

EXERCISE 1 (DATA TYPES)

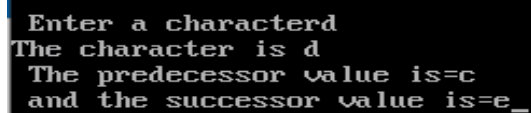
Ques 1

Write a program to display the predecessor and successor value of a given character.

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
    char ch,a,b;
    clrscr();
    printf("\n Enter a character");
    scanf("%c",&ch);
    printf("\n The character is %c",ch);
    a=--ch;
    b=ch+2;
    printf("\n The predecessor value is=%c \n and the successor value
    is=%c",a,b);
    getch();
}
```

Output

A screenshot of a terminal window with a black background and white text. The text shows the program's execution: it prompts for a character, reads 'd', and then displays the predecessor 'c' and successor 'e' of the character 'd'.

```
Enter a characterd
The character is d
The predecessor value is=c
and the successor value is=e_
```

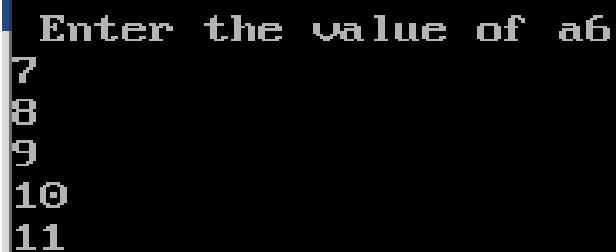
Ques 2

Write a program to display the next five consecutive number of given number.

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a,c=5,i;
    clrscr();
    printf("\n Enter the value of a");
    scanf("%d",&a);
    for(i=1; i<=c; i++)
    {
        a++;
        printf("%d",a);
    }
    getch();
}
```

Output



```
Enter the value of a
7
8
9
10
11
```

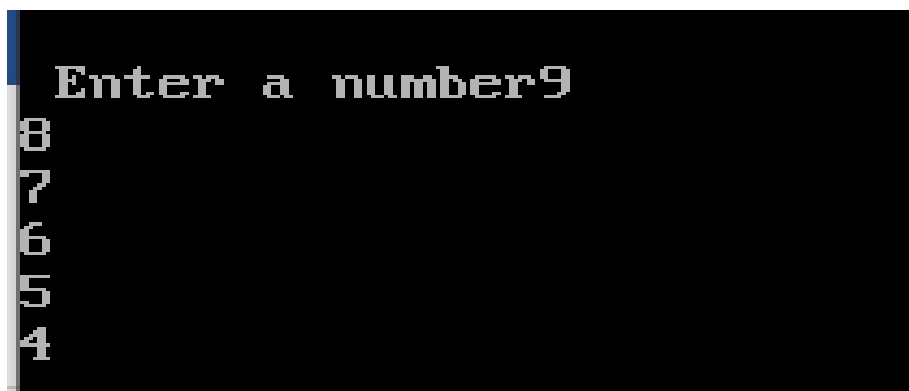
Ques 3

Write a program to display the previous five numbers of given number.

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a,i,c=5;
clrscr();
printf("\n Enter a number");
scanf("%d",&a);
for(i=1; i<=c; i++)
{
a--;
printf("%d \n",a);
}
getch();
}
```

Output



```
Enter a number9
8
7
6
5
4
```

Ques 4

Write a program to display the distance in meter for given distance in kilometre.

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int km;
    long m;
    clrscr();
    printf("\n Enter the distance");
    scanf("%d",&km);
    m=km*1000;
    printf("\n The distance in meter is %d",m);
    getch();
}
```

Output



```
Enter the distance 5
```

```
The distance in meter is 5000
```

Ques 5

Write a program to display the ASCII value of given character.

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
    char ch;
    int m;
    clrscr();
    printf("\n Enter a character");
    scanf("%c",&ch);
    m=ch;
    printf("\n The ASCII value of the character is=%d",ch,m);
    getch();
}
```

Output



```
Enter a character h
```

```
The ASCII value of the character is=32_
```

EXERCISE 2

(INPUT AND OPERATORS)

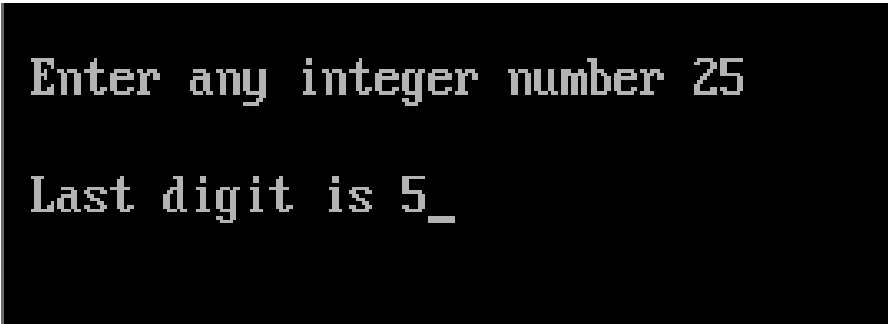
Ques 1

Display the last digit of any input of number.

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int n,a;
    clrscr();
    printf("\n Enter any integer number");
    scanf("%d",&n);
    a=n%10;
    printf("\n Last digit is %d",a);
}
```

Output

A screenshot of a terminal window with a black background and white text. The first line shows the prompt 'Enter any integer number' followed by the input '25'. The second line shows the output 'Last digit is 5_' where the underscore indicates the cursor position.

```
Enter any integer number 25
Last digit is 5_
```

Ques 2

Write a program to display the addition, multiplication, subtraction and division of two input integer values.

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a,b,c,d,e,f;
    clrscr();
    printf("\n Enter first number a:");
    scanf("%d",&a);
    printf("\n Enter second number b:");
    scanf("%d",&b);
    c=a+b;
    d=a-b;
    e=a*b;
    f=a/b;
    printf("\n Addition=%d",c);
    printf("\n Subtraction=%d",d);
    printf("\n Multiplication=%d",e);
    printf("\n Division=%d",f);
    getch();
}
```

Output

```
Enter first number a:9
Enter second number b:5

Addition=14
Subtraction=4
Multiplication=45
Division=1
```

Ques 3

Write a program to display the addition, multiplication, subtraction and division of two input float values.

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
float a,b,c,d,e,f;
clrscr();
printf("\n Enter the first number a:");
scanf("%f",&a);
printf("\n Enter the second number b:");
scanf("%f",&b);
c=a+b;
d=a-b;
e=a*b;
f=a/b;
printf("\n Addition=%f",c);
printf("\n Subtraction=%f",d);
printf("\n Multiplication=%f",e);
```



```
printf("\n Division=%f",f);  
getch();  
}
```

Output

```
Enter the first number a:4.5  
  
Enter the second number b:2.2  
  
Addition=6.700000  
Subtraction=2.300000  
Multiplication=9.900001  
Division=2.045455_
```

Ques 4

Write a program to display the division of two input integer numbers.

