
printf("The first matrix is\n");
for(i=0;i<r1;i++)
```

```

{
for(j=0;j<c1;j++)
{
printf("%d\t",a[i][j]);
}
printf("\n");
}
printf("The second matrix is\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++)
{
S=0;
for(k=0;k<c1;k++)
{
s=s+a[i][k]*b[k][j];
c[i][j]=s;
}
}
}
printf("Multiplication of two matrix\n");
for(i=0;i<r1;i++)
{
for(j=0;j<c2;j++)
printf("%d\t",c[i][j]);
printf("\n");
}
getch();
}

```

Output:-

```
Enter the row and column of 1st matrix
2 2
Enter the row and column of 2nd matrix
2 2

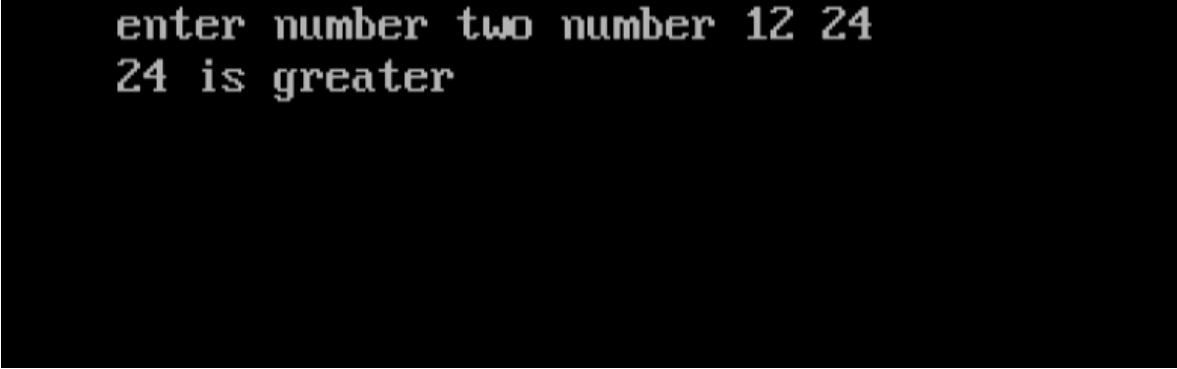
enter elements of first matrix:
1 2 3 4

enter elements of second matrix:
1 2 3 4
The first matrix is
1      2
3      4
The second matrix is
1      2
3      4
Multiplication of two matrix
7      10
15     22
-
```

Q. 22 Write a program to print compare two numbers using ternary operators.

Ans.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    Int a,b,c;
    printf("enter two number");
    scanf("%d",&a,&b);
    c=((a>b)?a:b);
    printf("%d is greater",c);
    getch();
}
```

A screenshot of a terminal window with a black background and green text. The text shows the output of the program: "enter number two number 12 24" on the first line and "24 is greater" on the second line.

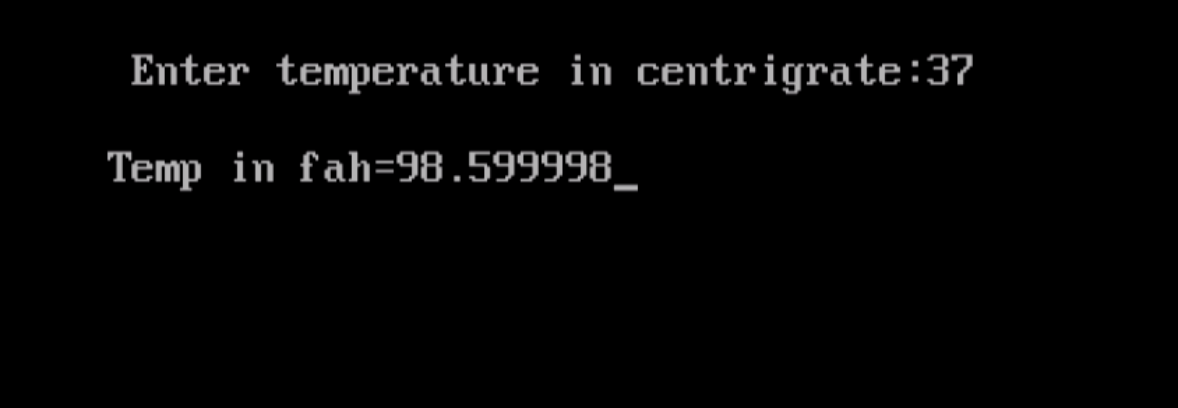
```
enter number two number 12 24
24 is greater
```


