```
## User will input (3ages).Find the oldest one

age1 = int(input("Enter your age : "))
age2 = int(input("Enter your age : "))
age3 = int(input("Enter your age : "))

if (age1>=age2) and (age1>=age3) :
    print("age 1 is the greatest")
elif (age2>=age1) and (age2>=age3) :
    print("age 2 is the greatest")

else :
    print('age3 is the greatest')
```

```
Enter your age : 26
Enter your age : 31
Enter your age : 12
age 2 is the greatest
```

```
## Write a program that will convert celsius value to fahrenheit

temp =  float(input("Enter the temperature in Celsius : "))
farh =  (temp*1.18 +32)
print("Temp in Fahrenhite is  :", farh)
```

```
Enter the temperature in Celsius : 32
Temp in Fahrenhite is  : 69.75999999999999
```

```
## User will input (2numbers).Write a program to swap the numbers

c= 0

a = int(input("Enter num1  : "))
b = int(input("Enter num2 : "))

c=a
a=b
b=c

print ("after swapping both ....")

print ("num1 :", a)
print ("num2 :" , b)
```

```
Enter num1  : 2
Enter num2 : 6
after swapping both ....
num1 : 6
num2 : 2
```

```
## Write a program to swap the numbers without using 3rd variable


a = int(input("Enter num1  : "))
b = int(input("Enter num2 : "))

a=a+b
b=a-b
a=a-b

print ("after swapping both ....")
print ("num1 :", a)
print ("num2 :" , b)
```

```
Enter num1  : 7
Enter num2 : 9
after swapping both ....
num1 : 9
num2 : 7
```

```
#Write a program that will give you the sum of 3 digits

num = int(input ('Enter number :'))

a = num%10
rem = num//10

b = rem%10
rem = rem//10

c = rem%10

sum = a+b+c
print ("sum of digits :" , sum)
```

```
Enter number :789
sum of digits : 24
```

```
#Write a program that will reverse a four digit number. Also it checks
whether the reverse is true.

num = int(input ('Enter number :'))

d1 = num%10
num = num//10
d2 = num % 10
num = num//10
d3 = num % 10
num = num//10
d4 = num % 10
```

```
print ('New number is : ', (1000*d1 +100*d2+ 10*d3 + d4))
```

```
Enter number :9876
New number is :  6789
```

```
## Write a program that will tell whether the number entered by the
user is odd or even

num = int(input ('Enter a number : '))
if num%2 == 0:
    print("even number")

elif num%2 == 1 :
    print ("Odd number")
```

```
Enter a number : 11
Odd number
```

```
## Write a program that will tell whether the given year is a leap
year or not.


year = int(input("Enter a year: "))

# divided by 100 means century year (ending with 00)
# century year divided by 400 is leap year
if (year % 400 == 0) and (year % 100 == 0):
    print("{0} is a leap year".format(year))

# not divided by 100 means not a century year
# year divided by 4 is a leap year
elif (year % 4 ==0) and (year % 100 != 0):
    print("{0} is a leap year".format(year))

# if not divided by both 400 (century year) and 4 (not century year)
# year is not leap year
else:
    print("{0} is not a leap year".format(year))
```

```
Enter a year: 2022
2022 is not a leap year
```

```
##Write a program to find the euclidean distance between two
coordinates.
x1 = int(input("Enter coordinate-1 x-val: "))
y1 = int(input("Enter coordinate-1 y-val: "))

x2 = int(input("Enter coordinate-2 x-val: "))
y2 = int(input("Enter coordinate-2 y-val: "))
```

```
Euc = ((x2-x1)**2 + (y2-y2)**2)** 0.5

print("Euclindean Distance = ", Euc)
```

```
Enter coordinate-1 x-val: 12
Enter coordinate-1 y-val: 8
Enter coordinate-2 x-val: -8
Enter coordinate-2 y-val: 11
Euclindean Distance =  20.0
```

```
## Write a program that take a user input of three angles and will
find out whether it can form a triangle or not.
a = int(input("Enter angle 1: "))
b = int(input("Enter angle 2: "))
c = int(input("Enter angle 3: "))

if (a+b+c == 180) and a!=0 and b!=0 and c!=0 :
    print ("Valid triangle")
else :
    print ("Not a valid triangle")
```

```
Enter angle 1: 90
Enter angle 2: 60
Enter angle 3: 30
Valid triangle
```

```
## Write a program that will take user input of cost price and selling
price and determine whether its a loss or a profit

CP = int(input("Enter CP :"))
SP = int(input("Enter SP :"))

if CP > SP:
    print ("Loss")

elif CP < SP :
    print ("Profit")

else :
    print("Neither profit nor loss")
```

```
Enter CP :890
Enter SP :900
Profit
```

```
## Write a program to find the simple interest when the value of
principle,rate of interest and time period is given.

p = int(input("Enter your principal : "))
r = int(input("Enter your rate of interest : "))
```

```
t = int(input("Enter your time period in years : "))

si = p*r*t/100
a = si+p

print ("Your amount is Rs ", a, "on a simple interest of : ", si, "%")
```

```
Enter your principal : 800
Enter your rate of interest : 7
Enter your time period in years : 10
Your amount is Rs  1360.0 on a simple interest of :  560.0 %
```

```
## Write a program to find the volume of the cylinder. Also find the
cost when ,when the cost of 1litre milk is 40Rs.

r = int(input("Enter your Cylinder's radius : "))
h = int(input("Enter your Cylinder's height : "))

v = 3.14*(r**2)*h
cost = 40 * v/1000
print("Volume of the cylinder is :", v,"cm3 and cost of milk will be
Rs", cost)
```

```
Enter your Cylinder's radius : 10
Enter your Cylinder's height : 45
Volume of the cylinder is : 14130.0 cm3 and cost of milk will be Rs
565.2
```

```
#Write  a program that will tell whether the given number is divisible
by 3 & 6.

num = int(input("Enter the number : "))
if (num%3==0 and num%6==0):
    print("Divisible by both 3 and 6")
else :
    print("Number not divisible by both 3 and 6")
```

```
Enter the number : 36
Divisible by both 3 and 6
```

