

```

a = " tyson "
b = " granger "
print("concatated string: ",a+b)
date = "15/01/2002"
print("spiltted characters: ",date.split('/'))

concatated string:   tyson  granger
spiltted characters:  ['15', '01', '2002']

```

Write a Python program to enter two integers and then perform all arithmetic operations on them.

```

a = int(input("enter first integer: "))
b = int(input("enter second integer: "))
print("addition: ",a+b)
print("subraction: ",a-b)
print("multiplication: ",a*b)
print("float division: ",a/b)
print("flood division: ",a//b)
print("division reminder: ",a%b)

```

```

enter first integer: 2
enter second integer: 5
addition:  7
subraction:  -3
multiplication:  10
float division:  0.4
flood division:  0
division reminder:  2

```

Write a Python program to enter two integers and then perform all arithmetic operations using float numbers

```

a = float(input("enter first float value: "))
b = float(input("enter second float value: "))
print("addition: ",a+b)
print("subraction: ",a-b)
print("multiplication: ",a*b)
print("float division: ",a/b)
print("flood division: ",a//b)
print("division reminder: ",a%b)

```

```

enter first float value: 2.5
enter second float value: 3.6
addition:  6.1
subraction:  -1.1
multiplication:  9.0
float division:  0.6944444444444444
flood division:  0.0
division reminder:  2.5

```

Write Python programs to print ASCII value of a character and character from an ASCII value.

```
# To convert character to a ASCII value
ch = input("enter any character: ")
print("The ASCII value of {}: {}".format(ch,ord(ch)))

# To convert ASCII value into a character
v = int(input("enter the ASCII value: "))
print("The ASCII character of {} is: {}".format(v,chr(v)))
```

```
enter any character: C
The ASCII value of C: 67
enter the ASCII value: 65
The ASCII character of 65 is: A
```

Write a Python program to swap two numbers using a temporary variable.

```
a1 = int(input("enter first integer value: "))
a2 = int(input("enter second integer value: "))
print("values before swapped are: ",a1, a2)
temp = a1
a1 = a2
a2 = temp
print("values after swapped are: ",a1, a2)
```

```
enter first integer value: 9
enter second integer value: 10
values before swapped are: 9 10
values after swapped are: 10 9
```

Write a Python program to calculate simple interest and compound interest

```
p = input("enter the principle amount: ")
t = input("enter the time period: ")
r = input("enter rate of interest value: ")
si = (int(p)*float(t)*float(r))/100
ci = int(p)* ((1 + float(r)/100)** int(t)-1)
print("simple interest value: ",si)
print("compound interest value: ",ci)
```

```
enter the principle amount: 12000
enter the time period: 6
enter rate of interest value: 5
simple interest value: 3600.0
compound interest value: 4081.147687500005
```

Write a program that prompts user to enter his first name and last name and then displays a message "Greetings!!!First name Last name"

```
first = input("enter your first name: ")
last = input("enter your last name: ")
print(' "Greetings!!!{} {}" '.format(first,last))
```

```
print(" \"Greetings!!!"+first+last+" \")
```

```
enter your first name: motamarri
enter your last name: sai
"Greetings!!!motamarri sai"
"Greetings!!!motamarrisai "
```

Write a program to calculate gross salary of an employee given his basic pay (to be entered by the user). HRA = 10% of basic pay, DA = 80% of basic pay. Gross salary = basic pay + basic pay * (HRA+DA).

```
print(" GROSS SALARY OF AN EMPLOYEE ")
bp = float(input("enter the basic pay value: "))
HRA = float(bp*0.10)
DA = float(bp*0.80)
gross_salary = float(bp + bp*(HRA + DA))
print("HRA: ",HRA)
print("DA: ",DA)
print("Gross salary: ",gross_salary)
```

```
GROSS SALARY OF AN EMPLOYEE
enter the basic pay value: 12000
HRA: 1200.0
DA: 9600.0
Gross salary: 129612000.0
```

Momentum is calculated as, $e = mc^2$, where m is the mass of the item and c is its velocity. Write a program that accepts an item's mass (in Kgs) and velocity (in m/s) and displays its momentum.

```
m = int(input("enter the mass of the item in kgs: "))
c = int(input("enter the velocity of the item in (m/s): "))
e = m*c**2
print("the momentum of the item is : ",e)
```

```
enter the mass of the item in kgs: 50
enter the velocity of the item in (m/s): 60
the momentum of the item is : 180000
```