Q.23. Write a program to convert temperature from centigrate to farenhiet.

Ans.

```
#include<stdio.h>
#include<conio.h>
void main()
{
float c,f;
printf("\n Enter temperature in centigrate:");
scanf("%d",&c);
f=(c*9/5)+32;
printf("\n Temp in fah=%f",f);
getch();
}
```

Output:-

A screenshot of a terminal window with a black background and green text. The first line shows the prompt 'Enter temperature in centigrate:' followed by the input '37'. The second line shows the output 'Temp in fah=98.599998_'.

```
Enter temperature in centigrate:37
Temp in fah=98.599998_
```

Q.24 Write a program to demonstrate bitwise operator left shift and right shift operator.

Ans.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a=4,c;
    c=a<<1;
    printf("%d",c);
    c=a>>1;
    printf("%d",c);
    getch();
}
```

Output:-



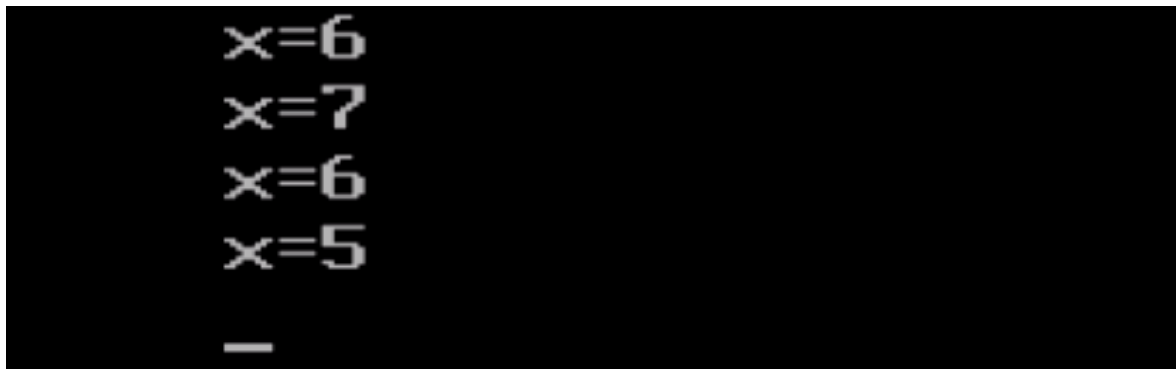
82

Q.25 Write a program to demonstrate print to increment and decreament operator.

Ans.

