

1. write a program to demonstrate basic datatype in python:

```
a=10  
b="Python"  
c = 10.5  
d=2.14j  
e=True  
print("Data type of Variable a :",type(a))  
print("Data type of Variable b :",type(b))  
print("Data type of Variable c :",type(c))  
print("Data type of Variable d :",type(d))  
print("Data type of Variable e :",type(e))
```

Output:

```
Data type of Variable a : <class 'int'>  
Data type of Variable b : <class 'str'>  
Data type of Variable c : <class 'float'>  
Data type of Variable d : <class 'complex'>  
Data type of Variable e : <class 'bool'>
```

2. Create a list and perform the following methods.

a) insert() b) remove() c) append() d) pop() e) clear()

```
a=[1,3,5,6,7,4,'hello']
```

```
print(a)
```

```
#insert()
```

```
a.insert(3,20)
```

```
print(a)
```

```
#remove()
```

```
a.remove(7)
```

```
print(a)
```

```
#append()
```

```
a.append('hi')
```

```
print(a)
```

```
c=len(a)
```

```
print(c)
```

```
#pop()
```

```
a.pop()
```

```
print(a)
```

```
a.pop(6)
```

```
print(a)
```

```
# clear()
```

```
a.clear()
```

```
print(a)
```

output:

```
[1, 3, 5, 6, 7, 4, 'hello']
```

```
[1, 3, 5, 20, 6, 7, 4, 'hello']
```

```
[1, 3, 5, 20, 6, 4, 'hello']
```

```
[1, 3, 5, 20, 6, 4, 'hello', 'hi']
```

```
8
```

```
[1, 3, 5, 20, 6, 4, 'hello']
```

```
[1, 3, 5, 20, 6, 4]
```

```
[]
```

3. Create a tuple and perform the following methods.

a) Add items b) len() c) Check for item in tuple d) Access items

```
#creating a tuple
rainbow=('v','i','b','g','y','o','r')
print(rainbow)
colour=('violet','blue','green','yellow','orange','red')
print(colour)
# Add items in tuples
rainbow_colour=rainbow+colour
print(rainbow_colour)
#length of the tuple
c=len(rainbow_colour)
print(c)
#Access items in tuple
print("rainbow[2]:",rainbow[2])
"""rainbow[1:3] means all the items in rainbow tuple
starting from an index value of 1 up to an index value of 4"""
print("rainbow[1:3]",rainbow[1:3])
print("rainbow[0:4]",rainbow[0:4])
```

output:

```
('v', 'i', 'b', 'g', 'y', 'o', 'r')
('violet', 'blue', 'green', 'yellow', 'orange', 'red')
('v', 'i', 'b', 'g', 'y', 'o', 'r', 'violet', 'blue', 'green', 'yellow', 'orange', 'red')
13
rainbow[2]: b
rainbow[1:3] ('i', 'b')
rainbow[0:4] ('v', 'i', 'b', 'g')
```

4. Create a dictionary and apply the following methods.

- 1. Print the dictionary items**
- 2. Access items**
- 3. Use get()**
- 4. Change Values**
- 5. Use len()**

#Source code:

creating a dictionary

```
college={'name': "QIS", 'code': "INDIA",'pincode': 560050 }
```

```
print(college)
```

#adding items to dictionary

```
college["location"] = "IBP"
```

```
print(college)
```

#changing values of a key

```
college["location"] = "vijayawada"
```

```
print(college)
```

#know the length using len()

```
print('length of college is:',len(college))
```

#Access items

```
print('college['name']:',college['name'])
```

use get ()

```
x=college.get('pincode')
```

```
print(x)
```

#to copy the same dictionary use copy()

```
mycollege= college.copy()
```

```
print(mycollege)
```

