PROBLEM STATEMENT/AIM:

#python exercises

#1. array,list,set,dictionary

#2. modules and function

#3. file handling

#4. exception handling

#5. inheritance

SOURCE CODE:

```python
import pickle as pk
import array as arr
import time
import math
import random

#1(a) array
print("ARRAY IN PYTHON")
colours = arr.array("i",[1,2,3,4,5])
x=colours[1]
print("colours[1]",x)
y=len(colours)
print("length of array: ",y)
print("looping in array:-")
for i in colours:
    print(i)
print("appending in array")
colours.append(69)
print(colours)
print("remove element")
colours.pop(2)
print(colours)
```

OUTPUT:

ARRAY IN PYTHON

colours[1] 2

length of array: 5

looping in array:-
1
2
3
4
5

appending in array
array('i', [1, 2, 3, 4, 5, 69])

remove element
array('i', [1, 2, 4, 5, 69])


```
#1(b) list
print("LIST IN PYTHON")
a=[2,5,1,9,4,0]
print(a)
a=[2,5,1,9,4,0,2,6,4,4]
print(a)
print("data type/ class")
print(type(a))
b=[10,19,220]
print(b)
print("concatenation")
print(a+b)
print("length of list")
print("length of a: ",len(a)," length of b: ",len(b))
print("Sorting in list")
```

```
print(a)
print(a.sort())
print(b)
print(b.sort())
```

OUTPUT:

```
LIST IN PYTHON

[2, 5, 1, 9, 4, 0]

data type/ class
<class 'list'>

[10, 19, 220]
concatenation
[2, 5, 1, 9, 4, 0, 10, 19, 220]

length of list
length of a:  6  length of b:  3

Sorting in list
[2, 5, 1, 9, 4, 0]
None
[10, 19, 220]
None
```

```
#1(c) set
print("SETS IN PYTHON")
c={"data science","machine learning","deep learning"}
print("set: ",c)
print("data type")
print(type(c))
print("length of set")
print(len(c))
```

OUTPUT:

SETS IN PYTHON

set: {'deep learning', 'data science', 'machine learning'}

data type
<class 'set'>

length of set
3

```python
#1(d) dictionary
print("DICTIONARY IN PYTHON")
d={41733001:"Abhigyan",41733002:"Guna Sekar",41733004:"Aditya Raj"}
print("dictionary: ",d)
print("length of dictionary")
print(len(d))
print("looping in array")
for i in d:
    print(i)
print("getting values")
print(d.keys())
print(d.values())
print("reverse mapping")
e={v:k for k,v in d.items()}
print(e)
```

OUTPUT:

DICTIONARY IN PYTHON

dictionary: {41733001: 'Abhigyan', 41733002: 'Guna Sekar', 41733004: 'Aditya Raj'}

length of dictionary
3

looping in array
41733001
41733002
41733004

getting values
dict_keys([41733001, 41733002, 41733004])

dict_values(['Abhigyan', 'Guna Sekar', 'Aditya Raj'])

reverse mapping
{'Abhigyan': 41733001, 'Guna Sekar': 41733002, 'Aditya Raj': 41733004}

#2(a) modules

```python
print("MODULES IN PYTHON\n")
print("time module")
print("curr time: ",time.ctime(time.time()))
time.sleep(3)
print("slept for 3 seconds")
print("Math module")
print("pi: ",math.pi)
print("sin: ",math.sin(0))
```

MODULES IN PYTHON

time module
curr time: Fri Jan 27 10:36:34 2023
slept for 1.5 seconds

Math module
pi: 3.141592653589793
sin: 0.0

OUTPUT:

```python
#2(b) functions
print("FUNCTIONS IN PYTHON")
print("abs()",abs(-5))
print("len()",len(d))
print("type()",type(d))
```

OUTPUT:

```
FUNCTIONS IN PYTHON

abs() 5
len() 3
type() <class 'dict'>
```

```python
#3 File Handling

print("FILE HANDLING IN PYTHON")
"""Twinkle, twinkle, little star,
How I wonder what you are!
Up above the world so high,
Like a diamond in the sky."""

with open("poem.txt","r+") as file:
    print("readline(): ",file.readline())
    print("readlines(): ",file.readlines())
    print("write(): ",file.write("Sathyabama University"))
    print("writelines(): ",file.writelines(["BE CSE Data Science","BE CSE AI ML","BE EEE"]))
    file.seek(0)
    print(file.readlines())
```

```python
with open("binary.dat","wb+") as file:
    print("dump():  ",d)
    pk.dump(d,file)
    file.seek(0)
    print("load(): ",pk.load(file))
```

OUTPUT:

FILE HANDLING IN PYTHON

readline(): Twinkle, twinkle, little star,

readlines(): ['How I wonder what you are!\n', 'Up above the world so high,\n', 'Like a diamond in the sky.']

write(): 22

writelines(): None

['Twinkle, twinkle, little star,\n', 'How I wonder what you are!\n', 'Up above the world so high,\n', 'Like a diamond in the sky.Sathyabama University BE CSE Data Science BE CSE AI ML BE EE E']

#4 Exception handling

#4(a)

```python
try:
    numerator = 10
    denominator = 0
    result = numerator/denominator
    print(result)
except:
    print("Error: Denominator cannot be 0.")
```

 # Output: Error: Denominator cannot be 0.

#4(b)

```python
try:
    with open("binary1.dat","rb+") as file:
        print("dump():  ",d)
        pk.dump(d,file)
        print("executed successfully")
except:
    print("wrong mode enabled")
```

OUTPUT:

EXCEPTION HANDLING IN PYTHON

Error: Denominator cannot be 0.
wrong mode enabled


```
#5. inheritance
print("INHERITANCE IN PYTHON")
class Person(object):
    def __init__(self, name, id):
        self.name = name
        self.id = id
    def Display(self):
        print(self.name, self.id)
emp = Person("Satyam", 102)
emp.Display()
```

OUTPUT:

INHERITANCE IN PYTHON

Satyam 102

RESULT:

      Thus the program was executed and output was verified successfully.