*Write a program that will determine weather when the value of temperature and humidity is provided by the user.*

| TEMPERATURE(C) | HUMIDITY(%) | WEATHER |
|---|---|---|
| >= 30 | >=90 | Hot and Humid |
| >= 30 | < 90 | Hot |
| <30 | >= 90 | Cool and Humid |
| <30 | <90 | Cool |

```
temp = int(input("Enter temperature in celsius : "))
humid = int(input("Enter humidity in percentage : "))
```

```
if (temp>=30 and humid >=90):
    print('Hot and Humid')
elif (temp>=30 and humid <90):
    print('Hot')
elif (temp<30 and humid >=90):
    print('Cool and Humid')
else :
    print("Cool")
```

```
Enter temperature in celsius : 34
Enter humidity in percentage : 60
Hot
```

```
## Write a program that will take three digits from the user and add
the square of each digit.

num1 = int(input("Enter the first digit : "))
num2 = int(input("Enter the second digit : "))
num3 = int(input("Enter the third digit : "))

sum = (num1**2 + num2**2 + num3**2)
print ("Sum of square of digits is : ", sum)
```

```
Enter the first digit : 3
Enter the second digit : 1
Enter the third digit : 5
Sum of square of digits is :  35
```

```
## Write a program that will check whether the number is armstrong (or
narcissist) number or not.

### let us consider ABC of order ‘n’ then ABC is an Armstrong number
if: ABC= An+Bn+Cn
#### 153 = 1*1*1 + 5*5*5 + 3*3*3  // 153 is an Armstrong number

num = int(input("Enter the number : "))
order = len(str(num))

# initialize sum
sum = 0

# find the sum of the cube of each digit
temp = num
while temp > 0:
    digit = temp % 10
    sum += digit ** order
    temp //= 10

# display the result
```

```
if num == sum:
    print(num,"is an Armstrong number")
else:
    print(num,"is not an Armstrong number")
```

```
Enter the number : 145
145 is not an Armstrong number
```

```
## Write a program that will check whether the number is prime number
or not.

#take user input
num = int(input("Enter the number : "))

# define a flag variable
flag = False

# prime numbers are greater than 1
if num > 1:
    # check for factors
    for i in range(2, num):
        if (num % i) == 0:
            # if factor is found, set flag to True
            flag = True
            # break out of loop
            break

# check if flag is True
if flag:
    print(num, "is not a prime number")
else:
    print(num, "is a prime number")
```

```
Enter the number : 13
13 is a prime number
```

```
## Write a program that will check whether the number is perfect
number or not.
### if the sum of a number's positive divisors excluding the number
itself is equal to that number..
#### For example, 6 is a perfect number in Python because 6 = 1+2+3
(it's divisors)

n = int(input("Enter any number: "))
sum1 = 0
for i in range(1, n):
    if(n % i == 0):
        sum1 = sum1 + i
if (sum1 == n):
    print("The number is a Perfect number!")
```

```
else:
    print("The number is not a Perfect number!")
```

```
Enter any number: 7
The number is not a Perfect number!
```

```
## Write a program to display the Fibonacci sequence up to n-th term

nterms = int(input("How many terms? "))

# first two terms
n1, n2 = 0, 1
count = 0

# check if the number of terms is valid
if nterms <= 0:
    print("Please enter a positive integer")

# if there is only one term, return n1
elif nterms == 1:
    print("Fibonacci sequence upto",nterms,":")
    print(n1)

# generate fibonacci sequence
else:
    print("Fibonacci sequence:")
    while count < nterms:
        print(n1)
        nth = n1 + n2

       #update values
        n1 = n2
        n2 = nth
        count += 1
```

```
How many terms? 11
Fibonacci sequence:
0
1
1
2
3
5
8
13
21
34
55
```

```
## Write a program that will give you the in hand salary after
deduction of HRA(10%), DA(5%), PF(3%) and tax
```

```
## (if salary is between 5-10 lakh–10%),(11-20lakh–20%),(20< _   –
30%)(0-1lakh print k).

user_ip = float(input('Enter you annual CTC :'))

if user_ip > 500000 and user_ip <1000000 :
    tax = (10/100)*user_ip
    salary = user_ip-tax

elif user_ip >1000000 and user_ip <2000000:
    tax = (20/100)*user_ip
    salary = user_ip-tax
else :
    tax = (30/100)*user_ip
    salary = user_ip - tax

print("Salary after tax deduction : Rs", salary)

hra = (10/100)*salary
da = (5/100)*salary
pf = (3/100)*salary

in_hand = (salary-hra-da-pf)/12
print("In hand salary per month is Rs", in_hand)

if in_hand <=999:
    print(in_hand)

elif in_hand >=1000 and in_hand<=9999:
    print("Salary is :", 'k')

elif in_hand >=100000 and in_hand<=9999999:
    print("Salary is :", 'l')

else :
    print(in_hand / 1000000, 'Cr')


Enter you annual CTC :1600000
Salary after tax deduction : Rs 1280000.0
In hand salary per month is Rs 87466.66666666667
0.08746666666666666 Cr

## Write a menu driven program - 1.cm to ft  2.kl to miles  3.usd to
inr  4.exit

user_inp = input('''
Hi! Welcome to my page
What would you like to do ?
```

```
1. Convert cm to inches
2. Convert km to miles
3. Convert usd to inr
4. Exit
''')

if user_inp =='1' :
    cm = float(input('Enter value in cm :'))
    inch = cm * 0.394
    print ('Value in inches is :', inch)

elif user_inp =='2':
    km = float(input('Enter value in km :'))
    mile = km * 0.621
    print ('Value in miles is :', mile)

elif user_inp =='3' :
    usd = float(input('Enter value in usd :'))
    inr = usd * 76.63
    print ('Value in INR is :', inr)

else :
    print('Exit')
```

```
Hi! Welcome to my page
What would you like to do ?

1. Convert cm to inches
2. Convert km to miles
3. Convert usd to inr
4. Exit
3
Enter value in usd :600
Value in INR is : 45978.0
```

```
## Write a program that will tell the number of dogs and chicken are
there when the user will provide the value of total heads and legs

h = int(input('Enter the total number of heads :'))
l = int(input('Enter the total number of legs :'))

if h<l:

    c = 2*h - (l/2)
    print ('Number of chickens :', c)
    d = h-c
    print('Number of dogs :', int(d))

else :
```

```
    print('Not possible')

# clearly
#c + d = h
#2c + 4d = l

#d = h-c  # will give us the total num of dogs
#2c + 4(h-c) = l
#c = 2h - (l/2)  # will give the number of chickens
```

```
Enter the total number of heads :40
Enter the total number of legs :90
Number of chickens : 35.0
Number of dogs : 5
```

```
# Write a program to find the sum of first n numbers, where n will be
provided by the user.
## Eg if the user provides n=10 the output should be 55.

num = int(input("Enter the number"))
sum = 0
for i in range(1, num+1):
    sum = sum+i

print ("Sum of all numbers : ", sum)
```

```
Enter the number16
Sum of all numbers :  136
```

```
## Write a program that can multiply 2 numbers provided by the user
without using the * operator

num1 = int(input("Enter the first number : "))
num2 = int(input("Enter the second number: "))
prod =0

for i in range (1, num2+1):
    prod = prod+num1

print("Product is :" , prod)
```

```
Enter the first number : 9
Enter the second number: 7
Product is : 63
```

```
## Write a program that can find the factorial of a given number
provided by the user.

num = int(input("Enter the number : "))
fact=1
for i in range(2,num+1):
```

```
    fact = fact*i
print('Factorial is ',fact)
```

```
Enter the number : 5
Factorial is  120
```

```
## Write a program to print the first 25 odd numbers

for i in range(0,25) :
    num = 2*i+1
    print(num)
```

```
1
3
5
7
9
11
13
15
17
19
21
23
25
27
29
31
33
35
37
39
41
43
45
47
49
```

```
## Print all the armstrong numbers in the range of 100 to 1000


lower = 100
upper = 1000

for num in range(lower, upper + 1):

   # order of number
   order = len(str(num))

   # initialize sum
   sum = 0
```

```
    temp = num
    while temp > 0:
        digit = temp % 10
        sum += digit ** order
        temp //= 10

    if num == sum:
        print(num)
```

```
153
370
371
407
```