Output:

```
{'name': 'QIS', 'code': 'INDIA', 'pincode': 560050}
```

```
{'name': 'QIS', 'code': 'INDIA', 'pincode': 560050, 'location': 'IBP'}
```

```
{'name': 'QIS', 'code': 'INDIA', 'pincode': 560050, 'location': 'vijayawada'}
```

```
length of college is: 4
```

```
college['name']: QIS
```

```
560050
```

```
{'name': 'QIS', 'code': 'INDIA', 'pincode': 560050, 'location': 'vijayawada'}
```

5. Write a program to create a menu with the following options

1. TO PERFORM ADDITION 2. TO PERFORM SUBTRACTION

3. TO PERFORM MULTIPLICATION 4. TO PERFORM DIVISION

Accepts users input and perform the operation accordingly. Use functions with arguments.

```
#print("Program to create a menu with the following options")
```

```
#1. TO PERFORM ADDITION
```

```
#2. TO PERFORM SUBTRACTION
```

```
#3. TO PERFORM MULTIPLICATION
```

```
#4. TO PERFORM DIVISION
```

```
def add(n1,n2):
```

```
    return n1+n2
```

```
def sub(n1,n2):
```

```
    return n1-n2
```

```
def mul(n1,n2):
```

```
    return n1*n2
```

```
def div(n1,n2):
```

```
    return n1/n2
```

```
print("Welcome to the Arithmetic Program")
```

```
choice =1
```

```
while(choice!=0):
```

```
    x = int(input(" Enter the first number\n"))
```

```
    y = int(input(" Enter the second number\n"))
```

```
    print("1. TO PERFORM ADDITION")
```

```
    print("2. TO PERFORM SUBTRACTION")
```

```
    print("3. TO PERFORM MULTIPLICATION")
```

```
    print("4. TO PERFORM DIVISION")
```

```
    print("0. To Exit")
```

```
    choice = int(input("Enter your choice"))
```

```
    if choice == 1:
```

```
    print(x, "+" ,y , "=" ,add(x,y))
elif choice == 2:
    print(x, "-" ,y , "=" ,sub(x,y))
elif choice == 3:
    print(x, "*" ,y , "=" ,mul(x,y))
elif choice == 4:
    print(x, "%" ,y , "=" ,div(x,y))
elif choice ==0:
    print("Exit")
else: print("Invalid Choice");
```

output:

Welcome to the Arithmetic Program

Enter the first number

45

Enter the second number

56

- 1. TO PERFORM ADDITION**
- 2. TO PERFORM SUBTRACTION**
- 3. TO PERFORM MULTIPLICATION**
- 4. TO PERFORM DIVISION**
- 0. To Exit**

Enter your choice 1

45 + 56 = 101

Enter the first number

23

Enter the second number

12

- 1. TO PERFORM ADDITION**
- 2. TO PERFORM SUBTRACTION**
- 3. TO PERFORM MULTIPLICATION**
- 4. TO PERFORM DIVISION**
- 0. To Exit**

Enter your choice 2

$$23 - 12 = 11$$

Enter the first number

2

Enter the second number

45

- 1. TO PERFORM ADDITION**
- 2. TO PERFORM SUBTRACTION**
- 3. TO PERFORM MULTIPLICATION**
- 4. TO PERFORM DIVISION**
- 0. To Exit**

Enter your choice 3

$$2 * 45 = 90$$

Enter the first number

34

Enter the second number

2

- 1. TO PERFORM ADDITION**
- 2. TO PERFORM SUBTRACTION**
- 3. TO PERFORM MULTIPLICATION**
- 4. TO PERFORM DIVISION**
- 0. To Exit**

Enter your choice 4

$$34 \% 2 = 17.0$$

Enter the first number

2

Enter the second number

3

- 1. TO PERFORM ADDITION**
- 2. TO PERFORM SUBTRACTION**
- 3. TO PERFORM MULTIPLICATION**
- 4. TO PERFORM DIVISION**
- 0. To Exit**