Code

```
#include<stdio.h>  
#include<conio.h>  
void main()  
{  
int a,b,c;  
clrscr();  
printf("\n Enter the first number a:");  
scanf("%d",&a);  
printf("\n Enter the second number b:");  
scanf("%d",&b);  
c=a/b;  
printf("\n Division=%d",c);  
getch();
```

```
}
```

Output

```
Enter the first number a:10
Enter the second number b:5
Division=2
```

Ques 5

Write a program to input an amount in paisa and display in rupees.

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
double a,b;
clrscr();
printf("\n Enter the amount in paisa a");
scanf("%lf",&a);
b=(0.01)*a;
printf("\n Amount in rupees=%lf",b);
getch();
}
```

Output

```
Enter the amount in paisa a 10
Amount in rupees=0.100000
```

Ques 6

Write a program to input a temperature in Fahrenheit and display in Celsius.

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
double fahrenheit,celsius;
clrscr();
printf("\n Enter the temperature in fahrenheit");
scanf("%lf",&fahrenheit);
celsius=(fahrenheit-32)*5/9;
printf("\n The temperature in celsius is %lf",celsius);
getch();
}
```

Output

```
Enter the temperature in fahrenheit 41
The temperature in celsius is 5.000000_
```

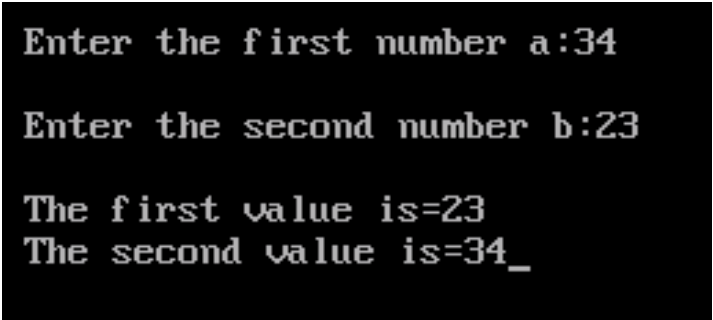
Ques 7

Input two numbers swap their values without using third variable and display them.

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a,b;
    clrscr();
    printf("\n Enter the first number a");
    printf("\n Enter the second number b");
    scanf("%d %d",&a,&b);
    a=a+b;
    b=a-b;
    a=a-b;
    printf("\n The first value is=%d \n The second value is=%d",a,b);
    getch();
}
```

Output

A screenshot of a terminal window with a black background and white text. It shows the output of the C program: 'Enter the first number a:34', 'Enter the second number b:23', 'The first value is=23', and 'The second value is=34_'.

```
Enter the first number a:34
Enter the second number b:23
The first value is=23
The second value is=34_
```

Ques 8

Input an amount in rupees and display the quantity of 2000 currency notes and show remaining amount: input: 4065, output: 2000 notes=2 , remaining amount= 65.

Code

```
#include<stdio.h>
#include<conio.h>
int main()
{
    int amount;
    int note2000;
    clrscr();
    note2000=0;
    printf("\n Enter the amount");
    scanf("%d",&amount);
    if(amount>=2000)
    {
        note2000=amount/2000;
        amount-=note2000*2000;
    }
    printf("\n Total number of notes=");
    printf("\n 2000=%d",note2000);
    printf("\n Remaining amount=%d",amount);
    return 0;
}
```

Output

```
Enter the amount 4845

Total number of notes=
2000=2
Remaining amount=845
```

Ques 9

Write a program to display an input no is even or odd using Conditional operators.

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int n;
    clrscr();
    printf("\n Enter an integer");
    scanf("%d",&n);
    n%2==0 ? printf("\n Even Number") : printf("\n Odd Number");
    getch();
}
```

Output

```
Enter an integer 5

Odd Number_
```

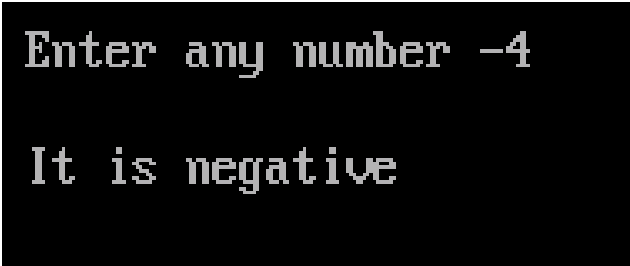
Ques 10

Input a no & check it is Positive or Negative using Conditional operators.

Code

```
#include<stdio.h>
#include<conio.h>
int main()
{
    int num;
    clrscr();
    printf("\n Enter any number");
    scanf("%d",&num);
    (num>0)? printf("\n It is positive"):(num<0)? printf("\nIt is
    negative"):printf("\n It is zero");
    return 0;
}
```

Output

A screenshot of a terminal window with a black background and white text. The first line shows the prompt 'Enter any number' followed by the user input '-4'. The second line shows the output 'It is negative'.

```
Enter any number -4
It is negative
```

EXERCISE 3

(Conditional statement –IF, IF-ELSE and SWITCH)

Ques 1

WAP to input the marks of three subjects and display Division as per following table, using simple-if:

<u>Percentage</u>	<u>Division</u>
Percentage \geq 60	First
Percentage \geq 50	Second
Percentage \geq 30	Third
Otherwise	Fail
If any of the subjects having marks less than 30	Fail

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int m1,m2,m3,p;
    clrscr();
    printf("\n Enter the marks of three subjects");
    scanf("%d %d %d",&m1,&m2,&m3);
    p=(m1+m2+m3)/3;
    if(m1<30 || m2<30 || m3<30)
    {
```



```
printf("\n Fail");
}
else if(p>=60)
{
printf("\n First");
}
else if(p>=50 && p<60)
{
printf("\n Second");
}
else if(p>=30 && p<50)
{
printf("\n Third");
}
else
{
printf("\n Fail");
}
getch();
}
```

Output

