

# **LAB MANUAL 2023- 24**

**CA-C15L: PYTHON PROGRAMMING LAB  
III SEM BCA**

**ST. CLARET COLLEGE  
DEPARTMENT OF COMPUTER SCIENCE.**

## PART A

### 1. Write a program to demonstrate basic data type 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

- |                    |                    |                    |
|--------------------|--------------------|--------------------|
| <b>1) insert()</b> | <b>2) remove()</b> | <b>3) append()</b> |
| <b>4) len()</b>    | <b>5) pop()</b>    | <b>6) clear()</b>  |

```
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.**

- 1) add items    2) len()    3) check for item in tuple    4) 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)

#check for item in tuple
if "i" in rainbow:
    print("item is present")

#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': "CLARET", 'code': "SCC",'pincode': 560013 }
print(college)
#adding items to dictionary
college["location"] = "MES ring road"
print(college)
#changing values of a key
college["location"] = "Jalahalli Village"
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': 'CLARET', 'code': 'SCC', 'pincode': 560013}
{'name': 'CLARET', 'code': 'SCC', 'pincode': 560013, 'location': 'MES ring road'}
{'name': 'CLARET', 'code': 'SCC', 'pincode': 560013, 'location': 'Jalahalli Village'}
length of college is: 4
college['name']: CLARET
560013
{'name': 'CLARET', 'code': 'SCC', 'pincode': 560013, 'location': 'Jalahalli Village'}
```

## **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

```
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

5

Enter the second number

8

1. TO PERFORM ADDITION

2. TO PERFORM SUBTRACTION
3. TO PERFORM MULTIPLICATION
4. TO PERFORM DIVISION

0. To Exit

Enter your choice1

$5 + 8 = 13$

Enter the first number

5

Enter the second number

5

1. TO PERFORM ADDITION
2. TO PERFORM SUBTRACTION
3. TO PERFORM MULTIPLICATION
4. TO PERFORM DIVISION

0. To Exit

Enter your choice2

$5 - 5 = 0$

Enter the first number

2

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 choice3

$2 * 2 = 4$

Enter the first number

6

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 choice4

$6 \% 2 = 3.0$

Enter the first number

4

Enter the second number

5

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 python 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: 5
The Number 5 is Positive
Do you wish to continue 1/0: 1
Enter a Number: -4
The Number -4 is negative
Do you wish to continue 1/0: 0
```

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

```
#syntax:filter(function,sequence)
```

```
L1=[1,6,4,9,7,0,8,3]
```

```
#function f() take a value and returns TRUE if remainder is zero
```

```
def f(X):  
    return X%2==0
```

```
M=list(filter(f,L1))  
print("Original list: ",L1)  
print("Filtered list: ",M)
```

**Output:**

```
Original list: [1, 6, 4, 9, 7, 0, 8, 3]  
Filtered list: [6, 4, 0, 8]
```

**PART B**

**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:**

```
2023-09-09 09:13:26.600974
2023-09-09 09:13:26.600974
```

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

```
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 days
days= int(input("how many days to add? "))
Enddate = Begindatestring + timedelta(days)

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

**output:**

```
2023-09-09
how many days to add? 10
2023-09-19
```

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

```
def char_frequency(str):
    dict={}
    for n in str:
        keys=dict.keys()
        if n in keys:
            dict[n]+=1
        else:
            dict[n]=1
    return dict

str1=input("Enter a string:")
print("The frequency of each character in the string as dictionary")
print(char_frequency(str1))
```

**Output:**

```
Enter a string:MALAYALAMKANNADA
The frequency of each character in the string as dictionary
{'M': 2, 'A': 7, 'L': 2, 'Y': 1, 'K': 1, 'N': 2, 'D': 1}
```

**11. Write a program to count frequency of characters in a given file**

```
def char_frequency(str1):
    dict={}
    for n in str1:
        keys=dict.keys()
        if n in keys:
            dict[n]+=1
        else:
            dict[n]=1
    return dict

str=input("Enter file name to read from :")
getfile= open(str).read()
D=char_frequency(getfile)
print("the frequency of each character in the file")
for k,v in D.items():
    print(k,v)
```

**Note:**create text document in the same folder where your lab program is saved

**Output:**

```
Enter file name to read from :hello.txt
the frequency of each character in the file
S 1
T 2
 3
C 2
L 4
A 3
R 2
E 4
O 2
G 2
B 1
N 1
```

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

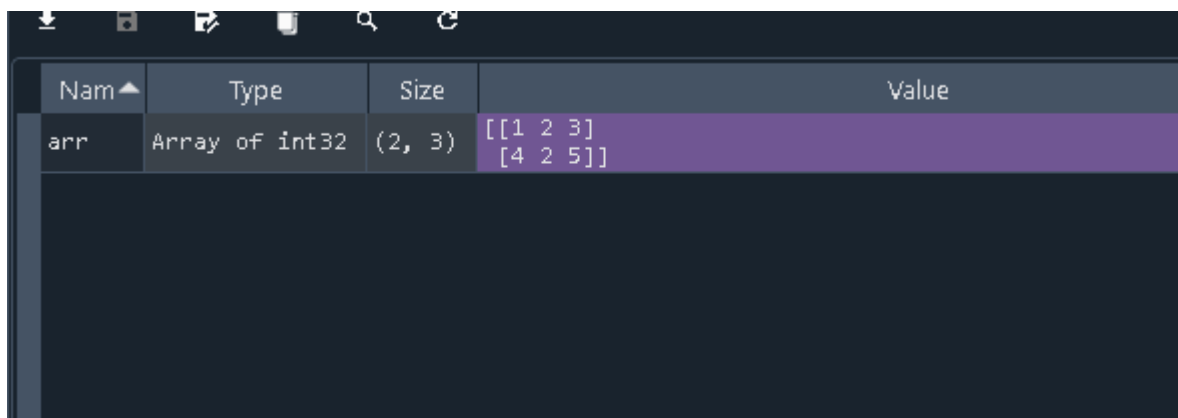
- 1) type of array
- 2) Axes of array
- 3) Shape of array
- 4) Type of elements in array

```
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
```



Nam▲	Type	Size	Value
arr	Array of int32	(2, 3)	<pre>[[1 2 3]  [4 2 5]]</pre>

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

```
import pandas as pd
one=pd.DataFrame({'Name':['Deepak','Joseph'], 'age':[19,20]}, index=[1,2])
two=pd.DataFrame({'Name':['Riya','Allen'], 'age':[20,21]}, index=[3,4])
print(pd.concat([one,two]))
```

**Output:**

	Name	age
1	Deepak	19
2	Joseph	20
3	Riya	20
4	Allen	21



**14. Write python program which accepts the radius of a circle from user and computes 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: 10
the area of circle is 314.1592653589793
the circumference of circle is 62.83185307179586
```