**NAME : MUHANNAD SHERAZ**

**ROLL NO : BSDSF21A002**

**LAB-11**

**PROGRAMMING FUNDAMENTALS**

**Dr. Muhammad Idrees**

**Assistant Professor**

**Department of Data Science, University of the Punjab**

**Quaid-e-Azam (New) Campus, Lahore, Pakistan**

**Phone: +9242 35292946/57 ext 148**

**TASK 1**

from random import randint

def main():

budjet = [[randint(5000,10000) for i in range(6)] for j in range(12)]

heads = ["traveling","eating","books","stationary","charity","mobile package"]

months = ["JANUARY","FEBRUARY","MARCH","APRIL","MAY","JUNE","JULY","AUGUST","SEPTEMBER","OCTOBER","NOVEMBER","DECEMBER"]

print("total bujet of year")

totalbudgut(budjet,heads)

print("<------------------------------------------------------------------------------>")

print("month with maxi maximum budjet")

monthmaxbudjet(budjet,heads,months)

print("<------------------------------------------------------------------------------>")

print("total charity of year")

totalcharity(budjet,heads)

print("<------------------------------------------------------------------------------>")

print("month with maximum traveling ")

MonthWithmaxtraveling(budjet,heads,months)

print("<------------------------------------------------------------------------------>")

monthplusHeadbudjet(budjet,heads,months)

print("<------------------------------------------------------------------------------>")

headwisetotalbug(budjet,heads)

def totalbudgut(budjet,heads):

total = 0

for month in range(12):

for head in range(6):

total += budjet[month][head]

print("total bugjet of year= ",total)

def monthmaxbudjet(budjet,heads,months):

max = [0] \* 12

for month in range(12):

for head in range(6):

max[month] += budjet[month][head]

maxbuget = max[0]

maxmonth=0

for month in range(12):

if maxbuget < max[month]:

maxbuget=max[month]

maxmonth=month

else:

pass

print(months[maxmonth],"has maximum budjet= ",maxbuget)

def totalcharity(budjet,heads):

total = 0

for month in range(12):

total += budjet[month][4]

print("totalcharity of year= ",total)

def MonthWithmaxtraveling(budjet,heads,months):

maxmonth = 0

maximum = budjet[0][0]

for month in range(12):

if maximum < budjet[month][0]:

maximum = budjet[month][0]

maxmonth = month

else:

pass

print(months[maxmonth],"has max traveling with= ",maximum)

def monthplusHeadbudjet(budjet,heads,months):

monthwisebudjet=[0] \* 12

for month in range(12):

for head in range(6):

monthwisebudjet[month] +=budjet[month][head]

print("month and head wise budjet")

print("month name",end="\t")

for head in range(6):

print(heads[head],end="\t")

print("totalbudgut")

for month in range(12):

print(months[month],end="\t")

for head in range(6):

print(budjet[month][head],end="\t")

print()

def headwisetotalbug(budjet,heads):

print("Head Wise total buget of year")

print("Head name\t","budjet")

sum = [0] \* 6

for head in range(6):

for month in range(12):

sum[head] += budjet[month][head]

for head in range(6):

print(heads[head],"\t",sum[head])

main()

**TASK 2**

# Consider a four dimensional array contains the percentage marks for students

# first dimension is for program no (0,1,2 and 3)

# second dimension is for semester no (0,1,2,3,4,5,6 and 7)

# third dimension is for subject no (0,1,2,3,4 and 5)

# fourth dimension is for student no (0,1,2,3,4,...,49)

# Write a function to compute and display the program wise average

# Write a function to compute and display the semester wise average

# Write a function to compute and display the subject wise average

# Write a function to compute and display the program (passed as parameter) + semester wise average

# Write a function to compute and display the result of , both passed as parameter

# Following is code to populate the array with suitable random values and display them.

from random import randint

def main():

marks = [[[[randint(10,99) for st in range(50)] for sub in range(6)] for sem in range(8)]for p in range(4)]

programewiseaverage(marks)

print("<-------------------------------------------------->")

semesterwiseaverage(marks)

print("<-------------------------------------------------->")

subjectwiseaverage(marks)

print("<-------------------------------------------------->")

print("the array with suitable random values")

properform(marks)

print("<-------------------------------------------------->")

print("Sem Wise Avg 4 Prog")

programe = int(input("enter program no less than 4= "))

print("Sem Wise Avg 4 Prog")

SemWiseAvg4Prog(marks,programe)

print("<-------------------------------------------------->")

print("Sem Wise Avg 4 Prog+student")

program = int(input("enter program no less than 4= "))

stu = int(input("enter student roll no less 50= "))

print("Sem Wise Avg 4 Prog+student")

semWiseAvg4Progandstudent(program,marks,stu)

def properform(marks):

for p in range(4):

print("programe",p)

for sem in range(8):

print("\tsemester",sem)

for sub in range(6):

print("\t\tsubect",sub)

for stu in range(50):

print("\t\t\tstudent",stu,"marks",marks[p][sem][sub][stu])

def programewiseaverage(marks):

add = [0] \* 4

for p in range(4):

for sem in range(8):

for sub in range(6):

for stu in range(50):

add[p] += marks[p][sem][sub][stu]

print("programe wise average")

print("programe no","\t","average marks")

for p in range(4):

print("programe",p,"\t",add[p]/8/6/50)

def semesterwiseaverage(marks):

add = [0] \* 8

for sem in range(8):

for p in range(4):

for sub in range(6):

for stu in range(50):

add[sem] += marks[p][sem][sub][stu]

print("semester wise average")

print("semester no","\t","average marks")

for sem in range(8):

print("semester",sem,"\t",add[sem]/4/6/50)

def subjectwiseaverage(marks):