```
Enter the marks of three subjects 82 74 64

The percentage is 73
First_
```

Ques 2

WAP to input two numbers and display the difference of both numbers after checking largest number to get positive answer.

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int n,m,d;
    clrscr();
    printf("\n Enter first number n:");
    scanf("%d",&n);
    printf("\n Enter second number m:");
    scanf("%d",&m);
    if(n>m)
    {
        d=n-m;
        printf("\n The difference between %d and %d is =%d",n,m,d);
    }
    else
    {
        d=m-n;
        printf("\n The difference between %d and %d is =%d",m,n,d);
    }
    getch();
}
```

Output

```
Enter first number n: -12
Enter second number m: 22
The difference between 22 and -12 is =34_
```

Ques 3

Input three sub marks & display percentage & division as per following table:

<u>Percentage</u>	<u>Division</u>
75 +	A+
65+	A
55+	B
45+	C
44	Fail

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
int m1,m2,m3,p;
clrscr();
printf("\n Enter marks of three subjects:");
scanf("%d %d %d",&m1,&m2,&m3);
p=(m1+m2+m3)/3;
printf("\n The percentage is %d",p);
if(p>75)
```

```
{  
printf("\n A+");  
}  
else if(p<=75 && p>65)  
{  
printf("\n A");  
}  
else if(p<=65 && p>55)  
{  
printf("\n B");  
}  
else if(p<=55 && p>45)  
{  
printf("\n C");  
}  
else  
{  
printf("\n Fail");  
}  
getch();  
}
```

Output

Enter marks of three subjects: 82 74 64

The percentage is 73

A

Ques 4

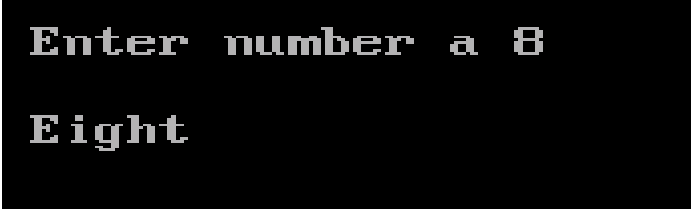
WAP to input a number within range of 0 to 9 and display in words.

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a;
    clrscr();
    printf("\n Enter number a");
    scanf("%d",&a);
    if(a==0)
        printf("\n Zero");
    else if(a==1)
        printf("\n One");
    else if(a==2)
        printf("\n Two");
    else if(a==3)
        printf("\n Three");
    else if(a==4)
        printf("\n Four");
    else if(a==5)
        printf("\n Five");
    else if(a==6)
        printf("\n Six");
    else if(a==7)
        printf("\n Seven");
    else if(a==8)
```

```
printf("\n Eight");
else if(a==9)
printf("\n Nine");
else
printf("Out of range");
getch();
}
```

Output



```
Enter number a 8
Eight
```

Ques 5

WAP to input six numbers and display the smallest and largest numbers among them.

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a,b,c,d,e,f;
clrscr();
printf("\n Enter six numbers: ");
scanf("%d%d%d%d%d%d",&a,&b,&c,&d,&e,&f);
if(a>b && a>c && a>d && a>e && a>f)
```

```

{
printf("\n The largest number is %d",a);
}
else if(b>a && b>c && b>d && b>e && b>f)
{
printf("\n The largest number is %d",b);
}
else if(c>a && c>b && c>d && c>e && c>f)
{
printf("\n The largest number is %d",c);
}
else if(d>a && d>b && d>c && d>e && d>f)
{
printf("\n The largest number is %d",d);
}
else if(e>a && e>b && e>c && e>d && e>f)
{
printf("\n The largest number is %d",e);
}
else
{
printf("\n The largest number is %d",f);
}
if(a<b && a<c && a<d && a<e && a<f)
{
printf("\n The smallest number is %d",a);
}
else if(b<a && b<c && b<d && b<e && b<f)
{

```

```
printf("\n The smallest number is %d",b);
}
else if(c<a && c<b && c<d && c<e && c<f)
{
printf("\n The smallest number is %d",c);
}
else if(d<a && d<b && d<c && d<e && d<f)
{
printf("\n The smallest number is %d",d);
}
else if(e<a && e<b && e<c && e<d && e<f)
{
printf("\n The smallest number is %d",e);
}
else
{
printf("\n The smallest number is %d",f);
}
getch();
}
```

Output

```
Enter six numbers: 23 45 56 67 89 97
```

```
The largest number is 97
```

```
The smallest number is 23_
```


Ques 6

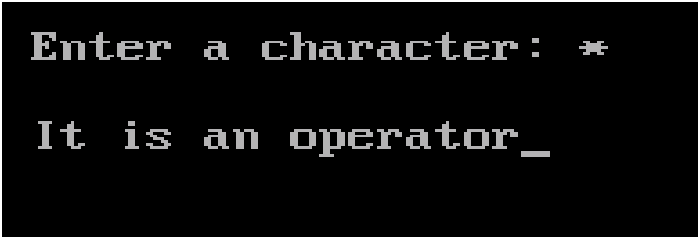
WAP to input a character and show it is digit, symbol, operator or alphabet.

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
    char ch;
    clrscr();
    printf("\n Enter a character: ");
    scanf("%c",&ch);
    if((ch>='a' && ch<='z')||(ch>='A' && ch<='Z'))
    {
        printf("\n It is an alphabet");
    }
    else if(ch>='0' && ch<='9')
    {
        printf("\n It is a digit");
    }
    else if((ch=='+' )||(ch=='-' )||(ch=='*' )||(ch=='/'))
    {
        printf("\n It is an operator");
    }
    else
    {
        printf("\n It is a symbol");
    }
}
```

```
}  
getch();  
}
```

Output



```
Enter a character: *  
It is an operator_
```

Ques 7

WAP to input date of birth and display the following predictions (using IF-ELSE):

<u>Date of Birth</u>	<u>Predictions</u>
1-9	Lucky Person
10-19	Honest Person
20-29	Handsome/Beautiful
Otherwise	Wrong Date or Hardworking Person

Code

```
#include<stdio.h>  
#include<conio.h>  
void main()  
{  
int a;
```

```
clrscr();
printf("\n Enter the date: ");
scanf("%d",&a);
if(a<9)
{
printf("\n Lucky Person");
}
else if(a>10 && a<19)
{
printf("\n Honest Person");
}
else if(a>20 && a<29)
{
printf("\n Handsome/Beautiful");
}
else
{
printf("\n Wrong date or hardworking person");
}
getch();
}
```

Output

A screenshot of a terminal window with a black background and white text. The first line shows the prompt 'Enter the date: ' followed by the input '22'. The second line shows the output 'Handsome/Beautiful_'.

```
Enter the date: 22
Handsome/Beautiful_
```

Ques 8

Write above program using SWITCH.

