Python
Practical File

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Start a Python interpreter and use it as a Calculator.

```
Python 3.12.7 (main, Oct  1 2024, 11:15:50) [GCC 14.2.1 20240910] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> 1+1
2
>>> 2-1
1
>>> 1*9
9
>>> 1/9
0.1111111111111111
>>> 1//9
0
>>>
```

Write Python programs to demonstrate the following:

i) input( ) ii) print( ) iii) ‘sep’ attribute iv) ‘end’ attribute

```
item1 = input()
item2 = input()

sep = input(“Enter seperator”)
end = input(“Enter the end character”)

print(item1, item2, sep = sep, end = end)
```

Write a program to calculate compound interest when principal, rate and number of periods are given

```
p = input()
r = input()
t = input()

a = p * (1 + r / 100) ** t
```

```
si = a - p

print(si)
```

Write a program to demonstrate the working of following functions in Python. i) id( ) ii) type( )

```
a = input()

print(id(a))
print(type(a))
```

Write a program to enter length and breadth and calculate area of rectangle

```
l = eval(input())
b = eval(input())

print("area = ", l * b)
```

Write a program to enter radius of circle and calculate area of circle

```
r = eval(input())

print("area = ", 3.1416 * r ** 2)
```

Write a program to get user input with a message

```
Name = input()

print(f"Hello, {Name}")
```

Write a program to get integer input in python

```
num = int(input())

print("The number is ", num)
```

Write a program to get multiple integer input in python

```
num1 = int(input())
num2 = int(input())
num3 = int(input())
num4 = int(input())
num5 = int(input())

print(num1, num2, num3, num4, num5)
```

Write a program to enter name, marks of 5 subjects and calculate total and percentage of students

```
sub1 = int(input())
sub2 = int(input())
sub3 = int(input())
sub4 = int(input())
sub5 = int(input())

total = sub1 + sub2 + sub3 + sub4 + sub5
percentage = total / 1.25

print(f“Total is {total} and percentage is {percentage}”)
```

Write a program to enter distance in feet and convert it into inches

```
feet = eval(input())
inches = feet / 12

print(“equiv in inches is :”, inches)
```

Write a program to enter value of temperature in Fahrenheit and convert it into Celsius

```
fahrenheit = float(input("Enter the temperature in Fahrenheit: "))
celsius = (fahrenheit - 32) * 5/9
print(f"{fahrenheit} degrees Fahrenheit is equal to {celsius:.2f}
degrees 1  Celsius.")
```

Write a program to enter radius and height of cylinder and calculate the volume

```
import math

radius = float(input())
height = float(input())

volume = math.pi * radius**2 * height

print(f"The volume of the cylinder is: {volume}")
```

Write a program to read name, address, email and phone number of a person through keyboard and print the details

```
name = input("Enter your name: ")
address = input("Enter your address: ")
email = input("Enter your email address: ")
phone_number = input("Enter your phone number: ")

print("\nYour details are:")
print("Name:", name)
print("Address:", address)
print("Email:", email)
print("Phone Number:", phone_number)
```

Write a program to demonstrate various base conversion functions

```
num = int(input("Enter a number: "))
print("Binary:", bin(num))
print("Octal:", oct(num))
print("Hexadecimal:", hex(num))
print("Decimal from binary:", int(bin(num), 2))
print("Decimal from octal:", int(oct(num), 8))
print("Decimal from hexadecimal:", int(hex(num), 16))
```

Write a program to demonstrate various type conversion functions

```
x=10;y=float(x);print(y)
```

```
x=10.5;y=int(x);print(y)
x="10";y=int(x);print(y)
x=10;y=str(x);print(y)
x="10.5";y=float(x);print(y)
x=10.5;y=str(x);print(y)
```

Demonstrate the following Conditional statements in Python with suitable examples.

i) if statement ii) if else statement iii) if – elif – else statement.

```
x = 10
if x > 5:
    print("x is greater than 5")

x = 5
if x > 5:
    print("x is greater than 5")
else:
    print("x is less than or equal to 5")

x = 5
if x > 5:
    print("x is greater than 5")
else:
    print("x is less than or equal to 5")
```

Write a program to enter 2 numbers and print the largest number

```
num1 = int(input("Enter first number: "))
num2 = int(input("Enter second number: "))

if num1 > num2:
  print(num1, "is larger")
else:
  print(num2, "is larger")
```