```
#include<stdio.h>
#include<conio.h>
Void main()
{
int x=5;
clrscr();
x++; //post increment operator
printf("x=%d",x);
++x; //pre increment operator
printf("x=%d",x);
x--; //post decrement operator
printf("x=%d",x);
--x; //pre decrement operator
printf("x=%d",x);
getch();
}
```

Output:-



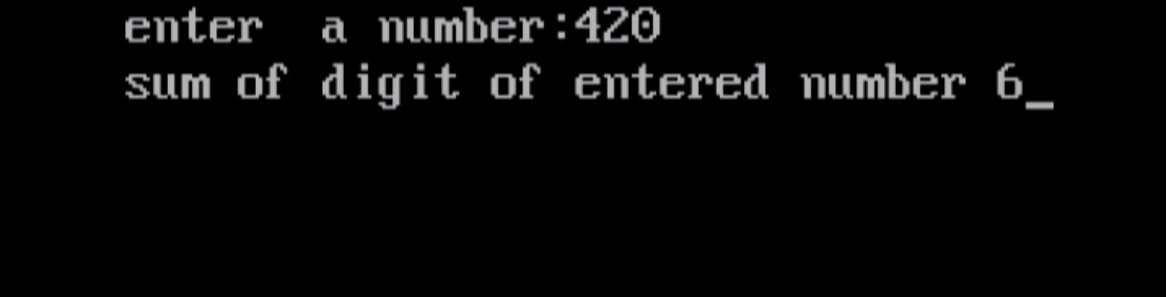
The screenshot shows the output of the program on a black background with white text. The output consists of five lines, each showing the value of the variable x. The first line is 'x=6', the second is 'x=7', the third is 'x=6', the fourth is 'x=5', and the fifth is a single underscore character '_'. This sequence of outputs corresponds to the state of x after each printf statement in the program: after the first printf (x=6), after the second printf (x=7), after the third printf (x=6), and after the fourth printf (x=5). The underscore likely represents the state of x after the final printf statement, where it remains at 5.

Q. 26. Write a program to calculation of sum of the digit.

Ans.

```
#include<stdio.h>
#include<conio.h>
Void main()
{
int n,r,sum=0;
printf("enter a number\n");
scanf("%d",&n);
while(n>0)
{
r=n%10;
sum=sum+r;
n=n/10;
}
printf("sum of digit of entered number %d",sum);
getch();
}
```

Output:

A screenshot of a terminal window with a black background and white text. The first line shows the prompt 'enter a number:' followed by the input '420'. The second line shows the output 'sum of digit of entered number 6_'.

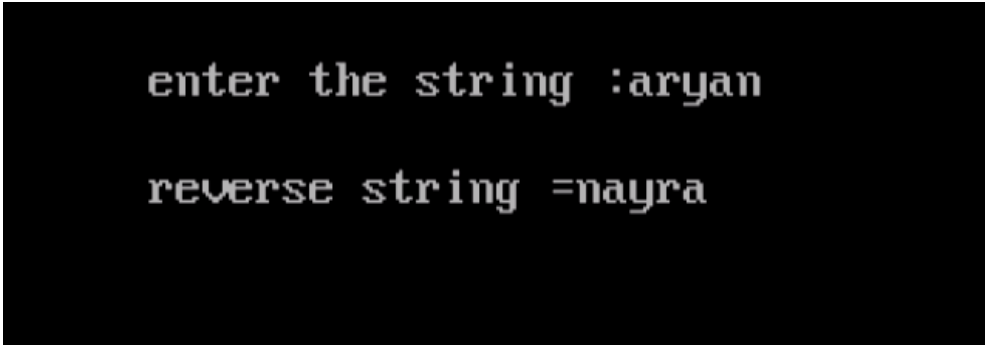
```
enter a number:420
sum of digit of entered number 6_
```

Q.27 Write a program to reverse a string without using library function.

Ans.

```
#include<stdio.h>
#include<conio.h>
Void main()
{
char a[15],temp;
int l,j,l=0;
clrscr();
printf("enter the string :");
scanf("%s",a);
for(i=0;a[i]!='\0';i++)
l++;
i=0;
j=l-1;
while(i<j)
{
temp=a[i];
a[i]=a[j];
a[j]=temp;
i++;
j++;
}
printf("reverse string =%s",a);
getch();
}
```

Output:-



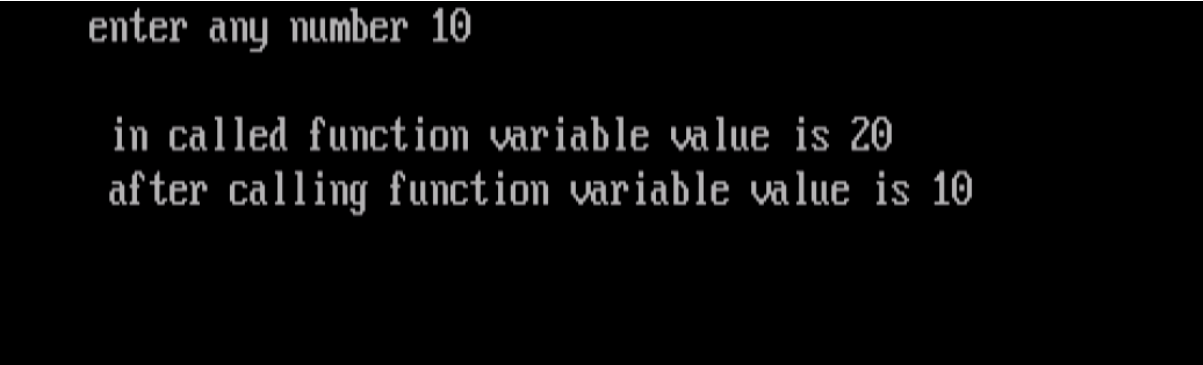
```
enter the string :aryan
reverse string =nayra
```

Q.28 Write a program to demonstrate Call by value.

Ans.