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a;
    clrscr();
    printf("\n Enter the date");
    scanf("%d",&a);
    switch(a)
    {
        case 1:case 2:case 3:case 4:case 5:case 6:case 7:case 8:case 9:printf("\n
        Lucky Person");
        break;
        case 10:case 11:case 12:case 13:case 14:case 15:case 16:case 17:case 18:case
        19:printf("\n Honest Person");
        break;
        case 20:case 21:case 22:case 23:case 24:case 25:case 26:case 27:case
        28:case 29:printf("\n Handsome/Beautiful");
        break;
        default:printf("\n Wrong date or hardworking person");
    }
    getch();
}
```

Output

```
Enter the date: 9
Lucky Person_
```

Ques 9

WAP to input pocket money and display the action as per the following table (using IF-ELSE):

<u>Pocket Money</u>	<u>Actions</u>
100	Dosa
200	Dosa + Cold Drink
300	Movie
400	Movie With Friend
500	Party In Canteen
Otherwise	Save The Money

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
int m;
clrscr();
```

```
printf("\n Enter the pocket money: ");
scanf("%d",&m);
if(m==100)
{
printf("\n Dosa");
}
else if(m==200)
{
printf("\n Dosa + Cold Drink");
}
else if(m==300)
{
printf("\n Movie");
}
else if(m==400)
{
printf("\n Movie with Friend");
}
else if(m==500)
{
printf("\n Party in Canteen");
}
else
{
printf("\n Save the Money");
}
getch();
}
```

Output

```
Enter the pocket money: 400

Movie with Friend
```

Ques 10


Write above program using SWITCH.

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int PM;
    clrscr();
    printf("\n Enter pocket money: ");
    scanf("%d",&PM);
    switch(PM)
    {
        case 100:printf("\n Dosa");
        break;
        case 200:printf("\n Dosa + Cold Drink");
        break;
        case 300:printf("\n Movie");
        break;
```

```
case 400:printf("\n Movie with friend");  
break;  
case 500:printf("\n Frooty in canteen");  
break;  
default:printf("\n Save Money");  
}  
getch();  
}
```

Output

A screenshot of a terminal window with a black background and white text. The text shows the program's output: "Enter pocket money: 300" followed by a new line and "Movie".

```
Enter pocket money: 300  
  
Movie
```

EXERCISE 4

(Looping statement –WHILE, FOR, DO-WHILE)

Ques1

Print numbers from 0 to 20 & also 20 to 0 simultaneously.

Code

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



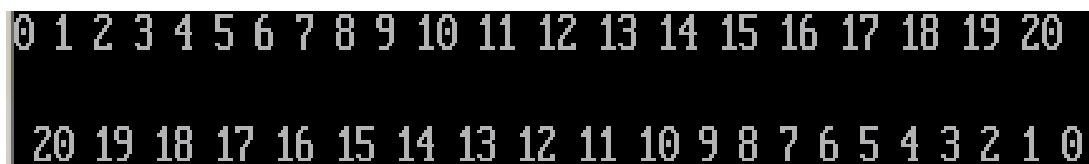
```

void main()
{
    int a,b;
    clrscr();
    for(a=0;a<=20;a++)
    {
        printf("%d \a",a);
    }
    printf("\n\n ");

    for(b=20;b>=0;b--)
    {
        printf("%d \a",b);
    }
    getch();
}

```

Output



```

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

```

Ques 2

Input a no & display sum of all natural numbers up to that number.

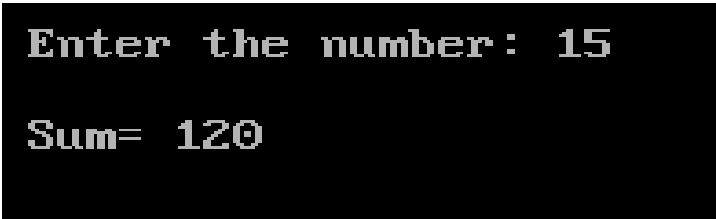
Code

```

#include<stdio.h>
#include<conio.h>
void main()
{
int a,n,s=0;
clrscr();
printf("\n Enter the number: ");
scanf("%d",&n);
for(a=1;a<=n;a++)
{
s=s+a;
}
printf("\n Sum= %d",s);
getch();
}

```

Output



```

Enter the number: 15

Sum= 120

```

Ques 3

Sum=1+3+5+7+9+.....n;

Code

```

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

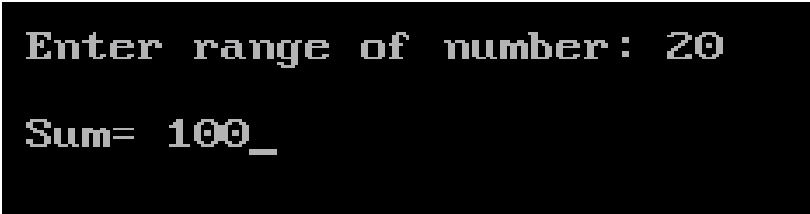
```

```

void main()
{
int n,sum=0,i=1;
clrscr();
printf("\n Enter range of number: ");
scanf("%d",&n);
while(i<=n)
{
sum+=i;
i+=2;
}
printf("\n Sum= %d",sum);
getch();
}

```

Output



```

Enter range of number: 20
Sum= 100_

```

Ques 4

Display Fibonacci series : 1,1,2,3,5,8,13.....n;

Code

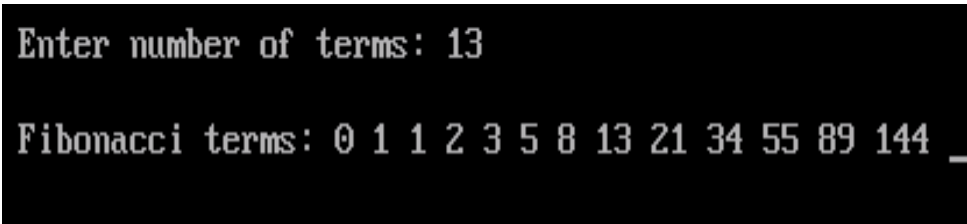
```

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

```

```
{
int a,b,c,i,terms;
clrscr();
printf("\n Enter number of terms: ");
scanf("%d",&terms);
a=0;
b=1;
c=0;
printf("\n Fibonacci terms: ");
for(i=1;i<=terms;i++)
{
printf("%d \a",c);
a=b;
b=c;
c=a+b;
}
getch();
}
```

Output



