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|  | Experiment No. 1 : In a second year computer engineering class, group A students 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 realising the group, duplicate entries should be avoided. Do not use SET built-in functions) |
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|  | # Function for removing duplicate entries from the group |
|  |  |
|  | def removeDuplicate(d): |
|  | lst=[] |
|  | for i in d: |
|  | if i not in lst: |
|  | lst.append(i) |
|  | return lst |
|  |  |
|  | #<----------------------------------------------------------------------------------------> |
|  |  |
|  | # Function for finding intersection between two sets (A&B) |
|  |  |
|  | def intersection(lst1,lst2): |
|  | lst3=[] |
|  | for val in lst1: |
|  | if val in lst2: |
|  | lst3.append(val) |
|  | return lst3 |
|  |  |
|  | #<------------------------------------------------------------------------------------------> |
|  |  |
|  | # Function for finding union of two sets (A|B) |
|  |  |
|  | def union(lst1,lst2): |
|  | lst3=lst1.copy() |
|  | for val in lst2: |
|  | if val not in lst3: |
|  | lst3.append(val) |
|  | return lst3 |
|  |  |
|  | #<-------------------------------------------------------------------------------------------> |
|  |  |
|  | # Function for finding difference between two sets (A-B) |
|  |  |
|  | def diff(lst1,lst2): |
|  | lst3=[] |
|  | for val in lst1: |
|  | if val not in lst2: |
|  | lst3.append(val) |
|  | return lst3 |
|  |  |
|  | #<----------------------------------------------------------------------------------------------> |
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|  | # Function for finding symmetric difference of two sets (A^B) |
|  |  |
|  | def sym\_diff(lst1,lst2): |
|  | lst3=[] |
|  | D1=diff(lst1,lst2) |
|  | print("Difference between Cricket and Badminton (C-B) is : ", D1) |
|  | D2=diff(lst2,lst1) |
|  | print("Difference between Badminton and Cricket (B-C) is : ", D2) |
|  | lst3=union(D1,D2) |
|  | return lst3 |
|  |  |
|  | #<------------------------------------------------------------------------------------------------> |
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|  | # Functon for finding List of students who play both cricket and badminton |
|  |  |
|  | def CB(lst1,lst2): |
|  | lst3=intersection(lst1,lst2) |
|  | print("\n\nList of students who play both cricket and badminton is : ", lst3) |
|  | return len(lst3) |
|  |  |
|  | #<------------------------------------------------------------------------------------------------> |
|  |  |
|  | # Function for finding List of students who play either cricket or badminton but not both |
|  |  |
|  | def eCeB(lst1,lst2): |
|  | lst3=sym\_diff(lst1,lst2) |
|  | print("\nList of students who play either cricket or badminton but not both is : ",lst3) |
|  | return len(lst3) |
|  |  |
|  | #<--------------------------------------------------------------------------------------------------> |
|  |  |
|  | # Function for finding Number of students who play neither cricket nor badminton |
|  |  |
|  | def nCnB(lst1,lst2,lst3): |
|  | lst4=diff(lst1,union(lst2,lst3)) |
|  | print("\n\nList of students who play neither cricket nor badminton is : ",lst4) |
|  | return len(lst4) |
|  |  |
|  | #<---------------------------------------------------------------------------------------------------> |
|  |  |
|  | # Function for finding Number of students who play cricket and football but not badminton |
|  |  |
|  | def CBnF(lst1,lst2,lst3): |
|  | lst4=diff(intersection(lst1,lst2),lst3) |
|  | print("\n\nList of students who play cricket and football but not badminton is : ",lst4) |
|  | return len(lst4) |
|  |  |
|  | #<-----------------------------------------------------------------------------------------------------> |
|  |  |
|  | # Main function |
|  |  |
|  | # Creating an empty list for SE COMP |
|  | SEComp = [] |
|  | n = int(input("\nEnter number of students in SE COMP: ")) |
|  | print("Enter the names of",n,"students (Please press ENTER after entering each students name) :") |
|  | for i in range(0, n): |
|  | ele = input() |
|  | SEComp.append(ele) # adding the element |
|  | print("Original list of students in SEComp : " + str(SEComp)) |
|  |  |
|  | #<-------------------------------------------------------------------------------------------------------> |