Develop a Python program to take three float numbers as sides of a triangle and print the area of a triangle.

```
p = float(input("enter first integer value: "))
q = float(input("enter second integer value: "))
r = float(input("enter third integer value: "))
s = (p+q+r)/2
area = (s*(s-p)*(s-q)*(s-r))**0.5
print("area of the triangle is: ",area)
```

```
enter first integer value: 3
```

```

enter second integer value: 4
enter third integer value: 5
area of the triangle is: 6.0

```

Write a Python program to calculate area and perimeter of a circle.

```

r1 = float(input("enter the radius of the circle: "))
a5 = 3.14*r1*r1
perimeter = 2*3.14*r1
print("area of the circle: ",a5)
print("perimeter of the circle: ",perimeter)

```

```

enter the radius of the circle: 10
area of the circle: 314.0
perimeter of the circle: 62.800000000000004

```

Compare nested if-else statement with if-elif-else statement. Develop separate Python programs using the nested if-else and if-elif-else statements to check a year is a leap year or not.

```

year = int(input("enter the year: "))
if year%4 == 0:
    if year%100 == 0:
        if year%400 == 0:
            print("{} is a leap year.".format(year))
        else:
            print("{} is not a leap year.".format(year))
    else:
        print("{} is a leap year.".format(year))
else:
    print("{} is not a leap year.".format(year))

```

```

enter the year: 2024
2024 is a leap year.

```

```

year = int(input("enter a year: "))
if year%4 == 0:
    print("{} is a leap year.".format(year))
elif year%100 == 0:
    print("{} is not a leap year.".format(year))
elif year%400 == 0:
    print("{} is a leap year.".format(year))
else:
    print("{} is not a leap year.".format(year))

```

```

enter a year: 2032
2032 is a leap year.

```

Write Python programs to find smallest integer number between three integer numbers using nested if else and if-elif-else statement.

```

a = int(input("enter first number: "))
b = int(input("enter second number: "))
c = int(input("enter third number: "))
if a<b:
    if a<c:
        print("{} is a smallest number.".format(a))
    else:
        print("{} is a smallest number.".format(c))
else:
    if b<c:
        print("{} is a smallest number.".format(b))
    else:
        print("{} is a smallest number.".format(c))

```

```

enter first number: 5
enter second number: 9
enter third number: 10
5 is a smallest number.

```

```

a = int(input("enter first number: "))
b = int(input("enter second number: "))
c = int(input("enter third number: "))
if a<c and a<b:
    print(a,"is a smallest number.")
elif b<c:
    print(b,"is a smallest number.")
else:
    print(c,"is a smallest number.")

```

```

enter first number: 8
enter second number: 5
enter third number: 10
5 is a smallest number.

```

Write a Python program to take three integer numbers (perpendicular, base, and hypotenuse) and print whether these numbers form a right-angle triangle or not.

```

p = int(input("enter the number: "))
b = int(input("enter the number: "))
h = int(input("enter the number: "))
if p**2 + b**2 == h**2:
    print("it forms a right angle triangle.")
else:
    print("it doesn't form a right angle triangle.")

```

```

enter the number: 3
enter the number: 4
enter the number: 5
it forms a right angle triangle.

```

Develop a Python program to take three integer numbers as sides of a triangle and verify whether these numbers will form a triangle or not. If so, then print the area of a triangle.

```

a = int(input("enter first number: "))
b = int(input("enter second number: "))
c = int(input("enter third number: "))
s = (a+b+c)/2
area = (s*(s-a)*(s-b)*(s-c))**0.5
if ((a+b) <= c) or ((b+c) <= a) or ((c+a) <= b):
    print(" it cannot form a triangle. ")
else:
    print(" it forms a triangle. ")
    print(" area of a triangle: ",area)

```

```

enter first number: 3
enter second number: 4
enter third number: 5
it forms a triangle.
area of a triangle: 6.0

```

Write a program to enter a character to check whether it is a vowel or a consonant. If the character is in lowercase, convert it into uppercase, and if it is an uppercase character, convert it into lowercase.

```

ch = input(" enter the character: ")
if ch == 'a' or ch == 'e' or ch == 'i' or ch == 'o' or ch == 'u':
    print(ch,"is a vowel")
    print("vowel in upper case: ",ch.upper())
elif ch == 'A' or ch == 'E' or ch == 'I' or ch == 'O' or ch == 'U':
    print(ch,"is a vowel.")
    print("vowel in lower case: ",ch.lower())
else:
    print(ch,"is a consonant")

