**Modern Education Society’s**

# College of Engineering, Pune

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| **NAME OF STUDENT: Prathamesh Kalyan Sable CLASS: SE Comp 1** |
| **SEMESTER/YEAR: Sem – 3 / 2022 ROLL NO: F21111015** |
| **DATE OF PERFORMANCE: 24/08/2022 DATE OF SUBMISSION: 31/08/2022** |
| **EXAMINED BY: Mrs. N.R. Mhaske EXPERIMENT NO: DSL A-01** |

**TITLE: PERFORM VARIOUS OPERATIONS ON ARRAY**

**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: -

1. List of students who play both cricket and badminton
2. List of students who play either cricket or badminton but not both
3. Number of students who play neither cricket nor badminton
4. 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)

# 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

# APPARATUS:

Computer Machine, python3 installed, etc.

# SOURCE CODE:

# for getting roll number in a list

def get\_student\_list(game):

    lst = []

    n = int(input(f"Enter Number of Students Playing {game} :"))

    for i in range(n):

        roll\_no = int(input(f"Enter roll no.({i+1}):"))

        lst.append(roll\_no)

    print(f"{game} players are : ", lst)

    return lst

# function for union of two lists

def union(x, y):

    unionist = x + y

    for i in x:

        if i in y:

            unionist.remove(i)

    return unionist

# function for intersection of two lists

def intersection(x, y):

    inter\_list = []

    for i in x:

        if i in y:

            inter\_list.append(i)

    return inter\_list

# function for list a - list b

def list\_difference(list\_a, list\_b):

    result = []

    for i in list\_a:

        if i not in list\_b:

            result.append(i)

    return result

# display lists of all players

def display\_lists():

    print("Cricket :", group\_a)

    print("Badminton :", group\_b)

    print("Football :", group\_c)

# Declaration variables and lists

total\_students = int(input("Enter Total Number of Students :"))

group\_a = get\_student\_list("Cricket")

group\_b = get\_student\_list("Badminton")

group\_c = get\_student\_list("Football")

exit\_choice = True

# while loop for user menu

while True:

    print("--MENU--")

    print("1.Display Players lists")

    print("2.List of Student playing both cricket and badminton")

    print("3.List of Student playing both either cricket or badminton but not both")

    print("4.Number of students who play neither cricket nor badminton")

    print("5.Number of students who play cricket and football but not badminton")

    choice = input("Enter your choice :")

    if choice == '1':

        display\_lists()

    elif choice == '2':

        both\_a\_and\_b = intersection(group\_a, group\_b)

        print("List of Student playing both cricket and badminton is ", both\_a\_and\_b)

    elif choice == '3':

        a\_and\_b\_not\_both = list\_difference(

            union(group\_a, group\_b), intersection(group\_a, group\_b))

        print("List of Student playing both either cricket or badminton but not both", a\_and\_b\_not\_both)

    elif choice == '4':

        no\_not\_a\_or\_b = total\_students - len(union(group\_a, group\_b))

        print(

            "Number of students who play neither cricket nor badminton is ", no\_not\_a\_or\_b)

    elif choice == '5':

        no\_a\_c\_not\_b = list\_difference(union(group\_a, group\_c), group\_b)

        print("Number of students who play cricket and football but not badminton is ", len(

            no\_a\_c\_not\_b))

    else:

        print("Please Enter a valid choice.(•\_•)")

        exit\_choice = False  # if choice is invalid no need to ask for exit

    if exit\_choice:

        want\_continue = input("Do you want to Exit:")

        if want\_continue == 'y' or want\_continue == 'Y':

            break

    exit\_choice = True

print("Successfully Exited... (^\_^)")

**OUTPUT:**

# 

# 

**QUESTIONS:**

1. What is structure?
2. How to delete an element from array? (Explain logic)