```
Enter number of terms: 13
```

```
Fibonacci terms: 0 1 1 2 3 5 8 13 21 34 55 89 144 _
```

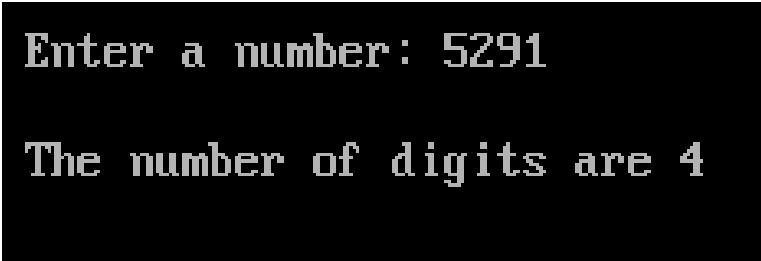
Ques 5

Input a no & display no of digit.

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
int n;
int count=0;
clrscr();
printf("\n Enter a number: ");
scanf("%d",&n);
while(n!=0)
{
n=n/10;
count++;
}
printf("\n The number of digits are %d",count);
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 '5291'. The second line shows the output 'The number of digits are 4'.

```
Enter a number: 5291

The number of digits are 4
```

Ques 6

Write a program to input a number and check for Armstrong number.

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
int n,r,sum=0,temp;
clrscr();
printf("\n Enter the number: ");
scanf("%d",&n);
temp=n;
while(n>0)
{
r=n%10;
sum=sum+(r*r*r);
n=n/10;
}
if(temp==sum)
{
printf("\n It is an armstrong number");
}
else
{
printf("\n It is not an armstrong number");
}
getch();
}
```

Output

```
Enter the number: 327
```

```
It is not an armstrong number
```

Ques 7

Input a no & display the sum of digit.

Code

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

Output

```
Enter a number: 259  
Sum = 16
```

Ques 8

Input a no & display in words.

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int n,num=0;
    clrscr();
    printf("\n Enter the number: ");
    scanf("%d",&n);
    while(n!=0)
    {
        num=(num*10)+(n%10);
        n/=10;
    }
    while(num!=0)
    {
        switch(num%10)
        {
```



```
case 0:printf("\a Zero");
break;
case 1:printf("\a One");
break;
case 2:printf("\a Two");
break;
case 3:printf("\a Three");
break;
case 4:printf("\a Four");
break;
case 5:printf("\a Five");
break;
case 6:printf("\a Six");
break;
case 7:printf("\a Seven");
break;
case 8:printf("\a Eight");
break;
case 9:printf("\a Nine");
break;
}
num=num/10;
}
getch();
}
```

Output

```
Enter the number: 582
Five Eight Two
```

Ques 9

Display the following patterns for an input range (here n=4) for pattern:

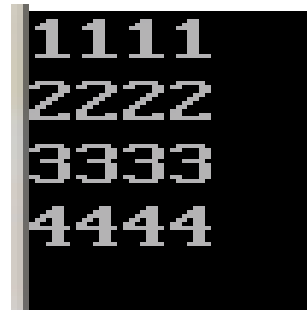
```
i)  1 1 1 1
     2 2 2 2
     3 3 3 3
     4 4 4 4
```

Code

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

}

Output



```
1111
2222
3333
4444
```

ii) 1 2 3
 1 2 3
 1 2 3
 1 2 3

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
int i,j;
clrscr();
for(i=1;i<=4;i++)
{
for(j=1;j<=3;j++)
{
printf("%d",j);
}
```

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

Output



```
123  
123  
123  
123
```

```
iii)  4 4 4  
      3 3 3  
      2 2 2  
      1 1 1
```

Code

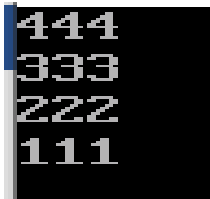
```
#include<stdio.h>  
#include<conio.h>  
void main()  
{  
int i,j;  
clrscr();  
for(i=4;i>=1;i--)  
{
```

```

for(j=3;j>=1;j--)
{
printf("%d",i);
}
printf("\n");
}
getch();
}

```

Output



```

444
333
222
111

```

```

iv)  1
      1  2
      1  2  3
      1  2  3  4

```

Code

```

#include<stdio.h>
#include<conio.h>
void main()
{
int i,j,rows;
clrscr();
printf("\n Enter the number of rows: ");

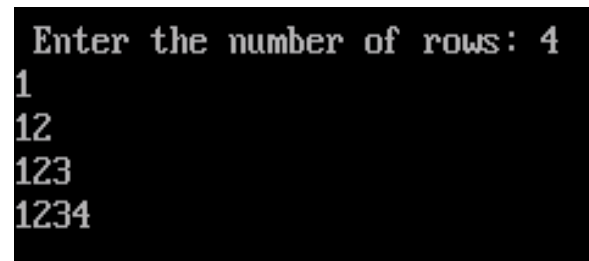
```

```

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

```

Output



```

Enter the number of rows: 4
1
12
123
1234

```

```

v)  1
    2 2
    3 3 3
    4 4 4 4

```

Code

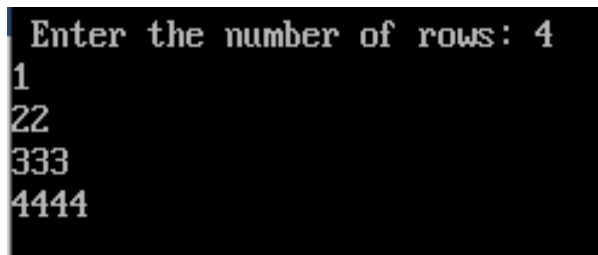
```

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

```

```
int i,j,rows;
clrscr();
printf("\n Enter the number of rows: ");
scanf("%d",&rows);
for(i=1;i<=rows;i++)
{
for(j=1;j<=i;j++)
printf("%d",i);
printf("\n");
}
getch();
}
```

Output



```
Enter the number of rows: 4
1
22
333
4444
```

vi) 1
 2 1
 3 2 1
 4 3 2 1

Code

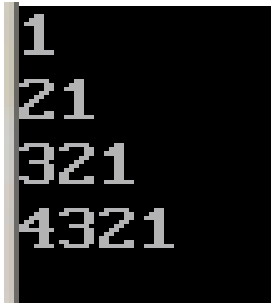
```
#include<stdio.h>
#include<conio.h>
void main()
```

```

{
int i,j;
clrscr();
for(i=1;i<=4;i++)
{
for(j=i;j>=1;j--)
{
printf("%d",j);
}
printf("\n");
}
getch();
}

