**Jaypee University of Engineering and Technology**

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Advanced Programming Lab Record

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**Lab Exercise 1**

#E.Calculate simple interest on shell.

p=int(input("Enter the Principal Amount = "))

r=int(input("enter the monthly intrest rate = "))

t=int(input("Enter the number of months = "))

si=(p\*r\*t)/100

print("The simple intrest is ",si)

#F.Calculate compound interest.

p=float(input("Enter the Principal amount = "))

r=float(input("Enter the rate of intrest = "))

n=int(input("Enter the number of intrest compounded(anually) = "))

t=int(input("Enter the time in years = "))

CI=(p\*(1+(r/n))\*\*(n/t))-p

print("Componud intrest on given principal amount = ",CI)

# G.Find the value of force when mass of a body and its acceleration is given. F = m \* a

m=float(input("Enter the mass = "))

a=float(input("Enter the acceleration = "))

F=m\*a

print("Total Force on the given object is {}".format(F))

# H.Convert a temperature from Celsius to Fahrenheit.

c=float(input("Enter the temperature in celsius = "))

f=c\*(9/5)+32

print("The temperature in fahrennite is ",f)

# I. Convert a temperature from Fahrenheit to Celsius.

f=float(input("Enter the temperature in faherenite = "))

c=(f-32)\*5/9

print("The temperature in celcius is ",c)

# J. Compute the area of circle, when its diameter is given.

r=float(input("Enter the Radius = "))

A= 3.14159\*r\*r

print("Area of Circle = ",A)

# K.Compute the volumeof a cylinder, when its height and diameter is given.

h=float(input("Enter the Height = "))

d=float(input("Diameter of Cylinder = "))

V=3.14159\*((d/2)\*\*2)\*h

print("Volume of Cylinder is ",V)

# L.Compute the surface area of a cylinder, when its height and diameter is given.

h=float(input("Enter the Height of cylinder = "))

d=float(input("Enter the Diameter of cylinder = "))

sa=2\*3.14159\*(d/2)\*((d/2)+h)

print("The Surface area of cylinder is ",sa)

# M.Compute the area of a rectangular prism, when it’s all sides is given.

h=float(input("Enter the height of prism = "))

w=float(input("Enter the width of prism = "))

l=float(input("Enter the length of prism = "))

ar=2\*(h\*l+h\*w+l\*w)

print("The surfase area is ",ar)

# Compute the volume of a rectangular prism, when it’s all sides are given.

h=float(input("Enter the height of prism = "))

b=float(input("Enter the width of prism = "))

l=float(input("Enter the length of prism = "))

V=l\*b\*h

print("Volume of prism is ",V)

**Lab Exercise 2**

#1: Write a python program to input two numbers and if their sum is equal to 10 and their multiplication is

#less than 20, print the text string "incorrect."

a=int(input("Enter the Number 1 = "))

b=int(input("Enter the Number 2= "))

if a+b==10 and a\*b<20:

print("Incorrect")

#2: Write a python program for finding area and circumference of a circle.

r=int(input("Enter the radius = "))

a=3.14159\*r\*r

c=2\*3.14159\*r

print("Area of circle = ",a)

print("circumference of circle = ",c)

#3: Write a python program for calculating simple and compound interest.

p=int(input("Enter the Principle amount = "))

r=int(input("Enter the rate of interest = "))

t=int(input("Enter the Time in years = "))

si=p\*r\*t/100

n=int(input("Enter the fryquency = "))

ci=(p\*(1+r/n)\*\*n\*t)-p

print("Simple intrest = ",si)

print("Compund intrest = ",ci)

#4: Write a python program to convert temperature from degree centigrade to Fahrenheit. c=int(input(" C = ")) f=(c\*9/5)+32 print("F=",f)

#5: Write a python program to calculate average of three numbers. a=int(input("a=")) b=int(input("b=")) c=int(input("c=")) av=(a+b+c)/3 print("Average = ",av)

#6: Write a python program to calculate sum of 6 subjects and find percentage obtained. print("Enter marks out of 30") a=int(input("s1=")) b=int(input("s2=")) c=int(input("s3=")) d=int(input("s4=")) e=int(input("s5=")) f=int(input("s6=")) sm=a+b+c+d+e+f pc=sm\*100/(6\*30) print("Sum = ",sm," Percentage = ",pc)

#7: Write a python program to print swapping of two numbers without using third variable.

a=int(input("a="))

b=int(input("b="))

a,b=b,a

print("a=",a , "b=",b)

#8: Write a python program to find gross salary (GS).