```
#include<stdio.h>
#include<conio.h>
void add(int a);
void main()
{
    int x;
    printf("enter any number");
    scanf("%d",&x);
    add(x);
    printf("\n after calling function variable value is %d",x);
    getch();
}
Void add(int a)
{
    a=a+10;
    printf("\n in Called function variable value is %d",a);
}
```

Output:-



```
enter any number 10

in called function variable value is 20
after calling function variable value is 10
```

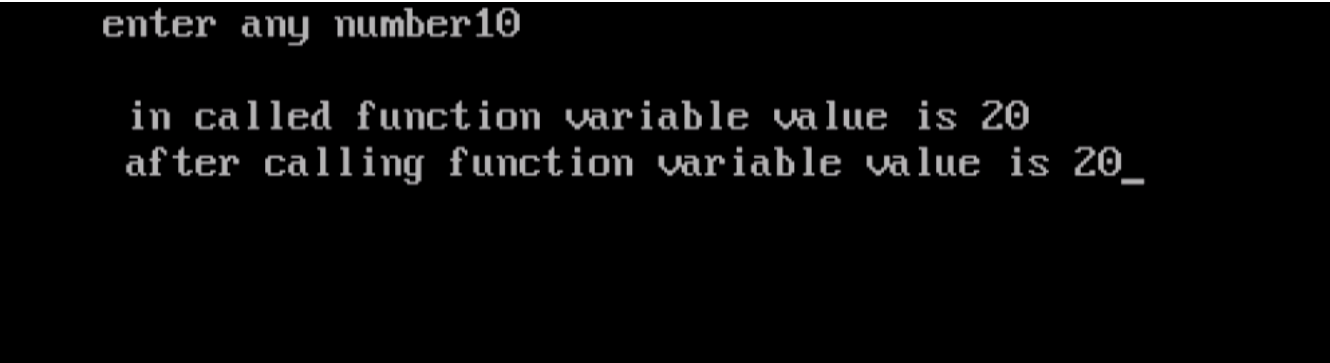
The screenshot shows the execution of the program. It prompts the user to 'enter any number' and receives the input '10'. It then prints 'in called function variable value is 20', which is the value inside the function after adding 10. Finally, it prints 'after calling function variable value is 10', which is the value in the main function after the call, demonstrating that the original value was not changed.

Q.29 write a program demonstrate to call by reference.

Ans.

```
#include<stdio.h>
#include<conio.h>
void add(int *a);
void main()
{
    int x;
    printf("enter any number");
    scanf("%d",&x);
    add(&x);
    printf("\n after calling function variable value is %d",x);
    getch();
}
Void add(int *a)
{
    *a=*a+10;
    printf("\n in Called function variable value is %d",*a);
}
```

Output:-

A screenshot of a terminal window with a black background and white text. The text shows the output of the program: 'enter any number10' on the first line, 'in called function variable value is 20' on the second line, and 'after calling function variable value is 20_' on the third line.