```

Output



```

1
21
321
4321

```

vii) 1
2 3
4 5 6
7 8 9 10

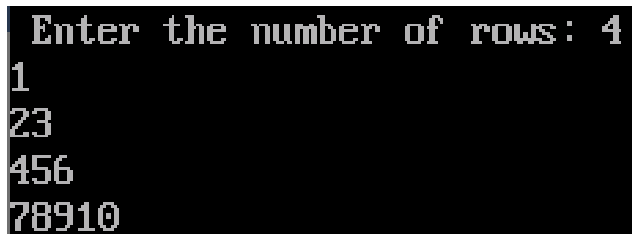
Code

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



```
#include<conio.h>
void main()
{
int rows,i,j,n=1;
clrscr();
printf("\n Enter the number of rows: ");
scanf("%d",&rows);
for(i=1;i<=rows;i++)
{
for(j=1;j<=i;++j)
{
printf("%d",n);
++n;
}
printf("\n");
}
getch();
}
```

Output



```
Enter the number of rows: 4
1
23
456
78910
```

Ques 10

Write a program to input a number and display all tables up to this number.

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int j,i,n;
    clrscr();
    printf("\n Enter the number: ");
    scanf("%d",&n);
    printf("\n Multiplication table: \n",n);
    for(i=1;i<=10;i++)
    {
        for(j=1;j<=n;j++)
        {
            if(j<=n-1)
                printf("%d * %d = %d \t",j,i,i*j);
            else
                printf("%d * %d = %d",j,i,i*j);
        }
        printf("\n");
    }
    getch();
}
```

Output

Enter the number: 3

Multiplication table:

1 * 1 = 1	2 * 1 = 2	3 * 1 = 3
1 * 2 = 2	2 * 2 = 4	3 * 2 = 6
1 * 3 = 3	2 * 3 = 6	3 * 3 = 9
1 * 4 = 4	2 * 4 = 8	3 * 4 = 12
1 * 5 = 5	2 * 5 = 10	3 * 5 = 15
1 * 6 = 6	2 * 6 = 12	3 * 6 = 18
1 * 7 = 7	2 * 7 = 14	3 * 7 = 21
1 * 8 = 8	2 * 8 = 16	3 * 8 = 24
1 * 9 = 9	2 * 9 = 18	3 * 9 = 27
1 * 10 = 10	2 * 10 = 20	3 * 10 = 30

Ques 11

Input a number and its power and evaluate it.

Code

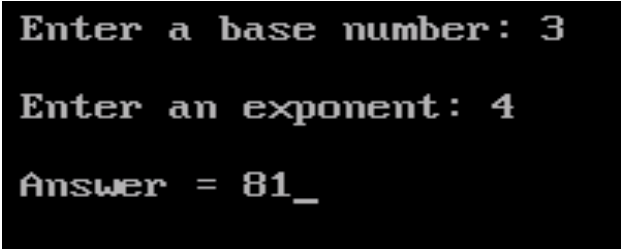
```
#include<stdio.h>
#include<conio.h>
void main()
{
    int base,exp;
    long double result=1.0;
    clrscr();
    printf("\n Enter a base number: ");
    scanf("%d",&base);
    printf("\n Enter an exponent: ");
    scanf("%d",&exp);
    while(exp !=0)
    {
```

```

result*=base;
--exp;
}
printf("\n Answer = %.0Lf",result);
getch();
}

```

Output



```

Enter a base number: 3
Enter an exponent: 4
Answer = 81_

```

Ques 12

Write a program to display the sum of following series:

Sum= $1+2^2+3^3+4^4+5^5+\dots\dots\dots n^n$.

Code

```

#include<math.h>
#include<stdio.h>
#include<conio.h>
void main();
{
int a,i,sum=0;
clrscr();
printf("\n Enter the range: ");
scanf("%d",&a);

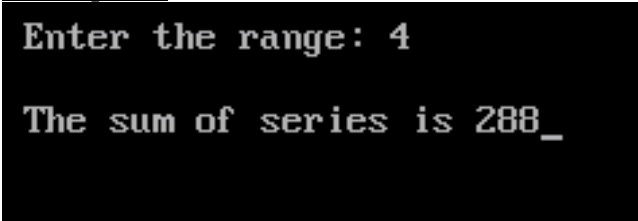
```

```

for(i=1;i<=a;i++)
{
sum=pow(i,i)+sum;
}
printf("\n The sum of series is %d", sum);
getch();
}

```

Output



```

Enter the range: 4

The sum of series is 288_

```

Ques 13

Write a program to display the sum of following series:

Sum= $2^1 + 2^2 + 2^3 + 2^4 + 2^5 + \dots + 2^n$.

Code

```

#include<math.h>
#include<stdio.h>
#include<conio.h>
void main()
{
int a,i,sum=0;
clrscr();
printf("\n Enter the range: ");
scanf("%d",&a);
for(i=1;i<a+1;i++)

```

```

{
sum=pow(2,i)+sum;
}
printf("\n The sum of the series is %d",sum);
getch();
}

```

Output

```

Enter the range: 4

The sum of the series is 30_

```

Ques 14

Write a program to print all Armstrong numbers between 100 – 999.

Code

```

#include<stdio.h>
#include<conio.h>
void main()
{
int i,rem,sum,temp,tnum;
clrscr();
printf(" The armstrong numbers are: \n");
for(i=100;i<=999;i++)
{
tnum=i;

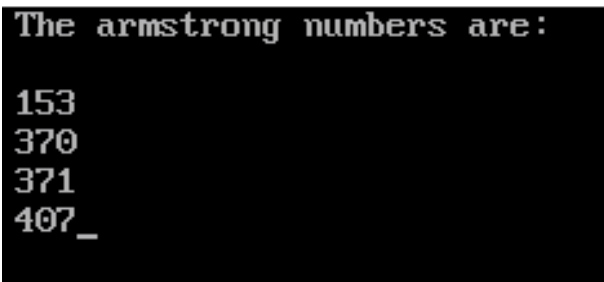
```

```

sum=0;
while(tnum>0)
{
rem=tnum%10;
temp=rem*rem*rem;
sum=temp+sum;
tnum=tnum/10;
}
if(i==sum)
printf("\n %d",sum);
}
getch();
}

```

Output