Enter your choice0

Exit

6. Write a Program to print a number is Positive / Negative using if-else

```
print("Program to print a number is Positive / Negative")
choice =1
while(choice!=0):
    number=int(input("Enter a Number"))
    if number >0:
        print("The Number",number,"is Positive")
    else:
        print("The Number",number, "is negative")
    choice=int(input("Do you wish to continue 1/0"))
```

output:

```
Program to print a number is Positive / Negative
Enter a Number 67
The Number 67 is Positive
Do you wish to continue 1/0    1
Enter a Number -90
The Number -90 is negative
Do you wish to continue 1/0    0
```


8. Write a python program to print date, time for today and now
import datetime

```
a=datetime.datetime.today()
b=datetime.datetime.now()
print(a)
print(b)
```

Output:

```
2022-11-30 17:18:52.879383
2022-11-30 17:18:52.879382
```

12. Using a numpy module create an array and check the following:

- 1. Type of array**
- 2. Axes of array**
- 3. Shape of array**
- 4. Type of elements in array**

```
import numpy as np
arr=np.array([[1,2,3],[4,2,5]])
print("Array is of type:",type(arr))
print("no.of dimensions:",arr.ndim)
print("Shape of array:",arr.shape)
print("Size of array:",arr.size)
print("Array stores elements of type:",arr.dtype)
```

Output:

```
Array is of type: <class 'numpy.ndarray'>
no.of dimensions: 2
Shape of array: (2, 3)
Size of array: 6
Array stores elements of type: int32
```

13. Write a python program to concatenate the dataframes with two different objects.

```
import pandas as pd
one=pd.DataFrame({'Name':['teju','gouri'], 'age':[19,20]},
index=[1,2])
two=pd.DataFrame({'Name':['suma','nammu'], 'age':[20,21]},
index=[3,4])
print(pd.concat([one,two]))
```

Output:

	Name	age
1	teju	19
2	gouri	20
3	suma	20
4	nammu	21

15. WAP which accepts the radius of a circle from user and compute the area(Use math module)

```
import math as M
radius = float(input("Enter the radius of the circle"))
area_of_circle = M.pi*radius*radius
circumference_of_circle = 2*M.pi*radius
print("the area of circle is", area_of_circle)
print("the circumference of circle is", circumference_of_circle)
```

Output:

```
Enter the radius of the circle 45
The area of circle is 6361.725123519332
The circumference of circle is 282.7433388230814
```

10. Write a program to count the number of characters in a string and store them in a dictionary data structure.

```
def construct_character_dict(word):
    character_count_dict=dict()
    for each_character in word:
        character_count_dict[each_character]=character_count_dict.get(each_character,0)+1
    sorted_list_keys=sorted(character_count_dict.keys())
    for each_key in sorted_list_keys:
        print(each_key,character_count_dict.get(each_key))
def main():
    word=input("enter a string")
    construct_character_dict(word)
if __name__=="__main__":
    main()
```

Output:

enter a string KLESNCBCA

```
1
A 1
B 1
C 2
E 1
K 1
L 1
N 1
S 1
```

7. Write a program for filter() to filter only even numbers from a given list.

```
def find_even_numbers(list_items):  
    print(" The EVEN numbers in the list are: ")  
    for item in list_items:  
        if item%2==0:  
            print(item)  
def main():  
    list1=[2,3,6,8,48,97,56]  
    find_even_numbers(list1)  
if __name__=="__main__":  
    main()
```

Output:

The EVEN numbers in the list are:

2

6

8

48

56

9. Write a python program to add some days to your present date and print the date added.

```
from datetime import datetime
from datetime import timedelta
from datetime import date

# taking input as the current date
# today() method is supported by date
# class in datetime module
Begindatestring = date.today()

# print begin date
print("Beginning date")
print(Begindatestring)

# calculating end date by adding 4 days
Enddate = Begindatestring + timedelta(days=10)

# printing end date
print("Ending date")
print(Enddate)
```

Output:

```
Beginning date
2022-12-05
Ending date
2022-12-15
```