```
enter any number10

in called function variable value is 20
after calling function variable value is 20_
```

Q.30 Write a program using switch case to calculate the area of circle,square and rectangle.

Ans.

```
#include<stdio.h>
#include<conio.h>
int main()
{
    int n;
    float rad,area,nsq,length,breadth;
    printf("enter any number\n");
    scanf("%d",&n);
    switch(n)
    {
        case 1:
            printf("\nplease enter the radius of the circle\n");
            scanf("%f",&rad);
            area=3.14*rad*rad;
            printf("\nArea of circle: %f",area);
            break;

        case 2:
            printf("please enter the length of side of the square:");
            scanf("%f",&nsq);
            area=nsq*nsq;
            printf("\nArea of rectangle: %f",area);

            break;

        case 3:
            printf("please enter the length of the rectangle:");
            scanf("%f",&length);
            printf("enter the breadth of the rectangle:");
            scanf("%f",&breadth);
            area=length*breadth;
            printf("\nArea of rectangle: %f",area);
            break;
```



```
        default:  
            printf("invalid choice");  
    }  
}
```

Output:-

```
enter any number  
3  
please enter the lenght  of the rectangle:4  
enter the breadth of the rectangle:3  
  
Area of rectangle: 12.000000
```

Q.31 write program in c to calculate volume using function.

Ans.

```
#include<stdio.h>
#include<conio.h>
float pi=3.14;
int cube(int a);
int cuboid(int l,int w,int h);
int sphere(int r);
void main()
{
    int i,j,k,l,d,V;
    printf("Find volume of some shapes\n");
    printf("\n CUBE\n");
    cube(i);
    printf("\n CUBOID\n");
    cuboid(j,k,l);
    printf("\n SPHERE\n");
    sphere(d);
}
int cube(int a)
{
    printf("Enter side of the cube\n");
    scanf("%d",&a);
    printf("Volume of cube is: %d\n",a*a*a);
    return 0;
}
int cuboid(int l,int w,int h)
{
    printf("Enter length of cuboid\n");
    scanf("%d%d%d",&l,&w,&h);
    printf("Volume is cuboid: %d\n",l*w*h);
    return 0;

}
int sphere(int r)
{
    printf("Enter radius of sphere\n");
```

```
scanf("%d",&r);  
printf("Volum of sphere is:%f",4/3*pi*r*r*r);  
return 0;  
  
}
```

Output:-

```
Find volume of some shapes  
  
CUBE  
Enter side of the cube  
2  
Volume of cube is: 8  
  
CUBOID  
Enter length of cuboid  
2 3 4  
Volume is cuboid: 24  
  
SPHERE  
Enter radius of sphere  
2  
Volum of sphere is:25.120001
```

Q.32 Write a program in c to search an element form array by linear serach method.

Ans.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int i,n,search,count=0;
    printf("\n\t Enter number of element in array");
    scanf("%d",&n);
    int arr[n];
    printf("\n\t Enter %d number",n);
    for(i=0;i<n;i++)
    {
        scanf("%d",&arr[i]);
    }
    printf("\n\t Enter a number to search");
    scanf("%d",&search);
    for(i=0;i<n;i++)
    {
        if(arr[i]==search)
        {
            printf("\n\t %d present at location %d",search,(i+1));
            count++;
        }
    }
    if(count==0)
    {
        printf("\n\t %d is not present in array ",search);
    }
    else
    {
        printf("\n\t %d is present %d times in array",search,count);
    }
}
```

Output:-

```
Enter number of element in array7
```

```
Enter 7 number10 12 15 76 59 45 57
```

```
Enter a number to search 10
```

```
10 present at location 1
```

```
10 is present 1 times in array
```

Q.33 Write a program to find transpose of matrix.

Ans.