```

The armstrong numbers are:
153
370
371
407_

```

Ques 15

Write a menu driven program which repeats as per the following users choice:

<u>Choice</u>	<u>Operation</u>
1	Input two numbers

2	Display Subtraction
3	Display Multiplication
4	Display Division
5	Exit
Otherwise	Wrong choice and repeat again

Code

```

#include<stdio.h>
#include<conio.h>
void main()
{
int a=0,b=0,c=0,choice;
clrscr();
do
{
printf("\n Enter the choice: ");
scanf("%d",&choice);
printf(" 1. Enter two number \n 2. Subtraction \n 3. Multiplication \n 4.
Division \n 5. Exit \n ");
switch(choice)
{
case 1:printf("\n Enter first number: ");
scanf("%d",&a);
printf("\n Enter second number: ");
scanf("%d",&b);
break;

```



```
case 2:c=a-b;
printf("\n Subtraction= %d",c);
break;
case 3:c=a*b;
printf("\n Multiplication= %d",c);
break;
case 4:c=a/b;
printf("\n Division= %d",c);
break;
case 5:printf("\n Exit");
break;
default:printf("\n Wrong choice and Repeat again");
}
getch();
}while(choice!=5);
}
```

Output

```

Enter the choice: 1
1. Enter two number
2. Subtraction
3. Multiplication
4. Division
5. Exit

Enter first number: 20

Enter second number: 12

Enter the choice: 3
1. Enter two number
2. Subtraction
3. Multiplication
4. Division
5. Exit

Multiplication= 240

```

Ques 16

Write a menu driven program for a Restaurant which repeats as per the following users choice:

<u>Choice</u>	<u>Operation</u>
1	To order Tea and Snacks
2	To order Breakfast
3	To order Lunch
4	To order Dinner
5	To show Billing Amount

6	To show Rate List
7	Exit from Program
Otherwise	Wrong choice and repeat again

Code

```

#include<stdio.h>
#include<conio.h>
void main()
{
int choice;
clrscr();
do
{
printf("\n Enter the choice:");
scanf("%d",&choice);
printf(" 1. To order Tea and Snacks \n 2. To order Breakfast \n 3. To
order Lunch \n 4. To order Dinner \n 5. To show Billing Amount \n 6. To
show Rate List \n 7. Exit from Program \n");
switch(choice)
{
case 1:printf("\n Order Tea and Snacks");
break;
case 2:printf("\n Order Breakfast");
break;
case 3:printf("\n order Lunch");
break;

```

```
case 4:printf("\n Order Dinner");
break;
case 5:printf("\n Show Billing Amount");
break;
case 6:printf("\n Show Rate List");
break;
case 7:printf("\n Exit from Program");
break;
default:printf("\n Wrong choice and repeat again");
}
getch();
}while(choice!=7);
}
```

Output

```
Enter the choice: 4
1. To order Tea and Snacks
2. To order Breakfast
3. To order Lunch
4. To oder Dinner
5. To show Billing Amount
6. To show Rate List
7. Exit from Program

Order Dinner
Enter the choice: 7
1. To order Tea and Snacks
2. To order Breakfast
3. To order Lunch
4. To oder Dinner
5. To show Billing Amount
6. To show Rate List
7. Exit from Program

Exit from Program
```

Ques 17

Input a number & check it is prime number or not using break/continue statement.

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int n,i,m=0,flag=0;
    clrscr();
    printf("\n Enter the number: ");
    scanf("%d",&n);
    m=n/2;
    for(i=2;i<=m;i++)
    {
        if(n%i==0)
        {
            printf("\n It is not a prime number");
            flag=1;
            break;
        }
    }
    if(flag==0)
    printf("\n It is a prime number");
    getch();
}
```

Output

```
Enter the number: 45  
It is not a prime number_
```

Ques 18

Print all prime numbers from 1 to 100.

Code

```
#include<stdio.h>  
#include<conio.h>  
void main()  
{  
int i,j,count=0;  
clrscr();  
printf(" The prime numbers between 1 to 100 are: \n ");  
printf("\n");  
for(i=2;i<=100;i++)  
{  
for(j=1;j<=i;j++)  
{  
if(i%j==0)  
count++;  
}  
}
```

```
if(count==2)
printf(" %d \a",i);
count=0;
}
getch();
}
```

Output

```
The prime numbers between 1 to 100 are:

2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73
79 83 89 97 _
```

Ques 19

Print even numbers from 1 to 100 using goto.

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a;
clrscr();
a=2;
```

```
top:
printf("%d \t",a);
a+=2;
if(a<=100)
goto top;
getch();
}
```

Output

```
2      4      6      8      10     12     14     16     18     20
22     24     26     28     30     32     34     36     38     40
42     44     46     48     50     52     54     56     58     60
62     64     66     68     70     72     74     76     78     80
82     84     86     88     90     92     94     96     98     100
```

Ques 20

Print tables from 1 to 10 using goto.

Code

```
#include<stdio.h>
#include<conio.h>
void main()
{
int i,j;
clrscr();
i=1;
```



```
top:
j=1;
second:
printf("%d \t",i*j);
j++;
if(j<=10)
goto second;
printf("\n");
i++;
if(i<=10)
goto top;
getch();
}
```

Output

1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

EXERCISE 5

(Functions and Preprocessors)

Ques 1

Write a program to input two numbers and display addition, multiplication, subtraction and division using separate functions.

Code

```
#include<stdio.h>
#include<conio.h>
int add(int a,int b);
int sub(int a,int b);
int mul(int a,int b);
int div(int a,int b);
void main()
{
int x,y,z;
clrscr();
printf("\n Enter first number: ");
scanf("%d",&x);
printf("\n Enter second number: ");
scanf("%d",&y);
z=add(x,y);
printf("\n Addition=%d",z);
z=sub(x,y);
printf("\n Subtraction=%d",z);
z=mul(x,y);
printf("\n Multiplication=%d",z);
z=div(x,y);
printf("\n Division=%d",z);
}
int add(int a,int b)
{
return(a+b);
}
int sub(int a,int b)
```

```
{  
return(a-b);  
}  
int mul(int a,int b)  
{  
return(a*b);  
}  
int div(int a,int b)  
{  
return(a/b);  
}
```

Output

