

## 1. Python program to determine all data types of variable

### Input:-

```
input = input('Enter anything...')  
type = type(input)
```

```
def typeof():  
    if True:  
        try:  
            integer = int(input)  
            print("The input type is integer.")  
        except ValueError:  
            print("The input type is not an integer.")  
        try:  
            flt = float(input)  
            print("The input type is float.")  
        except ValueError:  
            print("The input type is not a float.")  
        try:  
            string = str(input)  
            print("The input type is a string.")  
        except ValueError:  
            print("The input type is not a string")
```

typeof()

### Output:-

```
Enter anything...aditya chauhan  
The input type is not an integer.  
The input type is not a float.  
The input type is a string.  
> |
```

## 2. Python program to demonstrate Numeric Literals and Binary Literals.

### Input :-

```
#Numeric Literals
# Integer literal

# Binary Literals
a = 0b10100
# Decimal Literal
b = 50
# Octal Literal
c = 0o320
# Hexadecimal Literal
d = 0x12b
print(a, b, c, d)

# Float Literal
e = 24.8
f = 45.0
print(e, f)

#Complex literals
z = 7 + 5j
# real part is 0 here.
k = 7j
print(z, k)
#binary literals
number = 0b1001100110001000110101110
print(number)
```

### Output :-

```
20 50 208 299
24.8 45.0
(7+5j) 7j
20124078
> |
```

### 3. Demonstrate the python program to show literals collection.

**Input: -**

# List literals

```
number = [1, 2, 3, 4, 5]
```

```
name = ['Python', 'Programming', 'Language', 2]
```

```
print(number)
```

```
print(name)
```

# Tuple literals

```
even_number = (2, 4, 6, 8)
```

```
odd_number = (1, 3, 5, 7)
```

```
print(even_number)
```

```
print(odd_number)
```

# Dict literals

```
alphabets = {'a': 'apple', 'b': 'ball', 'c': 'cat'}
```

```
information = {'name': 'Python', 'age': 30}
```

```
print(alphabets)
```

```
print(information)
```

# Set literals

```
vowels = {'a', 'e', 'i', 'o', 'u'}
```

```
fruits = {"Australia", "Bangkok", "Calcutta"}
```

```
print(vowels)
```

```
print(fruits)
```

## Output:-

```
[1, 2, 3, 4, 5]
['Python', 'Programming', 'Language', 2]
(2, 4, 6, 8)
(1, 3, 5, 7)
{'a': 'apple', 'b': 'ball', 'c': 'cat'}
{'name': 'Python', 'age': 30}
{'i', 'u', 'a', 'o', 'e'}
{'Australia', 'Bangkok', 'Culcutta'}
> |
```

**4. Python program to calculate area of circle by using mathematical function.  
( Demonstrate all the three methods of executing a program).**

**Input: -**

```
from math import pi
```

```
dia = float(input("Enter the value of diameter: "))
```

```
print("the area of circle with diameter " + str(dia) + " is: " + str(pi* (dia/2)**2))
```

**Output:-**

```
Enter the value of diameter: 26
the area of circle with diameter 26.0 is: 530.929158456675
>
```

## 5. Python Program to find square root and factorial of number by using mathematical functions.

**Input: -**

```
import math

sqrt = int(input('Enter the number of which you want to find square root of: '))
factorial = int(input('Enter the number of which you want to find factorial of: '))
print('The square root of',sqrt,'is',math.sqrt(sqrt))
print('The factorial of',factorial,'is',math.factorial(factorial))
```

**Output: -**

```
Enter the number of which you want to find square root of: 20
Enter the number of which you want to find factorial of: 10
The square root of 20 is 4.47213595499958
The factorial of 10 is 3628800
> |
```

## 6. Python program to find exponentiation of a number

**Input: -**

```
base = int(input('Enter the value of base: '))
```

```
power = int(input('Enter the value of power: '))
```

```
print("The value of number with base =",base,"and power =",power,"is:  
",pow(base,power))
```

**Output:-**

```
Enter the value of base: 3
Enter the value of power: 6
The value of number with base = 3 and power = 6 is:  729
> |
```

## 7. Write Python code to show the use of all math function.

**Input: -**

```
import math
print("Use of sqrt")
print(math.sqrt(6))
print("\n")
print("Use of floor")
print(math.floor(1.2))
print("\n")
print("Use of factorial")
print(math.factorial(2))
print("\n")
print("Use of gcd")
print(math.gcd(5,15))
print("\n")
print("Use of fabs")
print(math.fabs(2))
print("\n")
print("Use of copysign")
print(math.copysign(5,-5))
```

**Output:-**



```
Use of sqrt  
2.449489742783178
```

```
Use of floor  
1
```

```
Use of factorial  
2
```

```
Use of gcd  
5
```

```
Use of fabs  
2.0
```

```
Use of copysign  
-5.0
```

```
> |
```