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a[2][2],i,j,m,n;
printf("number of rows\n");
scanf("%d",&m);
printf("number of columns\n");
scanf("%d",&n);
printf("Enter element of matrix\n");
for(i=0;i<m;i++)
{
for(j=0;j<n;j++)
{
scanf("%d",&a[i][j]);
}
}
printf("Matrix is \n");
for(i=0;i<m;i++)
{
for(j=0;j<n;j++)
{

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

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

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

Output:-

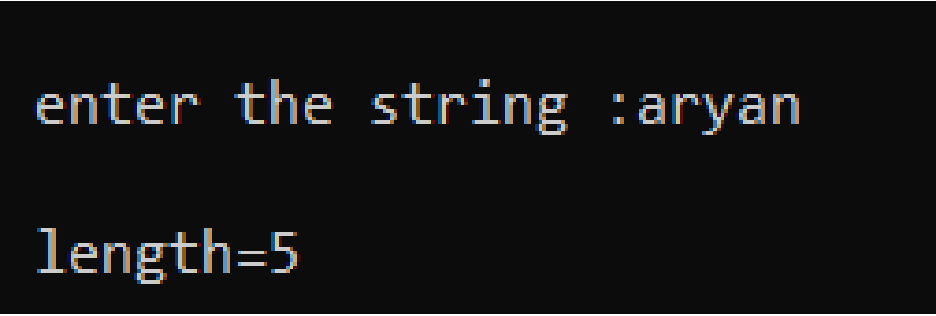
```
number of rows  
2  
number of columns  
2  
Enter element of matrix  
1 2 4 5  
Matrix is  
1      2  
4      5  
Transpose of matrix  
1      4  
2      5
```

Q.34 Write a program to input a string and find it's length without using library function.

Ans.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    char a[15];
    int i,l=0;
    printf("\n enter the string :");
    scanf("%s",a);
    for(i=0;a[i]!='\0';i++)
        l++;
    printf("\n length=%d",l);
    getch ();
}
```

Output:-

A screenshot of a terminal window with a black background. The text 'enter the string :aryan' is displayed on the first line, and 'length=5' is displayed on the second line. The text is in a light blue, monospaced font.

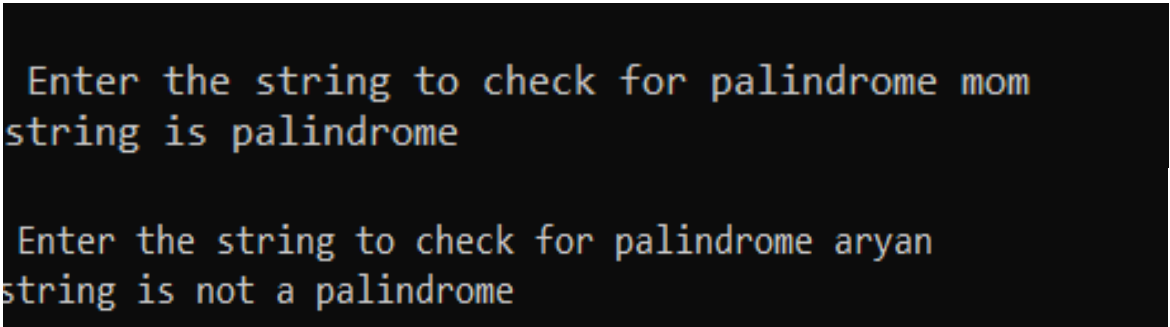
```
enter the string :aryan
length=5
```


Q.35 write program to check whether the enter string palindrome or not.

Ans.

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
int main()
{
    char str[50];
    int i,len,flag=0;
    printf("\n Enter the string to check for palindrome");
    scanf("%s",str);
    len=strlen(str);
    for(i=0;i<len;i++)
    {
        if(str[i]!=str[len-i-1])
        {
            flag=1;
            break;
        }
    }
    if (flag==0)
        printf("string is palindrome");
    else
        printf("string is not a palindrome");
    getch();
    return 0;
}
```

Output:-



```
Enter the string to check for palindrome mom
string is palindrome
```

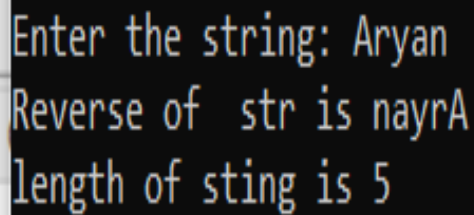
```
Enter the string to check for palindrome aryan
string is not a palindrome
```

Q.36 Write a program to calculate reverse string and length string help with library function.