*The current population of a town is 10000. The population of the town is increasing at the rate of 10% per year.*

You have to write a program to find out the population at the end of each of the last 10 years.

For eg current population is 10000 so the output should be like this:

```
10th year - 10000
9th year - 9000
8th year - 8100 and so on
```

```
curr =10000
print ("10th year - 10000")
for i in range (9,0,-1):
    pop = int(curr - (curr*10)/100)
    curr = pop
    print("{}th year - {}".format(i, pop))
```

```
10th year - 10000
9th year - 9000
8th year - 8100
7th year - 7290
6th year - 6561
5th year - 5904
4th year - 5313
3th year - 4781
2th year - 4302
1th year - 3871
```

```
## Write a program to print all the unique combinations of 1,2,3 and 4

for i in range(1,5):
    for j in range(1,5):
        if i!=j:
            print(i,j)
```

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

```
## User will provide 2 numbers you have to find the HCF and LCM of
those 2 numbers

a = int(input("Enter num1  : "))
b = int(input("Enter num2 : "))

while a%b !=0:
    rem = a%b
    a = b
    b = rem
print("HCF is : ", b)

lcm = (a*b)/b
print("LCM is :", lcm)
```

```
Enter num1  : 80
Enter num2 : 65
HCF is :  5
LCM is : 15.0
```

```
#Print first 25 prime numbers

counter = 1
num = 2
while counter <=25:
    for i in range (2, num):
        if num % i==0:
            break
    else:
        print(counter, ') ',num)
        counter = counter+1
    num= num+1
```

```
1 )  2
2 )  3
3 )  5
```

```
4 )  7
5 )  11
6 )  13
7 )  17
8 )  19
9 )  23
10 )  29
11 )  31
12 )  37
13 )  41
14 )  43
15 )  47
16 )  53
17 )  59
18 )  61
19 )  67
20 )  71
21 )  73
22 )  79
23 )  83
24 )  89
25 )  97
```

```
##Print the first 20 numbers of a Fibonacci series

def printFibonacciNumbers(n):

    f1 = 0
    f2 = 1
    if (n < 1):
        return
    print(f1, end = " ")
    for x in range(1, n):
        print(f2, end=" ")
        next = f1 + f2
        f1 = f2
        f2 = next


# Driven code
printFibonacciNumbers(20)
```

```
0 1 1 2 3 5 8 13 21 34 55 89 144 233 377 610 987 1597 2584 4181
```

```
## Write a program to find the compound interest

p = int(input("Enter your principal : "))
r = int(input("Enter your rate of interest : "))
t = int(input("Enter your time period in years : "))
```

```
a = p*(1+r/100)**t
print("Your amount is Rs", a)

ci = a-p
print('Your Compound interest is ', ci)
```

```
Enter your principal : 890
Enter your rate of interest : 12
Enter your time period in years : 8
Your amount is Rs 2203.607226902382
Your Compound interest is  1313.607226902382
```

```
## Write a Python program that accepts an integer (n) and computes the
value of n+nn+nnn

n = int(input("Enter an integer : "))
sum = int(n+n**2+n**3)
print("n is :", n)
print("nn is :", n**2)
print("nnn is :", n**3)

print("Value of n+nn+nnn is :", sum)
```

```
Enter an integer : 7
n is : 7
nn is : 49
nnn is : 343
Value of n+nn+nnn is : 399
```

```
## Take a number from the user and find the number of digits in it

num = int(input("Enter a number : "))
num= str(num)
digits = len(num)

print('Length of number is :' , digits)
```

```
Enter a number : 908876
Length of number is : 6
```

```
## Print all factors of a given number provided by the user

x = int(input("Enter a number : "))

for i in range(1, x + 1):
       if x % i == 0:
            print(i)
```

```
Enter a number : 50
1
2
```

```
5
10
25
50
```

```
## Find the reverse of a number provided by the user(any number of
digit)
num = int(input("Enter the number : "))
num = str(num)


for i in range(len(num), 0, -1) :
    num = int(num)
    l = num%10
    num = num//10
    print( l, end = "")
```

```
Enter the number : 34567
76543
```