Write a program to enter 3 number and print the largest number

```
num1 = int(input("Enter first number: "))
```

```
num2 = int(input("Enter second number: "))
num3 = int(input("Enter third number: "))

if num1 ≥ num2 and num1 ≥ num3:
  print(num1, "is the largest number")
elif num2 ≥ num1 and num2 ≥ num3:
  print(num2, "is the largest number")
else:
  print(num3, "is the largest number")
```

Input age of a person and print whether the person is eligible for voting or not

```
age = int(input("Enter your age: "))

if age ≥ 18:
  print("You are eligible to vote.")
else:
  print("You are not eligible to vote.")
```

Write a program to enter any age and check it is teenage or not

```
age = int(input("Enter your age: "))

if age ≥ 13 and age ≤ 19:
  print("You are a teenager.")
else:
  print("You are not a teenager.")
```

Write a program to enter monthly sale of salesman and give him commission i.e. if the monthly sale is more than 500000 then commission will be 10% of monthly sale otherwise 5%

```
sale = int(input("Enter monthly sale: "))

if sale > 500000:
  commission = sale * 0.1
else:
  commission = sale * 0.05

print("Commission is:", commission)
```

Write a program to input any year and check it is a leap year or not

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

if (year % 4 == 0) and (year % 100 ≠ 0) or (year % 400 == 0):
  print(year, "is a leap year")
else:
  print(year, "is not a leap year")
```

Write a program to input any number and print absolute value of that number

```
num = int(input("Enter a number: "))

if num < 0:
  num = -num

print("Absolute value:", num)
```

Write a program to input any number and check it is positive or negative number

```
num = int(input("Enter a number: "))

if num > 0:
  print(num, "is a positive number")
elif num < 0:
  print(num, "is a negative number")
else:
  print(num, "is 1  zero”)
```

Input temperature of water and print its physical state

```
temp = float(input("Enter the temperature of water in Celsius: "))

if temp < 0:
  print("Water is in solid state (ice)")
elif temp == 0:
  print("Water is in solid and liquid state (freezing point)")
elif temp > 0 and temp < 100:
  print("Water is in liquid state")
```

```
elif temp == 100:
  print("Water is in liquid and gaseous state (boiling point)")
else:
  print("Water is in gaseous state (steam)")
```

Input 3 sides of a triangle and print the type of triangle- equilateral, scalene, isosceles

```
side1 = float(input())
side2 = float(input())
side3 = float(input())

if side1 == side2 == side3:
    print("The triangle is equilateral.")
elif side1 == side2 or side2 == side3 or side1 == side3:
    print("The triangle is isosceles.")
else:
    print("The triangle is scalene.")
```

Write a program to calculate and print roots of a quadratic equation ax^2+bx+c=0 (a!=0)

```
import math

a = float(input("Enter the coefficient a: "))
b = float(input("Enter the coefficient b: "))
c = float(input("Enter the coefficient c: "))

discriminant = b**2 - 4*a*c

root1 = (-b + math.sqrt(discriminant)) / (2*a)
root2 = (-b - math.sqrt(discriminant)) / (2*a)

print("Root 1 =", root1)
print("Root 2 =", root2)
```

Write a program to input day number and print corresponding day name for e.g if input is 1 output should be Sunday and so on

```
day_number = int(input())

if day_number == 1:
    print("Sunday")
```

```
elif day_number == 2:
    print("Monday")
elif day_number == 3:
    print("Tuesday")
elif day_number == 4:
    print("Wednesday")
elif day_number == 5:
    print("Thursday")
elif day_number == 6:
    print("Friday")
elif day_number == 7:
    print("Saturday")
```

Write a program to enter any number and find its factorial

```
num = int(input())

factorial = 1

for i in range(1, num + 1):
    factorial *= i
print("Factorial of", num, "is", factorial)
```

Write a program to print the following Fibonacci series 0,1,1,2,3,5,8....n terms

```
n = int(input())


fib1, fib2 = 0, 1
print(fib1, fib2, end=" ")
for i in range(2, n):
    fib3 = fib1 + fib2
    print(fib3, end=" ")
    fib1, fib2 = fib2, fib3
```

Write a program to enter 10 numbers and find the sum and average

