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Group A Assignment-1

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Problem Statement -

In a second year Engineering class group A student plays Cricket group B student plays badminton and group C student plays football write a python program using functions to Compare

a) list of student who play both Cricket and badminton
b) list of student who play Cricket or badminton but not both
c) No of student who play neither Cricket nor badminton
d) No of student who play Cricket and football but not badminton

Objective:-

To understand Concept and operation of set to understand premitive function of list data structure in python

Outcome :-

To impliment list data structure in python.

To write menu driven modular prog. in pyth

To implement user defined function in python.

* S/W requirement -
  programming lang:- python.
  operating system:- 64 bit Fedora
  programming tools:- Jupyter notebook.

* H/W requirement.
  machine used for carrying operation
  Company Name :- Lenovo
  intel Core is- 826U cpu@1.60GHz
  64 bit O.S. x64 based processor.

* Theory:-

Data structure used:- List.
python list is most versatile data type in python which can be written as list of comma seprated values (item) between square bracket.
important thing in the list is that items in a list need to be same type.

```
list1 = [1,2,3,4,5]
list2 = ['a','b','c','d']
```

OR

```
list1[0] = 1
list2[2] = c
```

Creating classes -

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(5)

```
class Employee :
    employee Count = 0
    def __init__ (self, name, salery)
        self.name = name
        self.salary = salary
        Employee employeeCount += 1
```

~~def~~

```
    def displayCount (self)
        print("Totle employee", EmployeeCount)
    def displayEmployee (self)
        print ("Name:", self.name)
```

- Creating instance object

To Create instance of the class we call the class using class name and pass in whatever argument it's __init__ method accepts.

- Accessing attribute :

We can access method of object attribute using . operator with object. class variable would be accessed using class name as follows

```
emp1.displayEmployee (self)
emp2.displayEmployee (self)
```

Sets:-

A set is a unordered & unindexed collection of elements. Addition, subtract, union, intersection are various operations performed on sets. Sets are defined using curly brackets and elements are seprated by comma.

Operation on sets.

1. Intersection -

Intersection of set is denoted by symbol ∩ the intersection A∩B is defined as the set composed of all element that belongs to both A & B.

A = {2,3,4,5}
B = {3,4,6,7}
A∩B = {3,4}

2. Union of set.

Union of set is denoted by symbol ∪ the union of A and B define as set that consist all elements of set A and set B

A = {2,3,4,5}
B = {3,4,6,7}
A∪B = {2,3,4,5,6,7}

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6 ADT :-

ADT Set is

Object or Value defination : A finite Collection of zero or more element.

Functions :-

For all S ∈ Set and item ∈ element.

add Ele(Set, item) : void.

// add unique item to set.

union (Set, Set) : Set

// returns union of two set.

Intersection (Set, Set) : Set

// returns intersection of two set.

Difference (Set, Set) : Set

// returns diff of two set.

Display (Set) : void

// Display item/element in set.

End set.

* Algorithm (pseudocode)

1) Union of two set:- union(S1, S2)

```
1 Begin
2 for i = 1 to S1.length()
3   S3.addelement [S1[i]]
4 endfor
5 for i=1 to S2.length
6     if S3.pin(S2[i])
7         Pass
8     else
9         S3.addelement(S2[i])
10 endfor returnS3
11 endfor. Stop
```

2) Intersection of two set.

```
Intersection (S1, S2)
1. Begin
2. for i=1 to $1.length()
3.     if S1[i] is present in S2
4         S3.add [S1[i]]
5. endfor.
6 return S3
7 Stop.
```

3) Function to determine is element is present in list or not.

Pin(list elt) → Present in.

```
Pin(list, ele)
1  for i=1   to   list.length()
2     if  list[i] == ele
3          return True
4          break.
5     else:
6          return false.
7  break.endfor.
8. end.
```

4) Diff of set.

```
DiFF.(S1,S2)
1. Begin.
2. for i=1   to   S1.length()
3.     if(Pin(S2, S1[i] == false)
4          S3.addelement(S1[i])
5  end for.
6  return S3
7. end.
```

9. Test Cases.

Case No	Input Values.	output Values.
1	Cricket = [2,3,4,6] Badminton = [3,4,6,7] Football = [4,5,7,8]	i) [3,4] ii) [2,5,6,7] iii) [8] iv) [2,5,6]
2	Cricket = [1,2,4,6] Badminton = [2,4,6,8] Football = [8,5,7,9]	i] [2,4] ii] [1,5,6,8] iii] [3,7,9] iv] [], 5,3,7,9]

10 Application

1] For Creating oop based application to store all data of various type of categories and also analyse the data.

2] Explain Various Concept regarding class and object and set operation.

11 Conclusion.

In this Assignment 1, I have Implimente the Concept of class, object, attributes, union, intersection, set-operations For object oriented programming in python.