Ans.

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
void main()
{
char str[100];
int i;
printf("Enter the string: ");
scanf("%s",str);
printf("Reverse of str is %s\n",strrev(str));
printf("length of sting is %d",strlen(str));
getch();
}
```

Output:-

A screenshot of a terminal window with a black background and light blue/green text. It shows the output of the program: 'Enter the string: Aryan', 'Reverse of str is nayrA', and 'length of sting is 5'.

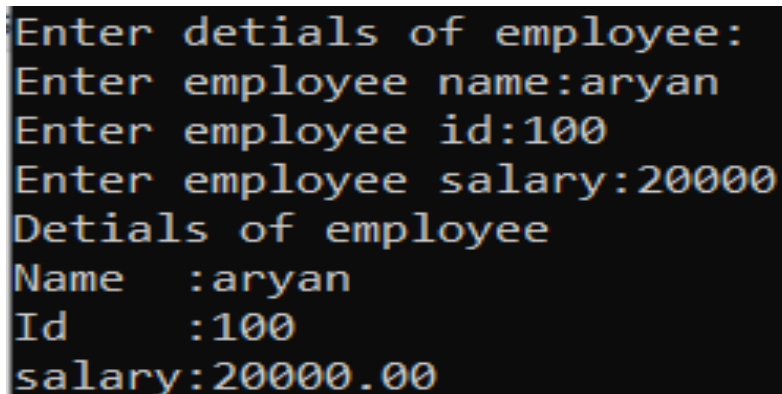
```
Enter the string: Aryan
Reverse of str is nayrA
length of sting is 5
```

Q.37 Write a program in c to input and print details of an employee the id,name,salary using structure.

Ans.

```
#include<stdio.h>
#include<conio.h>
struct employee
{
char name[100];
int id;
float salary;
};
void main()
{
struct employee emp;
printf("Enter details of employee:\n");
printf("Enter employee name:");
scanf("%s",&emp.name);
printf("Enter employee id:");
scanf("%d",&emp.id);
printf("Enter employee salary:");
scanf("%f",&emp.salary);
printf("Details of employee\n");
printf("Name :%s\n",emp.name);
printf("Id :%d\n",emp.id);
printf("salary:%f\n",emp.salary);
getch();
}
```

Output:-

A screenshot of a terminal window showing the output of the C program. The text is displayed in a monospaced font with a light blue/cyan color on a black background. The output shows the user entering 'aryan' for the name, '100' for the id, and '20000' for the salary, followed by a summary of the entered details.

```
Enter details of employee:
Enter employee name:aryan
Enter employee id:100
Enter employee salary:20000
Details of employee
Name :aryan
Id :100
salary:20000.00
```

Q.38 Write a program to demonstrate array of structure.

Ans.

```
#include<stdio.h>
#include<conio.h>
#define MAX 2
struct student
{
    char name[20];
    int rollno;
    float marks;
};
int main()
{
    struct student arr_student[MAX];
    int i,j;
    float sum=0;
    for(i=0;i<MAX;i++)
    {
        printf("\n Enter detials of student %d\n\n",i+1);
        printf("Enter name:");
        scanf("%s",arr_student[i].name);

        printf("Enter roll no.:");
        scanf("%d",&arr_student[i].rollno);

        printf("Enter marks:");
        scanf("%f",&arr_student[i].marks);

    }
    printf("\n");
    printf("Name\t Rollno.\tmarks\n\n");

    for(i=0;i<MAX;i++)
    {
        printf("%s\t%d\t%.2f\n",arr_student[i].name,arr_student[i].rollno,arr_student[
i].marks);
    }
```