```
sum = 0
for i in range(10):
    num = int(input("Enter number " + str(i+1) + ": "))
    sum += num

average = sum / 10
```

```
print("Sum of the numbers:", sum)
print("Average of the numbers:", average)
```

Write a program to enter lower limit and upper limit and find the sum of all odd and even numbers between the range separately

```
lower_limit = int(input("Enter the lower limit: "))
upper_limit = int(input("Enter the upper limit: "))

even_sum = 0
odd_sum = 0

for num in range(lower_limit, upper_limit + 1):
    if num % 2 == 0:
        even_sum += num
    else:
        odd_sum += num

print("Sum of even numbers:", even_sum)
print("Sum of odd numbers:", odd_sum)
```

Write a program to enter any number and find its reverse

```
num = int(input())
reverse = 0

while num > 0:
    digit = num % 10
    reverse = reverse * 10 + digit
    num //= 10

print("Reverse of the number:", reverse)
```

Write a program to enter any number and a digit and count how many times digit is in the number

```
import math

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

if num == 0:
    digits = 1
else:
```

```
    digits = int(math.log10(num)) + 1

print("The number of digits in the number is:", digits)
```

Write a program to enter any number and check it is Armstrong or not

```
num = int(input())
original_num = num
sum = 0

while num > 0:
    digit = num % 10
    sum += digit ** 3
    num //= 10

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

Write a program to enter any number and check it is palindrome or not

```
num = int(input("Enter a number: "))
original_num = num
reverse = 0

while num > 0:
    digit = num % 10
    reverse = reverse * 10 + digit
    num //= 10

if original_num == reverse:
    print(original_num, "is a palindrome number")
else:
    print(original_num, "is not a palindrome number")
```

Write a program to enter numbers as long as user wishes to enter and find the sum highest and lowest number entered by user

```
numbers = []
```

```
while True:
    num = int(input("Enter a number (or 0 to stop): "))
    if num == 0:
        break
    numbers.append(num)

if len(numbers) == 0:
    print("No numbers entered.")
else:
    sum_of_numbers = sum(numbers)
    highest_number = max(numbers)
    lowest_number = min(numbers)

    print("Sum of the numbers:", sum_of_numbers)
    print("Highest number:", highest_number)
    print("Lowest number:", lowest_number)
```

Write a program to input any string and count how many vowels are in it

```
string = input()
vowels = "aeiouAEIOU"
count = 0

for char in string:
    if char in vowels:
        count += 1

print("Number of vowels:", count)
```

Write a program to read string and print in reverse order

```
string = input("Enter a string: ")
reversed_string = string[::-1]
print("Reversed string:", reversed_string)
```

Write a program which replaces all vowels in the string with ‘*’

```
string = input("Enter a string: ")
vowels = "aeiouAEIOU"

new_string = ""
for char in string:
    if char in vowels:
```

```
        new_string += "*"
    else:
        new_string += char

print("New string:", new_string)
```

Write a program to check if a string is a palindrome or not

```
string = input("Enter a string: ")
reversed_string = string[::-1]

if string == reversed_string:
    print("The string is a palindrome.")
else:
    print("The string is not 1  a palindrome.")
```

Write a program to enter string and count how many uppercase, lowercase, digits, words present in it

```
string = input("Enter a string: ")

uppercase_count = 0
lowercase_count = 0
digit_count = 0
word_count = 1  # Assuming at least one word

for char in string:
    if char.isupper():
        uppercase_count += 1
    elif char.islower():
        lowercase_count += 1
    elif char.isdigit():
        digit_count += 1
    elif char.isspace():
        word_count += 1

print("Number of uppercase letters:", uppercase_count)
print("Number of lowercase letters:", lowercase_count)
print("Number of digits:", digit_count)
print("Number of words:", word_count)
```

Write a program to enter string and find the number of occurrences of any word

```
string = input("Enter a string: ")
word = input("Enter the word to search: ")

words = string.split()
count = words.count(word)

print("The word", word, "appears", count, "times in the string.")
```

Demonstrate the following control transfer statements in python with suitable examples. i)break ii) continue

```
# i) break
for i in range(1, 11):
    if i == 5:
        break
    print(i)

# ii)
for i in range(1, 11):
    if i % 2 ≠ 0:
        continue
    print(i)
```