Cricket football

**#1**

cricket = [] badminton = [] football = []

n = int(input("Enter no. of students playing cricket: ")) for i in range(n):

name = input("Enter student name: ") cricket.append(name)

print("Final list for cricket") print(cricket)

print()

m = int(input("Enter no. of students palying badminton: ")) for i in range(m):

name = input("Enter student name: ") badminton.append(name)

print("Final list for badminton") print(badminton)

print()

p = int(input("Enter no. of students palying football: ")) for i in range(p):

name = input("Enter student name: ") football.append(name)

print("Final list for football") print(football)

print()

#cricket and badminton

print("Students playing both cricket and badminton") for i in cricket:

for j in badminton: if (i == j):

print(i)

print()

#cricket or badminton

print("Students playing either cricket or badminton but not both") l = []

l.extend(cricket) l.extend(badminton) for i in l:

if (l.count(i) == 1): print(i)

print()

#neither cricket nor badminton

print("Students playing neither cricket nor badminton") f = False

l1 = []

for i in football: for j in cricket:

if (i == j): f = True break

for k in badminton: if (i == k):

f = True break

if (f == False): l1.append(i)

for i in l1: print(i)

print()

#cricket and football not badminton

print("Students playing cricket and football but not badminton") l.extend(football)

for i in badminton: for k in l:

if (i != k):

if (l.count(k) > 1): print(k)

**Store marks**

**#2**

marks = []

def enterval(n):

for i in range(n):

m = input("Enter marks: ") if (m.isalpha()):

marks.append(m) else:

u = int(m) marks.append(u)

print()

print("Final list of marks: ") print(marks)

print()

#Average score of class def avg(n):

sum = 0

for i in range(n):

if ((marks[i] != 'ab') and (marks[i] != 'AB')): sum += marks[i]

avg = sum/n

print("Average score of class is ",avg) print()

#Highest and lowest score of class def score(n):

high = 0

low = 100

for i in range(n):

if ((marks[i] != 'ab') and (marks[i] != 'AB')): if (high < marks[i]):

high = marks[i] if (low > marks[i]):

low = marks[i] print("Highest score is ",high) print("Lowest score is ",low) print()

#Students absent for the test def abst(n):

count = 0

for i in range(n):

if ((marks[i] == 'ab') or (marks[i] == 'AB')): count +=1

if (count == 0):

print("No student was absent for the test") else:

print(count," students were absent for the test") print()

#marks with highest frequency

def highfreq(n): f = []

for i in range(101): f.append(0)

for k in range(n):

if ((marks[k] != 'ab') and (marks[k] != 'AB')): f[marks[k]] += 1

mx = 0

p = 0

for j in range(101): if (f[j] > mx):

mx = f[j] p = j

print("Marks with highest frequency is ",p) flag = True

n = int(input("Enter number of students: ")) while(flag):

print("Choices: \n1. Enter values\n2. Average score of class\n3. Highest and lowest score of class\n4. Number of absent students\n5. Marks with highest frequency\n6. Exit")

ch = int(input("Enter your choice: ")) if (ch == 1):

enterval(n) elif (ch == 2):

avg(n)

elif (ch == 3): score(n)

elif (ch == 4): abst(n)

elif (ch == 5): highfreq(n) elif (ch == 6):

print("Thank you!!") flag = False

else:

print("Invalid input")

**Matrix operation**

**#3**

global r,c

def display(mat,r): for i in range(r):

print(mat[i])

def trs(a,r,c):

for i in range(r): for j in range(c):

if (i<j):

temp = a[i][j] a[i][j] = a[j][i] a[j][i] = temp

print("Transposed matrix is ") display(a,r)

print()

def enterval(mat1,mat2,r,c): print("Enter values for matrix 1 ->") for i in range(r):

mat = []

for j in range(c):

m = int(input("Enter value for %d, %d: "%(i,j))) mat.append(m)

mat1.append(mat) display(mat1,r) print()

print("Enter values for matrix 2 ->") for i in range(r):

mat = []

for j in range(c):

m = int(input("Enter value for %d, %d: "%(i,j))) mat.append(m)

mat2.append(mat) display(mat2,r) print()

#Addition of matrices def addr(mat1,mat2,r,c):

add = []

for i in range(r): mat = []

for j in range(c):

m = mat1[i][j] + mat2[i][j] mat.append(m)

add.append(mat) print("Added matrix is ") display(add,r)

print()

#Subtraction of matrices def subt(mat1,mat2,r,c):

sub = []

for i in range(r): mat = []

for j in range(c):

m = mat1[i][j] - mat2[i][j] mat.append(m)

sub.append(mat) print("subtracted matrix is ") display(sub,r)

print()

