Program 1# Write a program to find the factorial value of any number entered through the keyboard.

program to find the factorial value of any number

- If the number entered is 4
  - Factorial is 4*3*2*1
- If the number entered is 7
  - Factorial is 7*6*5*4*3*2*1

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  - Initializing the count
  - Checking the condition
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Body of the Loop:
Factorial of 7
Iteration 1: 1*7   =7   count=7
Iteration 2: 7*6   =42   count=6
Iteration 3: 42*5   =210   count=5
Iteration 4: 210*4   =840   count=4
Iteration 5: 840 *3   = 2520   count=3
Iteration 6: 2520*2   = 5040 count=2
Iteration 7: 5040 *1   = 5040 count=1
product= product*num

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  Iteration 6: 5040 *1   = 5040

Algorithm
Step 1: Enter the number **num** whose factorial u want to calculate
Step 2: count=num
Step 3: product=1
Step 4: Repeat steps while count> =1
Step 5: product = product * count
Step 6: count - - and go to step 4
Step 7: print product
Step 8: End

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- ## Algorithm

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want to calculate

Step 2: count=num

Step 3: product=1

Step 4: Repeat steps while count> =1

Step 5: product = product * count

Step 6: count - - and go to step 4

Step 7: print product

Step 8: End

```c
#include<stdio.h>
int main()
{
    long int  product=1;
    int count, num;
    printf("Enter the number whose factorial you want to find");
    scanf("%d", &num);
    for(count=num; count>=1;count--)
    {
        product=product*count;
    }
    printf("factorial of %d is %ld", num, product);

}
```

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#include<stdio.h>
int main()
{
    long int  product=1;
    int count, num;
    printf("Enter the number whose factorial you want to find");
    scanf("%d", &num);
    for(count=num; count>=1;count--)
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        product=product*count;
    }
    printf("factorial of %d is %ld", num, product);

}
```

```c
#include<stdio.h>
int main()
{
    long int  product=1;
    int count, num;
    printf("Enter the number whose factorial you want to find");
    scanf("%d", &num);
    for(count=1; count<=num;count++)
    {
        product=product*count;
    }
    printf("factorial of %d is %ld", num, product);

}
```

Data Types

Type	Storage size	Value range
char	1 byte	-128 to 127 or 0 to 255
unsigned char	1 byte	0 to 255
signed char	1 byte	-128 to 127
int	2 or 4 bytes	-32,768 to 32,767 or -2,147,483,648 to 2,147,483,647
unsigned int	2 or 4 bytes	0 to 65,535 or 0 to 4,294,967,295
short	2 bytes	-32,768 to 32,767
unsigned short	2 bytes	0 to 65,535

Program 2# Two numbers are entered through the keyboard. Write a program to find the value of one number raised to the power of another.

Write a program to find the value of one number raised to the power of another.

- $2^5 = 2*2*2*2*2$

- $5^7 = 5*5*5*5*5*5*5$

Logic

Initializing the count
Checking the condition
Increment/ Decrement

Write a program to find the value of one number raised to the power of another.

- $2^5 = 2*2*2*2*2$

- $5^7 = 5*5*5*5*5*5*5$

Logic

Initializing the count   count = 1

Checking the condition   while(count<=pow)

Increment/ Decrement   count++

Write a program to find the value of one number raised to the power of another.

- $2^5 = 2*2*2*2*2$

- $5^7 = 5*5*5*5*5*5*5$

Logic

Initializing the count   count = 1
Checking the condition while(count<=pow)
Increment/ Decrement   count++

Body of the loop
Product=1
Product = 1 * 2   = 2   count=1
Product = 2*2   =4   count=2
Product = 4*2   =8   count=3
Product = 8*2   =16   count=4
Product = 16*2   =32   count=5
Product = Product *num

Program 3# Write a program to enter the numbers till the user wants and at the end it should display the count of positive, negative and zeros entered.

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Algorithm

Step 1: Initialize positive =0 , negative=0 , zero=0

Step 2: Initialize choice = 'y'

Step 3: while choice ==' y'

Step 4: Enter the number

- If number < 0 then increment negative by 1

- else if number = 0 then increment zero by 1

- else if number > 0 then increment positive by 1

- Step 5: Do you wish to enter another number – if yes enter choice as 'y' and go to step 3

- Step 6: End

Program 3# Write a program to enter the numbers till the user wants and at the end it should display the count of positive, negative and zeros entered.

Algorithm
Step 1: Initialize positive =0 , negative=0 , zero=0
Step 2: Initialize choice = 'y'   // Initialize the counter
Step 3: while choice ==' y'   // Condition checking
Step 4: Enter the number
- If number < 0 then increment negative by 1
- else if number = 0 then increment zero by 1
- else if number > 0 then increment positive by 1
- Step 5: Do you wish to enter another number – if yes enter choice as 'y' and go to step 3   // Changing the counter
- Step 6: End

```c
#include<stdio.h>
int main()
{
    int num, negative=0, positive=0, zero=0;
    char choice= 'y';
    while(choice=='y' || choice =='Y')
    {
        printf("Enter the number");
        scanf("%d", &num);
        if(num<0)
        negative++;
        else if (num>0)
        positive++;
        else
        zero++;
        printf("Do you wish to continue Enter y if interested");
        scanf(" %c", &choice);
    }
    printf("\nthe number of positive numbers are %d", positive);
    printf("\nthe number of negative numbers are %d", negative);
    printf("\nthe number of zeros are %d", zero);
}
```

Num=345

Program #4 . Write a program to find sum of the digits of a number

Algorithm:-for a five digit number

Step1: Enter a 5 digit number 'n'.

Step 2: Initialize sum =0.

Step 3: b=n%10. n=n/10; sum =sum+b.

Step 4: b=n%10. n=n/10; sum =sum+b.

Step 5: b=n%10. n=n/10; sum =sum+b.

Step 6: b=n%10. n=n/10; sum =sum+b.

Step 7: b=n%10. n=n/10; sum =sum+b.

Step 8: Print sum.

Initialize the counter

Condition checking

Loop counter

Body of the loop

b=n%10

n=n/10

sum=sum+b

Algorithm:-for a five digit number

Step1: Enter a 5 digit number 'n'.
Step 2: Initialize sum =0.
Step 3: b=n%10. n=n/10; sum =sum+b.
Step 4: b=n%10. n=n/10; sum =sum+b.
Step 5: b=n%10. n=n/10; sum =sum+b.
Step 6: b=n%10. n=n/10; sum =sum+b.
Step 7: b=n%10. n=n/10; sum =sum+b.
Step 8: Print sum.

Initialize the counter
$\qquad$ count=1
Condition checking
$\qquad$ while(count<=5)
Loop counter
$\qquad$ count++
Body of the loop
$\qquad$ b=n%10
$\qquad$ n=n/10
$\qquad$ sum=sum+b

Algorithm:-for a n digit number

Step1: Enter a number 'n'.

Step 2: Initialize sum =0.

Step 3: Repeat the steps 4 to 6 while (n) is true

Step 4: b=n%10.

Step 5: n=n/10;

Step 6: sum =sum+b and go to step 3

Step 7: Print sum.

Initialize the counter
      n   (*n is the number*)

Condition checking
      while(n)

Loop counter

Body of the loop
      b=n%10

      n=n/10

      sum=sum+b