*Write a program to print the following pattern*

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

```
for i in range(1,6):
    for j in range(1,6):
        if i==j:
            print(i*'*')
```

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

*Write a program to print the following pattern*

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

```
for i in range(1,4):
    for j in range(1,4):
        if i==j:
            print(i*'*')

for i in range(2,0,-1):
```

```
    for j in range(2,0,-1):
        if i==j:
            print(i*'*')
```

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

*Write a program to print the following pattern*

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

```
rows = int(input("Enter number of rows: "))

k = 0

for i in range(1, rows+1):
    for space in range(1, (rows-i)+1):
        print(end="  ")

    while k!=(2*i-1):
        print("* ", end="")
        k += 1

    k = 0
    print()
```

```
Enter number of rows: 6
          *
        * * *
      * * * * *
    * * * * * * *
  * * * * * * * * *
* * * * * * * * * * *
```

*Write a program to print the following pattern*

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

```
row = int(input("Please enter the number of rows :"))

for i in range(0, row):
    for j in range(0, row-i-1):
        print(end= ' ')
```

```
    for k in range(0, i+1):
        print('*', end= ' ')
    print()
```

```
Please enter the number of rows :7
      *
     * *
    * * *
   * * * *
  * * * * *
 * * * * * *
* * * * * * *
```

*Write a program to print the following pattern*

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

```
row = int(input('Enter number of rows : '))

for i in range(1, row+1) :
    for j in range(1, i+1) :
        print(j, end = ' ')
    for k in range(i-1, 0, -1):
        print(k, end =' ')
    print(' ')
```

```
Enter number of rows : 6
1
1 2 1
1 2 3 2 1
1 2 3 4 3 2 1
1 2 3 4 5 4 3 2 1
1 2 3 4 5 6 5 4 3 2 1
```

*Write a program to print the following pattern*

```
1
2 3
4 5 6
7 8 9 10
```

```
row = int(input('Enter number of rows : '))
k=1

for i in range(1, row+1) :
    for j in range(1, i+1) :
        print(k, end=' ')
        k = k+1
```

```
    print("\r")
```

```
Enter number of rows : 7
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
16 17 18 19 20 21
22 23 24 25 26 27 28
```

```
## Write a program to calculate the sum of the following series till
the nth term :- 1/1! + 2/2! + 3/3! + 4/4! +…….+ n/n!
## n will be provided by the user

num = int(input('Enter the number : '))
result = 0
fact = 1

for i in range (1, num+1):
    fact = fact*i
    result = result + (i/fact)
print(result)
```

```
Enter the number : 8
2.7182539682539684
```

```
## Write a Python Program to Find the Sum of the Series till the nth
term :- 1 + x^2/2 + x^3/3 + … x^n/n
## n will be provided by the user


x = int(input('Enter your number : '))
num = int(input('Enter nth value : '))

sum = 1

for i in range (2, num+1):
    sum = sum + ((x**i)/i)

print(sum)
```

```
Enter your number : 11
Enter nth value : 4
4165.416666666667
```

**The natural logarithm can be approximated by the following series.**

*If x is input through the keyboard, write a program to calculate the sum of the first seven terms of this series.*

The natural logarithm can be approximated by the following series.

$$\frac{x-1}{x}+\frac{1}{2}\left(\frac{x-1}{x}\right)^2+\frac{1}{2}\left(\frac{x-1}{x}\right)^3+\frac{1}{2}\left(\frac{x-1}{x}\right)^4+\ldots$$

