**Assignment- A01**

**Name of Student:Sumit Gulab Bhamare**

**Roll No.:A08**

**Problem Statement:**In second year computer engineering class, group A student’s play cricket, group B Students play badminton and group C students play football. Write a Python program using functions to compute following: -

a) List of students who play both cricket and badminton

b) List of students who play either cricket or badminton but not both

c) Number of students who play neither cricket nor badminton

d) Number of students who play cricket and football but not badminton.

(Note- While realizing the group, duplicate entries should be avoided, Do not use SET built-in functions)

**Program:**

**def accept\_set(A,Str): #Accepting the elements and appending to make the set**

**n = int(input("Enter the total no. of student who play %s : "%Str))**

**for i in range(n) :**

**x = input("Enter the name of student %d who play %s : "%((i+1),Str))**

**A.append(x)**

**print("Set accepted successfully");**

**def display\_set(A,Str):**

**n = len(A)**

**if(n == 0) :**

**print("\nGroup of Students who play %s = { }"%Str)**

**else :**

**print("\nGroup of Students who play %s = {"%Str,end=' ')**

**for i in range(n-1) :**

**print("%s,"%A[i],end=' ')**

**print("%s }"%A[n-1]);**

**def search\_set(A,X) :**

**n = len(A)**

**for i in range(n):**

**if(A[i] == X) :**

**return (1)**

**return (0)**

**def find\_intersection\_set(A,B,C): #Intersection of sets**

**for i in range(len(A)):**

**flag = search\_set(B,A[i]);**

**if(flag == 1) :**

**C.append(A[i])**

**def find\_difference\_set(A,B,C): #D=Difference that is students who play only one game**

**for i in range(len(A)):**

**flag = search\_set(B,A[i]);**

**if(flag == 0) :**

**C.append(A[i])**

**def find\_union\_set(A,B,C): #Union of sets**

**for i in range(len(A)):**

**C.append(A[i])**

**for i in range(len(B)):**

**flag = search\_set(A,B[i]);**

**if(flag == 0) :**

**C.append(B[i])**

**def Main() :**

**Group\_A = []**

**Group\_B = []**

**Group\_C = []**

**while True :**

**print ("\t1 : Accept the Information")**

**print ("\t2 : List of students who play both cricket and badminton")**

**print ("\t3 : List of students who play either cricket or badminton but not both")**

**print ("\t4 : Number of students who play neither cricket nor badminton")**

**print ("\t5 : Number of students who play cricket and football but not badminton")**

**print ("\t6 : Exit")**

**ch = int(input("Enter your choice : "))**

**Group\_R = []**

**if (ch == 6):**

**print ("End of Program")**

**break**

**elif (ch==1):**

**accept\_set(Group\_A,"Cricket")**

**accept\_set(Group\_B,"Badminton")**

**accept\_set(Group\_C,"Football")**

**display\_set(Group\_A,"Cricket")**

**display\_set(Group\_B,"Badminton")**

**display\_set(Group\_C,"Football")**

**elif (ch==2):**

**display\_set(Group\_A,"Cricket")**

**display\_set(Group\_B,"Badminton")**

**find\_intersection\_set(Group\_A,Group\_B,Group\_R)**

**display\_set(Group\_R," both Cricket and Badminton")**

**elif (ch==3):**

**display\_set(Group\_A,"Cricket")**

**display\_set(Group\_B,"Badminton")**

**R1 = []**

**find\_union\_set(Group\_A,Group\_B,R1)**

**R2 = []**

**find\_intersection\_set(Group\_A,Group\_B,R2)**

**find\_difference\_set(R1,R2,Group\_R)**

**display\_set(Group\_R," either cricket or badminton but not both")**

**elif (ch==4):**

**display\_set(Group\_A,"Cricket")**

**display\_set(Group\_B,"Badminton")**

**display\_set(Group\_C,"Football")**

**R1 = []**

**find\_union\_set(Group\_A,Group\_B,R1)**

**find\_difference\_set(Group\_C,R1,Group\_R)**

**display\_set(Group\_R," neither cricket nor badminton")**

**print("Number of students who play neither cricket nor badminton = %s"%len(Group\_R))**

**elif (ch==5):**

**display\_set(Group\_A,"Cricket")**

**display\_set(Group\_C,"Football")**

**display\_set(Group\_B,"Badminton")**

**R1 = []**

**find\_intersection\_set(Group\_A,Group\_C,R1)**

**find\_difference\_set(R1,Group\_B,Group\_R)**

**display\_set(Group\_R,"cricket and football but not badminton")**

**print("Number of students who play cricket and football but not badminton = %s"%len(Group\_R))**

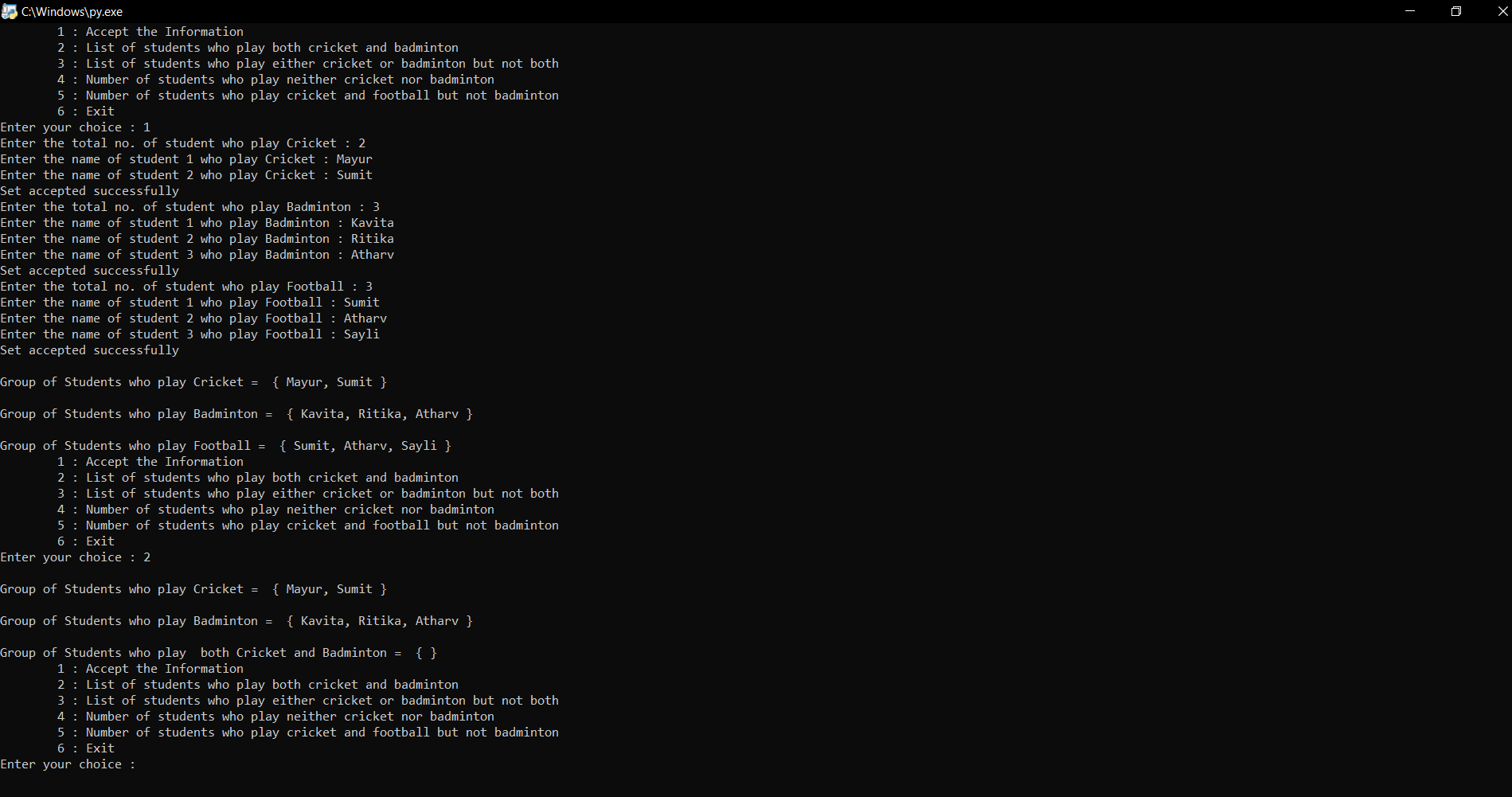
**else :**

**print ("Wrong choice entered !! Try again")**

**Main()**

**quit()**

**Output:**

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