```
return 0;  
}
```

Output:-

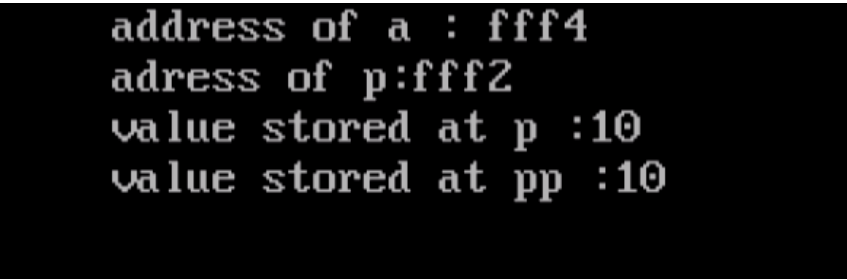
```
Enter detials of student 1  
  
Enter name:Tushar  
Enter roll no.:14  
Enter marks:68  
  
Enter detials of student 2  
  
Enter name:Nandini  
Enter roll no.:34  
Enter marks:89  
  
Name          Rollno.          marks  
Tushar   14          68.00  
Nandini  34          89.00
```

Q.39 Write a program in c to demonstrate pointer to a pointer(double pointer).

Ans.

```
#include<stdio.h>
#include<conio.h>
int main()
{
int a=10;
int *p;
int **pp;
p=&a; // pointer is pointing to the address of a
pp=&p; // pointer pp is a double pointer pointing to the address of pointing p
printf("address of a: %x\n"); // adress of a will be printed
printf("address of p: %x\n",pp); // adress of p will be printed
printf("value stored at p: %d\n",*p);
printf("value stord at pp: %d\n",**pp);
getch();
}
```

Output:-



```
address of a : fff4
address of p:fff2
value stored at p :10
value stored at pp :10
```

Q.40 Write a program to demonstrate the use of malloc and realloc in.

Ans.

Code:-

```
#include<stdio.h>
#include<stdlib.h>
struct course
{
    char subjects[100];
    int marks;
};
int main()
{
    struct course* ptr;
    int i,n;
    printf("\nenter the records:");
    scanf("%d",&n);
    ptr=(struct course*)malloc(n* sizeof(struct course));
    for(i=0;i<n;++i)
    {
        printf("\nenter the %d no of records:",i+1);
        printf("\nenter the subjects:");
        scanf("%s",&(ptr+i)->subjects);
        printf("\nenter the marks:");
        scanf("%d",&(ptr+i)->marks);
    }
    printf("\ndisplayed course record:");
    for(i=0;i<n;i++)
    {
        printf("\nsubjects= %s",(ptr+i)->subjects);
        printf("\nmarks= %d",(ptr+i)->marks);
    }
    printf("\n-----");
    printf("\nenter the new records you want to create:");
    scanf("%d",&n);
    ptr=(struct course*)realloc(ptr,n* sizeof(struct course));
    for(i=0;i<n;i++)
    {
```

```

printf("\nenter the %d no of records:",i+1);

printf("\nenter the subjects:");
scanf("%s",&(ptr+i)->subjects);
printf("\nenter the marks:");
scanf("%d",&(ptr+i)->marks);
}
printf("\ndisplayed course record:");
for(i=0;i<n;i++)
{
printf("\nsubjects=%s",(ptr+i)->subjects);
printf("\nmarks=%d",(ptr+i)->marks);
}
return 0;
}

```

Output:-

```

enter the records:2

enter the 1 no of records:
enter the subjects:maths

enter the marks:78

enter the 2 no of records:
enter the subjects:english

enter the marks:74

displayed course record:
subjects= maths
marks= 78
subjects= english
marks= 74
-----
enter the new records you want to create:2

enter the 1 no of records:
enter the subjects:programming

enter the marks:67

enter the 2 no of records:
enter the subjects:pcsoftware

enter the marks:79

displayed course record:
subjects=programming
marks=67
subjects=pcsoftware
marks=79
-----
Process exited after 58.1 seconds with return value 0
Press any key to continue . . .

```