```
Enter first number: 20  
  
Enter second number: 12  
  
Addition=32  
Subtraction=8  
Multiplication=240  
Division=1_
```

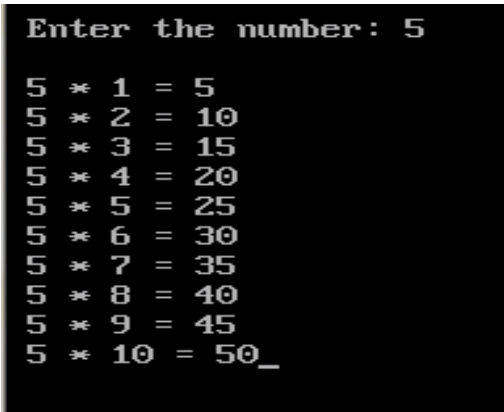
Ques 2

Write a program to input a number and display multiplication table of this number using separate functions.

Code

```
#include<stdio.h>
#include<conio.h>
void table(int n);
void main()
{
int n;
clrscr();
printf("\n Enter the number: ");
scanf("%d",&n);
table(n);
}
void table(int n)
{
int a;
for(a=1;a<=10;a++)
{
printf("\n %d * %d = %d",n,a,n*a);
}
getch();
}
```

Output

A screenshot of a terminal window with a black background and white text. The first line shows the prompt 'Enter the number: 5'. The subsequent lines show the multiplication table for 5, from 5 * 1 to 5 * 10. The last line ends with an underscore character.

```
Enter the number: 5
```

```
5 * 1 = 5
5 * 2 = 10
5 * 3 = 15
5 * 4 = 20
5 * 5 = 25
5 * 6 = 30
5 * 7 = 35
5 * 8 = 40
5 * 9 = 45
5 * 10 = 50_
```

Ques 3

Write a program to input two numbers and display largest and smallest using separate functions.

Code

```
#include<stdio.h>
#include<conio.h>
void show(int a,int b)
{
    if(a>b)
        printf("\n Largest= %d \n Smallest= %d",a,b);
    else
        printf("\n Largest= %d \n Smallest= %d",a,b);
}
void main()
{
    int a,b;
    clrscr();
    printf("\n Enter the first number: ");
    scanf("%d",&a);
    printf("\n Enter the second number: ");
    scanf("%d",&b);
    show(a,b);
    getch();
}
```

Output

```
Enter the first number: 25
Enter the second number: 19

Largest= 25
Smallest= 19
```

Ques 4

Write a program to input a number and display factorial using separate functions.

Code

```
#include<stdio.h>
#include<conio.h>
void show(int n)
{
    int i,f=1;
    for(i=1;i<=n;i++)
        f*=i;
    printf("\n Factorial= %d",f);
}
void main()
{
    int n,m;
    clrscr();
    printf("\n Enter the number: ");
    scanf("%d",&n);
    show(n);
    getch();
}
```

```
}
```

Output

```
Enter the number: 5
Factorial= 120_
```

Ques 5

Write a program to input a number and display factorial using recursion.

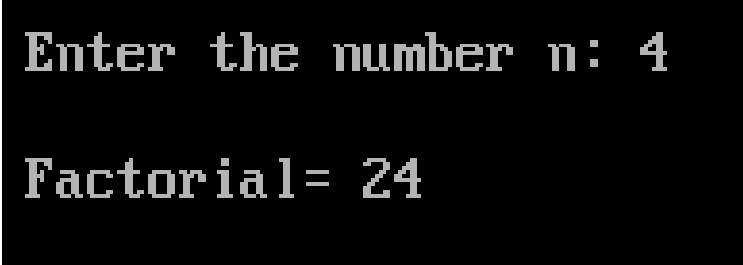
Code

```
#include<stdio.h>
#include<conio.h>
int fact(int a)
{
    if(a<=1)
        return(1);
    else
        return(a*fact(a-1));
}
void main()
{
    int n,f;
    clrscr();
    printf("\n Enter the number n: ");
    scanf("%d",&n);
    f=fact(n);
```



```
printf("\n Factorial= %d",f);  
getch();  
}
```

Output

A screenshot of a terminal window with a black background and white text. The first line shows the prompt 'Enter the number n: ' followed by the user input '4'. The second line shows the output 'Factorial= 24'.

```
Enter the number n: 4  
Factorial= 24
```

Ques 6

Write a program to input a number and display multiplication table of this number using recursion.

Code

```
#include<stdio.h>  
#include<conio.h>  
void table(int n,int a)  
{  
printf("\n %d * %d= %d",n,a,n*a);  
if(a<10)  
table(n,a+1);  
}  
void main()  
{  
int n;  
clrscr();  
printf("\n Enter a number: ");
```

```
scanf("%d",&n);  
table(n,1);  
getch();  
}
```

Output

```
Enter a number: 3
```

```
3 * 1= 3  
3 * 2= 6  
3 * 3= 9  
3 * 4= 12  
3 * 5= 15  
3 * 6= 18  
3 * 7= 21  
3 * 8= 24  
3 * 9= 27  
3 * 10= 30_
```

Ques 7

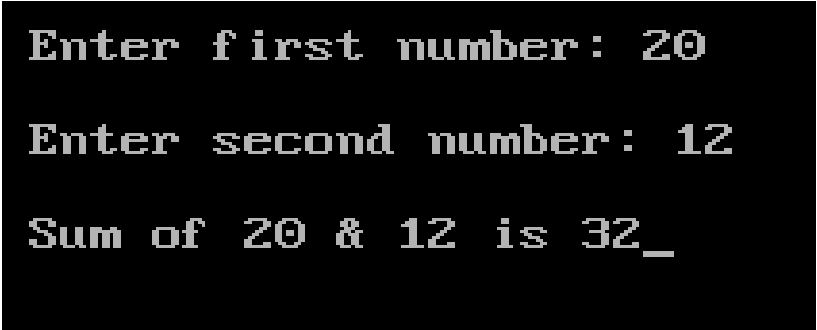
Write a program to show the use of #define preprocessors.

Code

```
#define sum(a,b) a+b  
#include<stdio.h>  
#include<conio.h>  
void main()
```

```
{  
int a,b;  
clrscr();  
printf("\n Enter first number: ");  
scanf("%d",&a);  
printf("\n Enter second number: ");  
scanf("%d",&b);  
printf("\n Sum of %d & %d is %d",a,b,sum(a,b));  
getch();  
}
```

Output

A screenshot of a terminal window with a black background and white text. It shows the output of a C program. The first line is "Enter first number: 20", the second line is "Enter second number: 12", and the third line is "Sum of 20 & 12 is 32_".

```
Enter first number: 20  
Enter second number: 12  
Sum of 20 & 12 is 32_
```