```

```

enter the character: a
a is a vowel
vowel in upper case: A

```

A company decides to give bonus to all its employees on Diwali. A 5% bonus on salary is given to the male workers and 10% bonus on salary to the female workers. Write a program to enter the salary of the employee and sex of the employee. If the salary of the employee is less than 10000/- then the employee gets an 2% bonus on salary. Calculate the bonus that has to be given to the employee and display the salary that the employee will get.

```

salary = int(input("enter the employee salary: "))
gender = input("enter the gender 'm' for male,'f' for female: ")
print("normal salary of an employee: ",salary)
if gender == 'M' or gender == 'm':
    if salary <= 10000:
        bonus = salary*0.02
        print("bonus on salary: ",bonus)
    else:
        bonus = salary*0.05
        print("bonus on salary: ",bonus)

```

```

    print("bonus on salary: ",bonus)
elif gender == 'F' or gender == 'f':
    if salary <= 10000:
        bonus = salary*0.02
        print("bonus on salary: ",bonus)
    else:
        bonus = salary*0.1
        print("bonus on salary: ",bonus)
else:
    print("input error ")
salary += bonus
print("total salary of employee with bonus: ",salary)

```

```

enter the employee salary: 40500
enter the gender 'm' for male,'f' for female: m
normal salary of an employee: 40500
bonus on salary: 2025.0
total salary of employee with bonus: 42525.0

```

Write a program to enter the marks of a student in four subjects. Then calculate the total and aggregate, and display the grade obtained by the student. (aggregate > 75% : Distinction, 60% <= aggregate < 75% : First Division, 50% <= aggregate < 60% : Second Division, 40% <= aggregate < 50% : Third Division, Else Fail).

```

a = int(input("enter your roll number: "))
print("student roll number: ",a)
b1 = float(input("enter marks of english: "))
b2 = float(input("enter marks of BEE: "))
b3 = float(input("enter marks of C lang: "))
b4 = float(input("enter marks of peripherals: "))
sum = b1 + b2 + b3 + b4
agg = (sum/400)*100
print("aggregate percentage: ",agg)
if agg >= 75:
    print(a," = DISTINCTION")
elif 60 <= agg < 75:
    print(a," = FIRST DIVISION")
elif 50 <= agg < 60:
    print(a," = SECOND DIVISION")
elif 40 <= agg < 50:
    print(a," = THIRD DIVISION")
else:
    print(a," = FAIL")

```

```

enter your roll number: 1101
student roll number: 1101
enter marks of english: 90
enter marks of BEE: 80
enter marks of C lang: 98
enter marks of peripherals: 75
aggregate percentage: 85.75
1101 = DISTINCTION

```

Write a Python program to calculate real roots of a quadratic equation.

```

i = int(input("first value: "))
j = int(input("second value: "))
k = int(input("third value: "))
d = (j**2) - (4*i*k)
r1 = (-j + (d**0.5))/(2*i)
r2 = (-j - (d**0.5))/(2*i)
if d > 0:
    print("real roots: ",r1,r2)
elif d < 0:
    print("complex roots: ",r1,r2)
else:
    print("roots are real and equal: ",(-j/(2*i)),(-j/(2*i)))

```

```

first value: 1
second value: -2
third value: 1
roots are real and equal:  1.0 1.0

```

Write a Python program to calculate parking charges of a vehicle. Enter the type of vehicle as a character (like c for car, b for bus, etc.) and number of hours, then calculate charges as given below: Truck/bus - 20/- per hour, Car – 10/- per hour, Scooter/Cycle/Motor cycle – 5/- per hour.

```

t = input("enter type of vehicle as a character: ")
time = int(input("enter no.of hours for parking: "))
if t == 't' or t == 'b':
    print("parking charges: ",time*20)
elif t == 'c':
    print("parking charges: ",time*10)
elif t == 's' or t == 'c' or t == 'm':
    print("parking charges: ",time*5)
else:
    print("input error")

```

```

enter type of vehicle as a character: b
enter no.of hours for parking: 6
parking charges:  120

```

Develop a Python program that determines whether a digit, uppercase or a lowercase character was entered.

```

p = input("enter a character or a digit: ")
if p.islower():
    print("it is a lower case character")
elif p.isupper():
    print("it is a upper case character")
elif p.isdigit():
    print("it is a digit")
else:
    print("input error")

```



```
enter a character or a digit: s
it is a lower case character
```

Write a Python program to sum the series $12/1 + 22/2 + 32/3 + \dots + n^3/n$ using for loop.

```
n = int(input("enter a number: "))
sum = 0
for i in range(1,n+1):
    sum = sum + (i**2)/i
print("sum of series: ",sum)
```

```
enter a number: 5
sum of series: 15.0
```