If x is input through the keyboard, write a program to calculate the result using the first N terms of this series. Note that if x is either a negative number or 0, the program must ask the user to re-enter the value of x as the natural logarithm is not defined for such cases. Also, keep in mind that the number of terms N must be greater than or equal to 1. Keep re-entering x and N values until they take valid values and then compute the result. Make sure the variable that holds the final result is of the correct datatype. You are NOT allowed to the math.h library file.

```
##The natural logarithm can be approximated by the following series.
##If x is input through the keyboard, write a program to calculate the
sum of the first seven terms of this series.

n=7
sum=0
x = int(input('Enter your number : '))
for i in range(1,n+1):
    if i==1 :
        sum = (x-1)/x
    else:
        sum = sum+( (0.5*(((x-1)/x)**i)) )
print(sum)
```

```
Enter your number : 7
2.408821397304087
```

```
# Write a program that keeps on accepting a number from the user until
the user enters Zero.
## Display the sum and average of all the numbers.

i=1
count = 1
su=0


while i!=0 :
    x = int(input('Please enter a number : '))
    i = x
    if x==0:
        break
    else :
```

```
        su =su+x
        avg = su/count
        count = count+1
    continue

print ('\nSum is :' , su, 'and Average of all numbers enter is :' ,
avg)
```

```
Please enter a number : 8
Please enter a number : 9
Please enter a number : 11
Please enter a number : 23
Please enter a number : 44
Please enter a number : 854
Please enter a number : 99
Please enter a number : 0

Sum is : 1048 and Average of all numbers enter is : 149.71428571428572
```

```
# Write a program that accepts 2 numbers from the user a numerator and
a denominator and then simplifies it
## Eg if the num = 5, den = 15 the answer should be ⅓
### Eg if the num = 6, den = 9 the answer should be ⅔

num  = int(input('Please enter the numerator : '))
den  = int(input('Please enter the denominator : '))

a = num
b= den

while num % den !=0:
    rem = num%den
    num = den
    den = rem

hcf = den
a = a/hcf
b = b/hcf
print(a/b)
```

```
Please enter the numerator : 78
Please enter the denominator : 9
8.666666666666666
```

```
## Find the length of a given string without using the len() function.

counter =0
string = input ('Enter a string : ')
for item in string :
```

```
    counter = counter+1
print("Length of string entered is ", counter)
```

```
Enter a string : My name is Anushka
Length of string entered is  18
```

```
# Extract username from a given email.
## Eg if the email is nitish24singh@gmail.com then the username should
be nitish24singh

#username=""
email = input ('Enter your email id : ')

#for item in email:
#   while(item!='@'):
#      username= username+item

#print ('username is :', username)

username,mail = email.split('@')
print('Username is :', username)
```

```
Enter your email id : anushka311@yahoo.com
Username is : anushka311
```

```
#Count the frequency of a particular character in a provided string.
## Eg 'hello how are you' is the string,  the frequency of h in this
string is 2.

counter = 0

string = input ('Enter a string : ')
char = input ('Enter the character : ')

for item in string :
    if item==char:
        counter =counter+1
print(counter)
```

```
Enter a string : kuch toh hai
Enter the character : h
3
```

```
## Find the index position of a particular character in another
string.

string = input ('Enter a string : ')
char = input ('Enter the character : ')

counter = 0
```

```
for item in string :
    if item!=char:
        counter = counter+1
    else :
        break
print(counter)
```

```
Enter a string : What can happen will happen
Enter the character : t
3
```

```
# Count the number of vowels in a string provided by the user.

counter = 0
string = input ('Enter a string : ')
vowels = ('aeiouAEIOU')

for item in string :
    if item in vowels :
        counter = counter+1
    else:
        pass
print('Number of vowels : ', counter)
```

```
Enter a string : Will you have toast for breakfast today ?
Number of vowels :  13
```

```
#Write a program which can remove a particular character from a string

string = input ('Enter a string : ')
char = input ('Enter the character : ')
for item in string :
    if item==char:
        string = string.replace(item, '')


print(string)
```

```
Enter a string : Never ever give up
Enter the character : e
Nvr vr giv up
```

```
# Write a program that can check whether a given string is palindrome
or not.

string = input ('Enter a string : ')

rev = string[::-1]
if string==rev:
```

```
    print('String is palindrome')
else :