# [Given: DA = (10\*BS)/100, TA = (12\*BS)/100, GS = BS+TA+DA ]

bs=int(input("BS= "))

da=10\*bs/100

ta=12\*bs/100

gs=bs+da+ta

print("Gross Salary = ",gs)

#9: Write a python program to find greatest in 3 numbers.

a=int(input("a = "))

b=int(input("b = "))

c=int(input("c = "))

if a>b and a>c:

print("a is greater")

elif b>a and b>c:

print("b is greater")

elif c>a and c>b:

print("c is greater")

else:

print("all are same")

#10: Write a python program to find whether a given no. is even or odd.

n=int(input("Enter the number = "))

if n%2==0:

print("Number is even")

else :

print("number is odd")

#11: If the marks obtained by a student in five different subjects are input through the keyboard, find out the aggregate marks and percentage marks obtained by the student. Assume that the maximum marks that can be obtained by a student in each subject is 100.

print("Enter marks out of 100")

a=int(input("s1="))

b=int(input("s2="))

c=int(input("s3="))

d=int(input("s4="))

e=int(input("s5="))

agm=(a+b+c+d+e)/5

pc=(a+b+c+d+e)\*100/(5\*100)

print("Agregate marks = ",agm," Percentage = ",pc)

# 12: The length & breadth of a rectangle and radius of a circle are input through the keyboard. Write an algorithm to calculate the area & perimeter of the rectangle, and the area & circumference of the circle.

l=int(input("Length = "))

b=int(input("Breadth = "))

r=int(input("Radius = "))

ac=3.14\*r\*r

cc=2\*3.14\*r

ar=l\*b;

pr=2\*(l+b)

print("area of circle = ",ac)

print("circumference of circle = ",cc)

print("area of rectangle = ",ar)

print("Perimeter of rectangle = ",pr)

#13: A cashier has currency notes of denominations 10, 50 and 100. If the amount to be withdrawn is input through the keyboard in tens, hundreds or thousands, find the total number of currency notes of each denomination the cashier will have to give to the withdrawer.

wa=float(input("Withdrawl Amount = "))

n100=n50=n10=0

while wa>=10:

if wa>=100:

wa=wa-100

n100+=1

elif wa>=50:

wa=wa-50

n50+=1

elif wa >=10:

wa=wa-10

n10+=1

else:

print("Wrong Input")

print("Rs. 100 Notes = ",n100 )

print("Rs. 50 Notes = ",n50 )

print("Rs. 10 Notes = ",n10 )

print("Remaining amount = ",wa)

#14: If the total selling price of 15 items and the total profit earned on them is input through the keyboard, write a python program to find the cost price of one item.

sp=float(input("Selling Price = "))

pr=float(input("Profit = "))

cp=sp-pr

print ("cost Price = ",cp)

#15: If a five-digit number is input through the keyboard, write a python program to print a new number by adding one to each of it digits. For example if the number that is input is 12391 then the output should be displayed as 23402. [If digit is 9 it should be converted into 0].

n=int(input("Enter the number = "))

m=0

while n!=0:

r=n%10+1

n=n//10

if(r==10):

r=0

m=r+(m\*10)

print("New Number = ",m)

#16. Write a program that asks the user to input 10 integers, and then prints the largest odd number that was entered. If no odd number was entered, it should print a message to that effect.

t=10

m=0

while t:

n=int(input("-- "))

if n%2!=0 and n>m:

m=n

t-=1

print("Largest odd number is = ",m)

#17. Write a program to prints the integer cube root, if it exists, of an integer. If the input is not a perfect cube, it prints a message “the number is not perfect cube” otherwise it prints “the number is perfect cube”.

n=int(input(" "))

r=round(n\*\*(1/3))

if r\*\*3==n:

print("The number is perfect cube. ",r)

else:

print("The number is not perfect cube.")

