Modern Education Society's

College of Engineering, Pune

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SEMESTER/YEAR: III sem	**ROLL NO:F20111040**
DATE OF PERFORMANCE:	**DATE OF SUBMISSION:19/11/2021**
EXAMINED BY: Prof.Anand Dhawale	**EXPERIMENT NO: DSL A-02**

TITLE: PERFORM VARIOUS OPERATIONS ON ARRAY

PROBLEM STATEMENT: Write a Python program to store marks scored in subject "Fundamental of Data Structure" by N students in the class. Write functions to compute following:

a) The average score of class
b) Highest score and lowest score of class
c) Count of students who were absent for the test
d) Display mark with highest frequency

OBJECTIVES:

1. To understand structure of Array.
2. To understand how create, display and perform various operations on array.

OUTCOMES:

1. To analyze the problems to apply suitable algorithm and data structure.
2. To discriminate the usage of various data structures in approaching the problem solution.
3. To understand concept of linear data structure

PRE-REQUISITES:

1. Knowledge of python programming
2. Knowledge of array data structure

APPARATUS:

QUESTIONS:

1. What is static and dynamic memory allocation?

2. Explain difference between list and array in python with an example.

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Project

FDS Q2.py

```python
m=list(map(int,input('enter marks').split()))
#average
sum=0
for i in m:
    sum+=i

average=sum/len(m)

#higest and lowest
h=0
for i in m:
    if i>h:
        h=i
print('higest marks:',h)

l = m[0]
for i in m:
    if i<l:
        if i!=-1:
            l = i
print('lowest marks:',l)


# absent
count=0
for i in m:
    if i==-1:
        count+=1
print('there are {} student who are absent'.format(count))

#higest frequency
max = 0
e = m[0]
for i in m:
    freq = m.count(i)
    if freq > max:
        max = freq
        e = i
print('higest frequency marks:',e,end='------->>>')
print('it is appered {} times'.format(m.count(e)))
```

Structure

Favorites

Output

```
C:\Users\sspab\PycharmProjects\new\venv\Scripts\python.exe "C:/Users/
enter marks10 20 30 60 30 40 30 -1 -1 30
higest marks: 60
lowest marks: 10
there are 2 student who are absent
higest frequency marks: 30------->>>it is appered 4 times

Process finished with exit code 0
```

DSL A-02

Questions:

1. What is Static and dynamic memory allocation?

Ans:

Static memory allocation:

Static memory is allocated for declared variables by the compiler. The address can be found using the address of operator and can be assigned to a pointer. The memory is allocated during Compile time.

Dynamic memory allocation:

Memory allocation done at the time of execution (run time) is known as dynamic memory allocation. Functions calloc() and malloc() support allocating dynamic memory. In the Dynamic allocation of memory space is allowed by using those functions when the value is returned by functions and assigned to pointer variables.

eg Dynamic memory allocation is generally used for linked list.

The Static memory allocations is generally used for array.

Q.2. Explain the difference between list and array in Python.

List:

A list in python is a collection of item which can contain elements of multiple data types, which may be either numeric, characters, logical values etc. It is an ordered collection of data supporting negative indexing.

Array:

An array is a vector containing homogenous elements i.e. belonging to the same data type. Elements are allocated with contiguous memory locations allowing easy modification. In python we have to use the array module to declare array.

List	Array
Can consist of elements belonging to different data types	Only consist of elements belonging to the same data type.
No need to explicitly import a module for declaration.	Need to explicitly import a module for declaration.
Can be nested to contain different type of elements.	Must contain either all nested elements of same size.