    print('String is not palindrome')
```

```
Enter a string : Naina
String is not palindrome
```

```
## Write a python program to remove all the duplicates from a list

lst = [2,9,0,5,8,5,4,2,7,2,0,1]

b = []
for item in lst :
    if item not in b :
        b.append(item)
print(b)
```

```
[2, 9, 0, 5, 8, 4, 7, 1]
```

```
## Write a python program to convert a string to title case without
using the title()

#The titlecase is a capitalization style used for titles so that the
first letter of each word is uppercase
##and the remaining letters are lowercase. For example: Python Title
Case Tutorial

string = input ('Enter a string : ')
# we will convert this string into a list of strings
lst = string.split()
print('Entered string in the form of list :' , lst)
final=''

for item in lst :
    final = final + item[0].upper()+item[1:].lower()+ ' '


print(final)
```

```
Enter a string : just to BE sURe!
Entered string in the form of list : ['just', 'to', 'BE', 'sURe!']
Just To Be Sure!
```

```
# Write a python program to find the max item from a list without
using the max function

lst = [2,0,5,8,5,4,2,7,2,0,1,9]
n = 0
for item in lst :
    if item>n:
        n = item
```

```
print(n)
```

```
9
```

```
# Write a python program to reverse a list

lst =   ['hello', 'ANUSHKA', 'baJPAi']
rev = []

for item in lst[: :-1]:
    rev.append(item)

print('Reversed list is :', rev)
```

```
Reversed list is : ['baJPAi', 'ANUSHKA', 'hello']
```

```
## Write a python program to search a given number from a list

lst = [2,0,5,8,5,4,2,7,2,0,1,9]

num = int(input ('Enter number to search : '))

for item in lst :
    if item==num:
        print('Number found')
        break
else :
    print('Not found')
```

```
Enter number to search : 5
Number found
```

```
# Write a program that can create a new list from a given list
## where each item in the new list is square of the item of the old
list

lst = [2,0,8,5,7,2,1,9]
sq = []

for item in lst :
    sq.append(item*item)
print('New squared list : ', sq)
```

```
New squared list :  [4, 0, 64, 25, 49, 4, 1, 81]
```

```
#Write a program that can reverse words of a given string.
## Eg:  Hello how are you
### Output : you are how Hello
```

```
string = input ('Enter a string : ')
string = string.split()
rev = ''

for item in string[: : -1] :
    rev = rev + item + " "

print('Reversed string is :' , rev)
```

```
Enter a string : It's raining heavily
Reversed string is : heavily raining It's
```

```
## Write a program that can count the number of words in a given
string

string = input ('Enter a string : ')
string = string.split()

count = 0

for item in string:
    count = count+1

print('number of items in the given string are :', count)
```

```
Enter a string : Cherish every moment in life
number of items in the given string are : 5
```

```
## Write a program to check if a list is in ascending order or not

lst = [1,2,3,4]
asc = 0

for item in lst :
    if asc <= item:
        asc = item
        #print('List is ascending')

    else :
        print ("List is not ascending")
        break
```

```
List is ascending
List is ascending
List is ascending
List is ascending
```

```
## Create 2 lists from a given list where 1st list will contain all
the odd numbers from the original list
### and the 2nd one will contain all the even numbers
```

```
lst = [2,0,8,5,7,2,1,9]
asc = 0
odd=[]
even=[]

for item in lst :
    if item%2==0:
        even.append(item)

    else :
        odd.append(item)

print('Odd list :', odd, 'and Even List :', even)
```

```
Odd list : [5, 7, 1, 9] and Even List : [2, 0, 8, 2]
```

```
## Write a program to merge 2 list without using the + operator

l1 = [2,0,8,9]
l2 = [1,7,6,3]

merged = []

for item in l1 :
    merged.append(item)
for item in l2 :
    merged.append(item)

print('Merged list is :' , merged)
```

```
Merged list is : [2, 0, 8, 9, 1, 7, 6, 3]
```

```
## Write a program to replace an item with a different item if found
in the list

l = [2, 0, 8, 9, 1, 7, 6, 3]

find = int(input('Enter the number you would like to replace :'))
rep = int(input('Enter what you want to replace it with : '))

for i in range(0, len(l)) :
    if find == l[i]:
        l[i] = rep
        print(l)
        break
else :
    print('Number not found')
```

```
Enter the number you would like to replace :4
Enter what you want to replace it with : 3
Number not found
```

```
# Write a program that can convert a 2D list to 1D list

import numpy as np
l1 = [[1, 2, 3],[3, 6, 7], [7 ,5, 4]]

print ("initial list ", str(l1))

flatten_list = []
for item in l1 :
    if type(item)==list :
        flatten_list.extend(item)

    else:
        flatten_list.append(item)
print('Flattened List is : ', flatten_list)