Write a Python program that prints all the prime numbers in the range (1, n).

```
n = int(input("enter a number: "))
for i in range(2,n+1):
    prime = 0
    for j in range(1,i+1):
        if i%j == 0:
            prime += 1
    if prime == 2:
        print("prime number: ",i)
```

```
enter a number: 10
prime number: 2
prime number: 3
prime number: 5
prime number: 7
```

Write a program that prompts users to enter numbers. Once the user enters -1, it displays the count, sum, and average of even numbers and that of odd numbers.

```
even,odd,i,sum1,sum2 = [0 for i in range(5)]
while True:
    p = int(input("enter a number: "))
    if p == -1:
        break
    elif p%2 == 0:
        even = even + 1; sum1 += p
    else:
        odd += 1; sum2 += p
    i = i + 1
print("count value: ",i)
print("even number count: ",even)
print("odd number count: ",odd)
print("average of even numbers: ",sum1/even)
print("average of odd numbers: ",sum2/odd)
```

```
enter a number: 2
```

```

enter a number: 1
enter a number: 1
enter a number: -1
count value: 3
even number count: 1
odd number count: 2
average of even numbers: 2.0
average of odd numbers: 1.0

```

Write a Python program to print prime factors of a number.

```

i = 1; n = int(input("enter a number: "))
while i <= n:
    count = 0
    if n%i == 0:
        j = 1
        while j <= i:
            if i%j == 0:
                count += 1
            j += 1
        if count == 2:
            print(i,"is a prime factor of given number")
    i += 1

```

```

enter a number: 14
2 is a prime factor of given number
7 is a prime factor of given number

```

Write a program to display the cos(x) and sin(x) value where x ranges from 0 to 360 in steps of 15.

```

from math import sin,cos,pi
print("cosine values from 0 to 360: ")
for i in range(0,361,15):
    print("cosine value of",i,"is",cos((i*pi)/180))
print()
print("sine values from 0 to 360: ")
for i1 in range(0,361,15):
    print("sine value of",i1,"is",sin((i1*pi)/180))

```

```

cosine values from 0 to 360:
cosine value of 0 is 1.0
cosine value of 15 is 0.9659258262890683
cosine value of 30 is 0.8660254037844387
cosine value of 45 is 0.7071067811865476
cosine value of 60 is 0.5000000000000001
cosine value of 75 is 0.25881904510252074
cosine value of 90 is 6.123233995736766e-17
cosine value of 105 is -0.25881904510252085
cosine value of 120 is -0.4999999999999998
cosine value of 135 is -0.7071067811865475
cosine value of 150 is -0.8660254037844387
cosine value of 165 is -0.9659258262890682
cosine value of 180 is -1.0

```

```

cosine value of 195 is -0.9659258262890684
cosine value of 210 is -0.8660254037844386
cosine value of 225 is -0.7071067811865477
cosine value of 240 is -0.5000000000000004
cosine value of 255 is -0.25881904510252063
cosine value of 270 is -1.8369701987210297e-16
cosine value of 285 is 0.25881904510252113
cosine value of 300 is 0.5000000000000001
cosine value of 315 is 0.7071067811865474
cosine value of 330 is 0.8660254037844384
cosine value of 345 is 0.9659258262890683
cosine value of 360 is 1.0

```

```

sine values from 0 to 360:
sine value of 0 is 0.0
sine value of 15 is 0.25881904510252074
sine value of 30 is 0.49999999999999994
sine value of 45 is 0.7071067811865475
sine value of 60 is 0.8660254037844386
sine value of 75 is 0.9659258262890683
sine value of 90 is 1.0
sine value of 105 is 0.9659258262890683
sine value of 120 is 0.8660254037844387
sine value of 135 is 0.7071067811865476
sine value of 150 is 0.49999999999999994
sine value of 165 is 0.258819045102521
sine value of 180 is 1.2246467991473532e-16
sine value of 195 is -0.25881904510252035
sine value of 210 is -0.5000000000000001
sine value of 225 is -0.7071067811865475
sine value of 240 is -0.8660254037844384
sine value of 255 is -0.9659258262890683
sine value of 270 is -1.0
sine value of 285 is -0.9659258262890682
sine value of 300 is -0.8660254037844386
sine value of 315 is -0.7071067811865477
sine value of 330 is -0.5000000000000004
sine value of 345 is -0.2588190451025207
sine value of 360 is -2.4492935982947064e-16

```

Write an interactive program to read an integer. If it is positive then display the corresponding binary representation of that number. The user must enter 999 to stop. In case the user enters a negative number, then ignore that input and ask the user to re-enter any different number.

```

while True:
    p = int(input("enter a number: "))
    if p < 0:
        continue
    if p == 999:
        break
    print("binary number: ",bin(p))