add = [0] \* 6

for sub in range(6):

for p in range(4):

for sem in range(8):

for stu in range(50):

add[sub] += marks[p][sem][sub][stu]

print("subject wise average")

print("subject no","\t","average marks")

for sub in range(6):

print("subject",sub,"\t",add[sub]/4/8/50)

def SemWiseAvg4Prog(marks,prgm):

if prgm > 3:

raise Exception("programe should be less than 4")

print("semester wise average for program")

print("semester no","\t","average marks")

for sub in range(6):

for stu in range(50):

print("student",stu)

for sem in range(8):

print("\tsemester",sem,"\t",marks[prgm][sem][sub][stu]/6/50)

def semWiseAvg4Progandstudent(programe,marks,stu):

if programe > 3:

raise Exception("programe should be less than 4")

if stu > 50:

raise Exception("student roll no should be be less than 50")

print("result of student of roll no",stu)

avrg=[0] \* 8

print("semester no\t","average")

for sem in range(8):

for sub in range(6):

avrg[sem] += marks[programe][sem][sub][stu]

for sem in range(8):

print("sem ",sem,"\t",avrg[sem]/6)

main()

**TASK 3**

**1ST METOD**

from random import randint

def main():

data = [[[[randint(60,95) for stu in range(50)] for sub in range(6)] for sem in range(8)] for pgm in range(4)]

p=0

while p < 4:

print("programe",p)

sem=0

while sem <8:

print("\tsemester",sem)

stu = 0

print("\t\tstudent no","\t","sub1","\t","sub2","sub3","\t","sub4","sub5","\t","sub6")

while stu <50:

print("\t\tstudent",stu,end="\t")

sub=0

while sub <6:

print(data[p][sem][sub][stu],end="\t")

sub+=1

print()

stu+=1

sem+=1

p+= 1

main()

**2ND METHOD**

from random import randint

def main():

data = [[[[randint(60,95) for stu in range(50)] for sub in range(6)] for sem in range(8)] for pgm in range(4)]

for p in range(4):

print("programe",p)

for stu in range(50):

print("\tstudent",stu)

print("\t\tsemestor no","\t","sub1","\t","sub2","sub3","\t","sub4","sub5","\t","sub6")

for sem in range(8):

print("\t\tsemester",sem,end="\t")

for sub in range(6):

print(data[p][sem][sub][stu],end="\t")

print()

main()

**3RD METHOD**

from random import randint

def main():

data = [[[[randint(60,95) for stu in range(50)] for sub in range(6)] for sem in range(8)] for pgm in range(4)]

print("programe no\t","semester no",end="\t")

for s in range(6):

print("sub",s,end="\t")

print()

for p in range(4):

for sem in range(8):

for stu in range(50):

print("programe",p,"semester",sem,"student",stu,end="\t")

for sub in range(6):

print(data[p][sem][sub][stu],end="\t")

print()

main()

**TASK 4**

# Consider a three dimensional array contains the scores for players

# first dimension is for match type ("test","ODI","T20")

# second dimension is for match no (0,1,2 and 3)

# third dimension is for player no (0,1,2,3,4 ...,10)

# Following is code to populate the array with suitable random values and display them.

# Write a function to compute and display the average of babar azam in test

# Write a function to compute and display the player wise average score of players in ODI

# Write a function to compute and display the player wise maximum score in T20

# Write a function to compute and display the player + match wise average

from random import randint

def main():

score = [[[randint(0,99) for p in range(11)] for m in range(4)]for t in range(3)]

matchtype = ["test","ODI","T20"]

players = ["BABAR","RIZWAN","HAIDER","ZAMAN","ALI","AHMAD","ABID","FAWAD","HASSAN","SHAHEEN","SOHAIL"]

suitableform(score,matchtype,players)

print("<------------------------------------------->")

print("player wise average score of players in ODI")

ODIavrgofplayers(score,players)

print("<------------------------------------------->")

print("player wise maximum score in T20")

maxrunsint20(score,players)

print("<------------------------------------------->")

print("averge of BABAR AZAM in TEST")

averageBABARinTEST(score)

print("<------------------------------------------->")

print("player + match wise runs in four ODIs")

playerwithmatchwiserunsODI(score,players,matchtype)

def suitableform(score,matchtype,players):

for t in range(3):

print(matchtype[t],"series")

print("\tmatch 1","\tmatch 2","\tmatch 3","\tmatch 4")

for p in range(11):

print("\t",players[p],end="\t")

for m in range(4):

print(score[t][m][p],end="\t")

print()

def totalscoreofteamin1stt20():

pass

#player wise average score of players in ODI

def ODIavrgofplayers(runs,players):

avrg = [0] \* 11

for p in range(11):

for m in range(4):

avrg[p] += runs[1][m][p]

print("player name","\t","average runs")

for p in range(11):

print(players[p],"\t",avrg[p]/4)

def maxrunsint20(runs,player):

max = [0] \* 11

for p in range(11):

for m in range(4):

max[p] += runs[2][m][p]

maxruns = max[0]

maxplayer = 0

for p in range(11):

if maxruns < max[p]:

maxruns=max[p]

maxplayer=p

else:

maxruns=maxruns

maxplayer=maxplayer

print("player name","\t","maximum runs")

print(player[maxplayer],"has most runs in t20 series",maxruns)

def averageBABARinTEST(runs):

ADD = 0

for m in range(4):

ADD += runs[0][m][0]

print("BABAR AZAM has",ADD/4,"in TEST series")

def playerwithmatchwiserunsODI(runs,player,match):

print("player name",end="\t")

for m in range(4):

print("match",m,end="\t")

print()

for p in range(11):

print(player[p],end="\t")

for m in range(4):

print(runs[1][m][p],end="\t")

print()

main()