student = []

n = int(input("Enter the number of students in the class: "))

for i in range(n):

a = input("Enter name of student: ")

student.append(a)

print("List of students in the class:", student)

# List of students who play cricket

cric = []

n1 = int(input("Enter the number of students who play cricket: "))

for i in range(n1):

a = input("Enter name of student who plays cricket: ")

cric.append(a)

# List of students who play badminton

bad = []

n2 = int(input("Enter the number of students who play badminton: "))

for i in range(n2):

a = input("Enter name of student who plays badminton: ")

bad.append(a)

# List of students who play football

foot = []

n3 = int(input("Enter the number of students who play football: "))

for i in range(n3):

a = input("Enter name of student who plays football: ")

foot.append(a)

# Function to find students who play both cricket and badminton

def cricANDbad(a, b):

cb = []

for i in a:

if i in b:

cb.append(i)

return cb

# Function to find students who play either cricket or badminton but not both

def cribad(a, b):

corb = []

for i in a:

if i not in b:

corb.append(i)

for i in b:

if i not in a:

corb.append(i)

return corb

# Function to find students who neither play cricket nor badminton

def NOTcricNOTbad(a, b, c):

ncnb = []

for i in c:

if i not in a and i not in b:

ncnb.append(i)

return ncnb

# Main loop to provide options and display results

flag = 1

while flag == 1:

choice = int(input("1. Both cricket and badminton\n2. Either cricket or badminton\n3. Neither cricket nor badminton\n4. Exit\nEnter your choice: "))

if choice == 1:

result = cricANDbad(cric, bad)

print("Students playing both cricket and badminton:", result)

elif choice == 2:

result = cribad(cric, bad)

print("Students playing either cricket or badminton but not both:", result)

elif choice == 3:

result = NOTcricNOTbad(cric, bad, student)

print("Students playing neither cricket nor badminton:", result)

elif choice == 4:

flag = 0

print("exit")

else:

print("Invalid choice. Please try again.")