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|  |  |
|  | # Creating an empty list for Cricket |
|  | Cricket = [] |
|  | n = int(input("\n\nEnter number of students who play cricket : ")) |
|  | print("Enter the names of",n,"students who play cricket (Please press ENTER after entering each students name) :") |
|  | for i in range(0, n): |
|  | ele = input() |
|  | Cricket.append(ele) # adding the element |
|  | print("Original list of students playing cricket is :" +str(Cricket)) |
|  | Cricket=removeDuplicate(Cricket) |
|  | print("The list of students playing cricket after removing duplicates : " +str(Cricket)) |
|  |  |
|  | #<-------------------------------------------------------------------------------------------------------> |
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|  |  |
|  | # Creating an empty list for Football |
|  | Football = [] |
|  | n = int(input("\n\nEnter number of students who play football : ")) |
|  | print("Enter the name of",n,"students who play football (Please press ENTER after entering each students name) :") |
|  | for i in range(0, n): |
|  | ele = input() |
|  | Football.append(ele) # adding the element |
|  | print("Original list of students playing football :" +str(Football)) |
|  | Football=removeDuplicate(Football) |
|  | print("The list of students playing football after removing duplicates : " +str(Football)) |
|  |  |
|  | #<--------------------------------------------------------------------------------------------------------> |
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|  |  |
|  | # Creating an empty list for Badminton |
|  | Badminton = [] |
|  | n = int(input("\n\nEnter number of students who play badminton : ")) |
|  | print("Enter the name of",n,"students who play badminton (Please press ENTER after entering each students name) :") |
|  | for i in range(0, n): |
|  | ele = input() |
|  | Badminton.append(ele) # adding the element |
|  | print("Original list of students playing badminton :" +str(Badminton)) |
|  | Badminton=removeDuplicate(Badminton) |
|  | print("The list of students playing badminton after removing duplicates : " +str(Badminton)) |
|  |  |
|  | #<----------------------------------------------------------------------------------------------------------> |
|  |  |
|  | flag=1 |
|  | while flag==1: |
|  | print("\n\n--------------------MENU--------------------\n") |
|  | print("1. List of students who play both cricket and badminton") |
|  | print("2. List of students who play either cricket or badminton but not both") |
|  | print("3. List of students who play neither cricket nor badminton") |
|  | print("4. Number of students who play cricket and football but not badminton") |
|  | print("5. Exit\n") |
|  | ch=int(input("Enter your Choice (from 1 to 5) :")) |
|  |  |
|  | if ch==1: |
|  | print("Number of students who play both cricket and badminton : ", CB(Cricket,Badminton)) |
|  | a = input("\n\nDo you want to continue (yes/no) :") |
|  | if a == "yes": |
|  | flag = 1 |
|  | else: |
|  | flag = 0 |
|  | print("Thanks for using this program!") |
|  |  |
|  | elif ch==2: |
|  | print("Number of students who play either cricket or badminton but not both : ", eCeB(Cricket, Badminton)) |
|  | a = input("\n\nDo you want to continue (yes/no) :") |
|  | if a == "yes": |
|  | flag = 1 |
|  | else: |
|  | flag = 0 |
|  | print("Thanks for using this program!") |
|  |  |
|  | elif ch==3: |
|  | print("Number of students who play neither cricket nor badminton : ", nCnB(SEComp,Cricket,Badminton)) |
|  | a = input("\n\nDo you want to continue (yes/no) :") |
|  | if a == "yes": |
|  | flag = 1 |
|  | else: |
|  | flag = 0 |
|  | print("Thanks for using this program!") |
|  |  |
|  | elif ch==4: |
|  | print("Number of students who play cricket and football but not badminton : ", CBnF(Cricket,Football,Badminton)) |
|  | a = input("\n\nDo you want to continue (yes/no) :") |
|  | if a == "yes": |
|  | flag = 1 |
|  | else: |
|  | flag = 0 |
|  | print("Thanks for using this program!") |
|  |  |
|  | elif ch==5: |
|  | flag=0 |
|  | print("Thanks for using this program!") |
|  |  |
|  | else: |
|  | print("!!Wrong Choice!! ") |
|  | a=input("\n\nDo you want to continue (yes/no) :") |
|  | if a=="yes": |
|  | flag=1 |
|  | else: |
|  | flag=0 |
|  | print("Thanks for using this program!") |
|  |  |
|  | #<---------------------------------------------END OF PROGRAM---------------------------------------> |