# one line solution
#print("Flattened List ",list(np.concatenate(l1).flat))
```

```
initial list  [[1, 2, 3], [3, 6, 7], [7, 5, 4]]
Flattened List is :  [1, 2, 3, 3, 6, 7, 7, 5, 4]
```

```
# Write a program that can perform union and intersection on 2 given
list.


l1 = [2,0,8,9,1,7,0]
l2 = [1,7,6,3]

union = []

inter = []
for item in l1 :
    if item in l2 :
        inter.append(item)

for p in l1:
    union.append(p)
for q in l2:
    if q not in union:
        union.append(q)

print('Union is :', union, 'and Intersection is :', inter)
```

```
Union is : [2, 0, 8, 9, 1, 7, 0, 6, 3] and Intersection is : [1, 7]
```

```python
# Write a program that can print the max item of each row of a matrix

l1 = [[1, 2, 3],[3, 6, 7], [7 ,5, 4]]

for item in l1:
    max = 0
    for i in item :
        if i>max:
            max = i
    print('max :', max)
```

```
max : 3
max : 7
max : 7
```

```python
## Write a program that can convert an integer to string.

n = int(input('Enter an integer :'))
n = str(n)
print(n)
print(type(n))

## without using str

def convert(num) :
    digits = '0123456789'
    res = ''
    while num !=0 :
        curr = num%10
        res = digits[curr]+res
        num = num// 10

    return res
print (type(convert(43)))
```

```
Enter an integer :78
78
<class 'str'>
<class 'str'>
```

```python
## Write a program to print the shape of a matrix

l1 = [[1, 8],[6, 9], [7, 4]]

row = 0
col = 0

for item in l1 :
```

```
    if type(item)==list:
        row = row+1
for item in l1 :
    for i in item :
        col = col+1
    break


print('Dimension of matrix is : [', row,',',col, ']')
```

```
Dimension of matrix is : [ 3 , 2 ]
```

```
## Write a program that can check if you can perform matrix
multiplication on 2 matrices

l2 = [[1, 8],[6, 9], [7, 4]]
l1 = [[1, 8],[6, 9]]

row = 0
col = 0
emp = []

for item in l1 :
    if type(item)==list:
        row = row+1
emp.append(row)
for item in l1 :
    for i in item :
        col = col+1
    break
emp.append(col)

print('Dimension of matrix 1 is : ', emp)

emp1 = []
row = 0
col = 0

for item in l2 :
    if type(item)==list:
        row = row+1
emp1.append(row)
for item in l2 :
    for i in item :
        col = col+1
    break
emp1.append(col)

print('Dimension of matrix 2 is : ', emp1)
```

```
if emp[1] == emp1[0] :
    print("matrix multiplication is possible")
else :
    print("matrix multiplication is not possible")
```

```
Dimension of matrix 1 is :  [2, 2]
Dimension of matrix 2 is :  [3, 2]
matrix multiplication is not possible
```

```
## Write a program to perform matrix multiplication on 2 matrices

# 3x3 matrix
X = [[12,7,3],
    [4 ,5,6],
    [7 ,8,9]]

# 3x4 matrix
Y = [[5,8,1,2],
    [6,7,3,0],
    [4,5,9,1]]

# result is 3x4
result = [[0,0,0,0],
          [0,0,0,0],
          [0,0,0,0]]

# iterate through rows of X
for i in range(len(X)):
   # iterate through columns of Y
   for j in range(len(Y[0])):
       # iterate through rows of Y
       for k in range(len(Y)):
            result[i][j] += X[i][k] * Y[k][j]

for r in result:
    print(r)
```

```
[114, 160, 60, 27]
[74, 97, 73, 14]
[119, 157, 112, 23]
```

```
#Write a program that can sort a given unsorted list. Dont use any
built in function for sorting.


l1 = [2,0,8,9,1,7,0]
for item in range(len(l1)) :
    for k in range(0, len(l1)-1):
        if l1[k]>l1[k+1]:
```

```
            temp = l1[k]
            l1[k] = l1[k+1]
            l1[k+1] = temp


print(l1)
```

```
[0, 0, 1, 2, 7, 8, 9]
```

```
# Write a program that can find the most used word in a bollywood song

song = '''Kyun Aajkal Neend Kam Khwaab Jyada Hai
Lagta Khuda Ka Koi Nek Iraada Hain
Kal Ka Fakir Dil Aaj Shehzada Hain
Lagta Khuda Ka Koi Nek Iraada Hain
( Kya Mujhe Pyar Hain Aah
Kaisa Khumaar Hain Aah )... (x2)


Pathhar Ke Inn Raston Pe
Phoolon Ki Ek Chadar Hain
Jabse Milen Ho Hamko
Badla Har Ek Manzar Hain
Dekho Jahaan Mein Neele Neele Aasmaan Tale
Rang Naye Naye Hain Jaise Ghulte Hue
Soye The Khwaab Mere Jaage Tere Waaste
Tere Khayaalon Me Hai Bheege Mere Raaste
( Kya Mujhe Pyar Hain Aah
Kaisa Khumaar Hain Aah )... (x2)


Tum Kyon Chale Aate Ho
Har Roj In Khwaabon Mein
Chupke Se Aa Bhi Jaaon
Ek Din Meri Baahon Mein
Tere Hi Sapanen Andheron Mein Ujaalon Mein
Koi Nasha Hain Teri Aankhon Ke Pyaalon Mein
Tu Mere Khwaabon Mein Jawaabon Mein Sawaalon Mein
Har Din Chura Tumehn Main Laata Hoon Khayalon Mein
( Kya Mujhe Pyar Hain Aah
Kaisa Khumaar Hain Aah )'''

most_used = {}
counter = 0
for word in song.split():
    if word in most_used:
        most_used[word]= most_used[word]+1
    else :
```

```
        most_used[word]=1

max_word = max(most_used.values())

for i in most_used:
    if most_used[i] == max_word:
        print(i, max_word)
        break
```