```

```

enter a number: 10929
binary number: 0b10101010110001
enter a number: 999

```

. Write a program that accepts any number and prints the number of digits in that number. Expand the program to print the reverse of that number.

```
p = int(input("enter a number: "));i = 0;r = 0
while p!=0:
    rem = p%10
    r = r*10 + rem
    p = p//10
    i = i + 1
print("no.of digits in a number: ",i)
print("reversed number: ",r)
```

```
enter a number: 54
no.of digits in a number:  2
reversed number:  45
```

Write a simple Python program that displays the following powers of 2. one per line: 2¹ , 2² , 2³ , 2⁴ , 2⁵ , 2⁶ , 2⁷ , 2⁸ .

```
from math import pow
t = int(input("enter a number: "))
for i in range(1,t+1):
    print("powers of 2 are: ",int(pow(2,i)),sep = "")
```

```
enter a number: 8
powers of 2 are: 2
powers of 2 are: 4
powers of 2 are: 8
powers of 2 are: 16
powers of 2 are: 32
powers of 2 are: 64
powers of 2 are: 128
powers of 2 are: 256
```

Write a Python program using while loop to calculate factorial of a number.

```
t = int(input("enter a number: ")); f = 1
for i in range(1,t+1):
    f = f * i
print("factorial: ",f)
```

```
enter a number: 10
factorial:  3628800
```

Write a Python program to print Fibonacci series up to step n.

```
t = int(input("enter a number: "));a = 0;b = 1
print("fibonacci series: ",a,b,sep = ' ',end = ' ')
for i in range(t-2):
    a,b = b,a+b
```

```
print(b,end = ' ')
```

```
enter a number: 10
fibonacci series: 0 1 1 2 3 5 8 13 21 34
```

Make use of while loop to develop a Python program to check a number is a strong number or not.

```
def fact(n):
    if n!=0:
        return n*fact(n-1)
    else:
        return 1
sum = 0
x = int(input("enter a number: "));p = x
while x!=0:
    c = x%10
    sum = sum + fact(c)
    x = x//10
if sum == p:
    print(" it's a strong number ")
else:
    print(" it's not a strong number ")
```

```
enter a number: 145
it's a strong number
```

Develop a Python program to check a number is a perfect number or not using while loop.

```
c = int(input("enter a number: ")); p = c; sum = 0
i = 1
while i!=c:
    if c%i == 0:
        sum += i
    i += 1
if sum == p:
    print(" it's a perfect number ")
else:
    print(" it's not a perfect number ")
```

```
enter a number: 28
it's a perfect number
```

Develop a Python program to check a number is an Armstrong number or not using for loop.

```
import math
p = int(input("enter a number: ")); x = p; sum = 0
while p!=0:
    last = p%10
    sum = sum + math.pow(last,3)
    p = p//10
```

```

if sum == x:
    print("it's an armstrong number")
else:
    print("it's not an armstrong number")

```

```

enter a number: 153
it's an armstrong number

```

Write a Python program to calculate GCD of two integer numbers.

```

def gcd(x,y):
    if x < y:
        x,y = y,x
    while y!=0:
        x,y = y,x%y
    return x

a,b = [int(x) for x in input("enter a number: ").split()]
print("G.C.D of 2 numbers: ",gcd(a,b))

```

```

enter a number: 2 4
G.C.D of 2 numbers:  2

```

Write python programs to print the following patterns.

```

z = int(input("enter a number: "))
for i in range(1,z+1):
    for j in range(0,i):
        print(i,end = ' ')
    print()

```

```

enter a number: 5
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5

```

```

z = int(input("enter a number: "))
for i in range(1,z+1):
    for j in range(1,i+1):
        print(j,end = ' ')
    print()

```

```

enter a number: 5
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5

```

```

z = int(input("enter a number: "))
for i in range(1,z+1):

```

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

enter a number: 5

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

pyramaid

```
p = 1
for x in range(5,0,-1):
    for y in range(x,0,-1):
        print(" ",end = ' ')
    print(""*p)
    p += 2
```

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

```
for i in range(1,6):
    for j in range(5,i,-1):
        print(" ",end = " ")
    for z in range(1,i+1):
        print(z,end = " ")
    print()
```

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

```
for x in range(5,0,-1):
    for y in range(x,5):
        print(" ",end = " ")
    for z in range(1,x+1):
        print(z,end = " ")
    print()
```

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

✓ 8s completed at 6:31 PM

● ✕