#Multiplication of matrices def mult(mat1,mat2,r,c):

mul = []

for i in range(r): mat = []

for j in range(c): mat.append(0) mul.append(mat)

for i in range(r): for j in range(c):

for k in range(r):

mul[i][j] += mat1[i][k]\*mat2[k][j] print("Multiplied matrix is ") display(mul,r)

print()

r = int(input("Enter number of rows: "))

c = int(input("Enter number of columns: ")) mat1 = []

mat2 = [] def main():

flag = True while (flag):

print("Choices: ")

print("1.Enter value\n2.Added matrix\n3.Subtracted matrix\n4.Multiplied matrix\n5.Transpose of matrix\n6.Exit")

ch = int(input("Enter your choice: ")) if (ch == 1):

enterval(mat1,mat2,r,c) elif (ch == 2):

addr(mat1,mat2,r,c) elif (ch == 3):

subt(mat1,mat2,r,c) elif (ch == 4):

mult(mat1,mat2,r,c) elif (ch ==5):

trs(mat1) trs(mat2)

elif (ch == 6): print("Thank you")

flag = False else:

print("Invalid choice!!")

main()

**Sentinel and linear search**

**#4**

n = int(input("Enter number of students: ")) roll = []

def enterval(roll,n): for i in range(n):

m = int(input("Enter roll number: ")) roll.append(m)

print("Final list for roll numbers is ") print(roll)

print()

def linear(roll,n):

print("$ Linear Search $")

find = int(input("Enter roll number to be found: ")) flag = False

for i in range(n):

if (find == roll[i]): print("Student found at ",i) flag = True

break

if (flag == False): print("Student not found!!")

print()

def sentinel(roll,n):

print("$ Sentinel Search $")

find = int(input("Enter roll number to be found: ")) i = 0

last = roll[n-1] roll[n-1] = find

while (roll[i] != find): i += 1

roll[n-1] = last

if ((i<n-1) or (roll[n-1] == find)): print("Student found at",i)

else:

print("Student not found!!") print()

f = True while (f):

print("Choices: ")

print("1. Enter values\n2. Linear Search\n3. Sentinel Search\n4. Exit") ch = int(input("Enter your choice: "))

if (ch == 1): enterval(roll,n)

elif (ch == 2): linear(roll, n)

elif (ch == 3): sentinel(roll, n)

elif (ch == 4): print("Thank you") f = False

else:

print("Invalid Input")

# #4

**Binary and Fibonacci**

n = int(input("Enter number of students: ")) roll = []

def enterval(roll,n): for i in range(n):

m = int(input("Enter roll number: ")) roll.append(m)

print("Final list of roll numbers: ") print(roll)

print()

for i in range(n):

for j in range(i+1,n):

if (roll[i] > roll[j]): temp = roll[i] roll[i] = roll[j] roll[j] = temp

print("Sorted list of roll numbers: ") print(roll)

print()

def binary(roll,n):

print("$ Binary Search $")

find = int(input("Enter roll number to be found:" )) st = 0

en = n-1 flag = False

while (st <= en):

mid = st + int((en - st)/2) if (find == roll[mid]):

print("Student found at",mid) flag = True

break

elif (find > roll[mid]): st = mid + 1

else:

en = mid - 1 if (flag == False):

print("Student not found!!") print()

#fibonacci search def fibonacci(roll,n):

print("$ Fibonacci Search $") offset = -1

fib1 = 0

fib2 = 1

fibm = fib1 + fib2

find = int(input("Enter roll number to be found: ")) while (fibm < n):

fib2 = fib1 fib1 = fibm

fibm = fib1 + fib2 while(fibm > 1):

i = min(offset+fibm, n-1) if (roll[i] < find):

offset = i fibm = fib1 fib1 = fib2

fib2 = fibm - fib1 elif (roll[i] > find):

fibm = fib2

fib1 = fib1 - fibm fib2 = fibm - fib1

else:

print("Student found at ",i) if((fib1) and (roll[n - 1] == find)):

print("Student found at ",n-1) else:

print("Student not found!!") print()

f = True while (f):

print("Choices: ")

print("1. Enter values\n2. Binary Search\n3. fibonacci Search\n4. Exit") ch = int(input("Enter your choice: "))

if (ch == 1): enterval(roll,n)

elif (ch == 2): binary(roll, n)

elif (ch == 3): fibonacci(roll, n)

elif (ch == 4): print("Thank you") f = False

else:

print("Invalid Input")