Hain 13

```
# Assume a list with numbers from 1 to 10 and then convert it into a
dictionary where the key would be the numbers
## of the list and the values would be the square of those numbers.

l1 = [1,2,3,4,5,6,7,8,9]
dic = {}

for i in l1:
    dic[i] = i**2
print(dic)
```

```
{1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49, 8: 64, 9: 81}
```

```
## Write a program to merge two given dictionary

d1 = {1: 1, 2: 4, 3: 9, 4: 16}
d2 = {5: 25, 6: 36, 7: 49, 8: 64, 9: 81}

d3 = {}

for i in d1:
    d3[i] = d1[i]

for j in d2 :
    d3[j] = d2[j]

d3
```

```
{1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49, 8: 64, 9: 81}
```

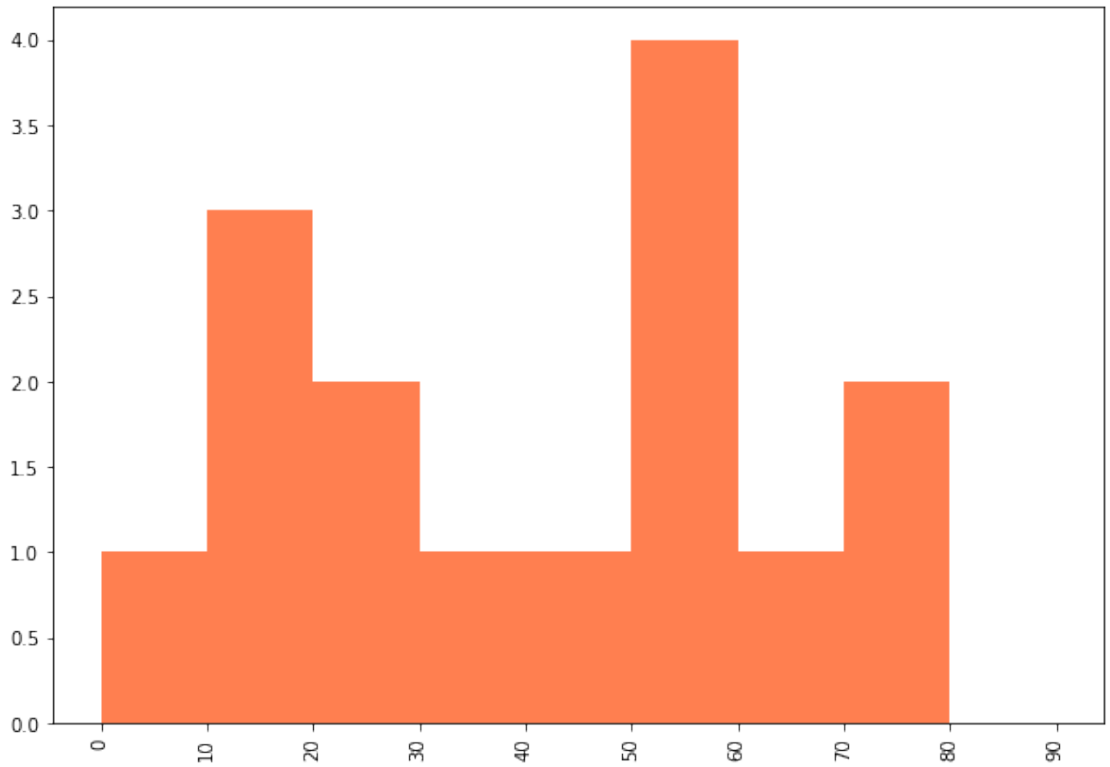
```
# Write a program to swap the key value pair for max and min values
## Eg if the dict is like this {‘a’:1,’b’:2,’c’:3}
### Output should be {a:3,b:2,c:1}

d = {'a':100, 'b':200, 'c':500 }

maxi = max(d.values())
mini = min(d.values())
```

```
for item in d :
    if d[item] == maxi:
        print('max item from dict :' , d[item])
        break

for j in d :
    if d[j]==mini:
        print('min item from dict :' , d[j])
        break

d[item] = mini
d[j] = maxi

print(d)
```

```
max item from dict : 500
min item from dict : 100
{'a': 500, 'b': 200, 'c': 100}
```

```
# Write a program to find histogram of a given set of numbers. Take
bin size from user.
## Print the result in the form of a dictionary


from matplotlib import pyplot as plt
import numpy as np


 # Creating dataset
a = np.array([62, 97, 15, 43, 56,
              73, 51, 54, 11,
              20, 51, 5, 79, 31,
              27, 10])

# Creating histogram, taking bin size from user
l = int(input('Enter the size of bins : '))
bins = [item for item in range(0,100,l)]
fig, ax = plt.subplots(figsize =(10, 7))
plt.xticks(bins, rotation ='vertical')
ax.hist(a, bins = bins, color = 'coral')

# Show plot
plt.xticks(visible = True)
plt.show()
```

```
Enter the size of bins : 10
```




```
# Write a function that accepts a string and returns the number of
upper case chars and lower case chars as a dictionary

string = input('Enter a string :')
d = {}
upper =0
lower =0

for item in string :
    if (item.isupper()) :
        upper = upper+1
    elif (item.islower()):
        lower = lower+1


d = {'Upper' : upper, 'Lower' : lower}
print(d)


Enter a string :Harry Potter fears none
{'Upper': 2, 'Lower': 18}

# Write a function that accepts a list of strings and performs Bag of
words and convert it to numerical vectors.

def bow(words) :
    vocab = []
```

```
    for i in words :
        vocab.extend(i.split())

    vocab = list(set(vocab))

    vector2d = []
    for w in words :
        vector = []

        for v in vocab :
            vector.append(w.count(v))
        vector2d.append(vector)
    return vector2d

words = ['Hello, how are you', 'I was waiting for you at the cafe last
night',
         'Are you planning to pursue MBA?', 'Hope you are working from
home', 'Lets meet someday']

bow(words)
```

```
[[0, 0, 0, 0, 0, 1, 0, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0,
0, 0],
 [1, 0, 0, 0, 0, 0, 0, 1, 0, 1, 0, 0, 0, 1, 0, 1, 1, 0, 1, 1, 1, 0, 1,
0, 0],
 [0, 1, 1, 0, 0, 0, 1, 0, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
0, 1],
 [0, 0, 0, 1, 1, 0, 0, 0, 0, 1, 0, 0, 1, 0, 0, 0, 0, 1, 0, 0, 0, 1, 0,
0, 0],
 [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0,
1, 0]]
```

```
# Write a dummy program that can perform login and registration using
a menu driven program

db = {}

def user_menu() :

    user_input = input('''
    1. Enter 1 to register
    2. Enter 2 for Login
    3. Enter 3 to exit
    ''')

    if user_input == '1' :
        register()
    elif user_input == '2' :
        login()
```

```
    elif user_input == '3' :
        print('Bye')
    else :
        print('Invalid Input. Please try again!')

def register() :
    name = input('Enter your name :')
    email = input('Enter your email :')
    password = input('Enter your password :')

    db[email] = [name, password]
    print('Registration Successful')
    print()
    user_menu()

def login() :
    email = input('Enter your email :')
    password = input('Enter your password :')
    flag = 0

    for d in db :
        if email ==d :
            flag = 1
            if password == db[d][1] :
                print('Welcome')
            else :
                print('Incorrect Password')
    if flag ==0 :
        print('Email not found')

user_menu()
```

```
    1. Enter 1 to register
    2. Enter 2 for Login
    3. Enter 3 to exit
    1
Enter your name :Anushka
Enter your email :a@gmail.com
Enter your password :expert
Registration Successful


    1. Enter 1 to register
    2. Enter 2 for Login
    3. Enter 3 to exit
    2
Enter your email :a@gmail.com
```

```
Enter your password :exp
Incorrect Password
```

```
### Write a program that accepts neighbors(set of 2D co-ordinates) and
a point(single 2D co-ordinate) and
## tells nearest neighbor(in terms of euclidean distance)

def knn(n, u):
    def calculate_ed(c1, c2):
        return((c1[0]-c2[0])**2 + (c1[1]-c2[1])**2) ** 0.5

    dist = []
    for i in n :
        dist.append(calculate_ed(u, i))

    n_index , distance = sorted(list(enumerate(dist)), key = lambda
x:x[1])[0]
    print('Nearest Neighbour is :' ,  n_index, 'at the distance of :
', distance)


n = [[89,90], [34,15], [70, 63], [11,56]]

u = [-7, 41]
knn(n, u)
```

```
Nearest Neighbour is : 3 at the distance of :  23.430749027719962
```

```
# Write a function that accepts a number and returns it's factorial.
You can not use any loop

#we will make use of recurssion here

def fact(num) :
    if num ==1:
        return 1
    else:
        return num*fact(num-1)


fact(3)
```

```
6
```

**We will add some more programs shortly, with OOPs concept.**

```
Till then.... HAPPY CODING :)
```