#18. Write a program to print all even numbers between 1 to 100.

for i in range(2,101,2):

print(i)

#19. Write a program to print all odd number between 1 to 100.

for i in range(1,100,2):

print(i)

#20. Write a program to find HCF (GCD) of two numbers.

a=int(input("Enter the 1st number = "))

b=int(input("Enter the 2ed number = "))

for i in range(1,a):

if a%i==0 and b%i==0:

f=i

print("HCF = {}".format(f))

#21. Write a program to find LCM of two numbers.

a=int(input("Enter the 1st number = "))

b=int(input("Enter the 2ed number = "))

for i in range(1,a):

if a%i==0 and b%i==0:

f=i

lcm=(a\*b)/f

print(lcm)

**Lab Exercise 3**

#1. Calculate simple interest.

p=int(input("Enter the Principle = "))

r=int(input("Enter the Rate= "))

t=int(input("Enter the Time = "))

si=(p\*r\*t)/100

print("Simple Interest = ",si)

#2. Find the area of a triangle.

def art(b,h):

return (1/2)\*b\*h

a=int(input("Enter the value 1 = "))

b=int(input("Enter the value 2 = "))

print("Area of tringle = ",art (a,b))

#3. Calculate compound interest.

def ci(p,r,t,n):

return (p\*(1+r/n)\*\*n\*t)-p

p=int(input("Enter the Principle amount = "))

r=int(input("Enter the rate of interest = "))

t=int(input("Enter the Time in years = "))

n=int(input("Enter the fryquency = "))

print("Compund intrest = ",ci(p,r,t,n))

#4. Find the value of force when mass of a body and its acceleration is given.

def force(m,a=10):

return m\*a

m=int(input("Enter the mass = "))

a=int(input("Enter the acceleration="))

print("Force = ",force(m,a))

#5. Calculate the factorial of the given number

def fac(n):

f=1

while n>0:

f=n\*f

n-=1

return f

n=int(input())

print("Factorial = ",fac(n))

#6. Convert a temperature from Celsius to Fahrenheit.

def cf(c):

return (c\*9/5)+32

c=int(input(" C = "))

print("F=",cf(c))

#7. Convert a temperature from Fahrenheit to Celsius.

def fc(f):

return (f-32)\*5/9

f=int(input(" F = "))

print("C=",fc(f))

#8. Compute the area of circle, when its diameter is given.

def arc(d):

return 3.14156\*(d/2)\*\*2

d=int(input("Enter the Diameter = "))

print("Area of circle = ",arc(d))

#9. Compute the area of a cylinder, when its height and diameter is given.

def sarc(h,d):

print("Surface Area of cylinder = ",(2\*3.14\*(d/2)\*((d/2)+h)))

h=int(input("Entert the Height = "))

d=int(input("Enter the Diameter = "))

def sarc(h,d):

return 2\*3.14\*(d/2)\*((d/2)+h)

h=int(input("Entert the Height = "))

d=int(input("Enter the Diameter = "))

print("Surface Area of cylinder = ",sarc(h,d))

#10. Compute the volume of a cylinder, when its height and diameter is given.

def vc(h,d):

print("Volume of cylinder = ",(3.14\*h\*(d/2)\*\*2))

h=int(input("Entert the Height = "))

d=int(input("Enter the Diameter = "))

vc(h,d)

def vc(h,d):

return (3.14\*h\*(d/2)\*\*2)

h=int(input("Entert the Height = "))

d=int(input("Enter the Diameter = "))

print("Volume of cylinder = ",vc(h,d))

#11. Compute the area of a rectangular prism, when its all sides are given.

def arp(l,b,h):

return 2\*(l\*b+b\*h+l\*h)

l=int(input())

b=int(input())

h=int(input())

print(arp(l,b,h))

def arp(l,b,h):

print(2\*(l\*b+b\*h+l\*h))

l=int(input())

b=int(input())

h=int(input())

arp(l,b,h)

#12. Compute the volume of a rectangular prism, when its all sides are given.

def vrp(l,b,h):

return l\*b\*h

l=int(input())

b=int(input())

h=int(input())

print(vrp(l,b,h))

def vrp(l,b,h):

print(l\*b\*h)

l=int(input())

b=int(input())

h=int(input())

vrp(l,b,h)

#A. Write a python function to print following shapes

# (Hint: print one symbol at a time, don’t print whole line in a single print statement)

def sh(n):

for i in range(0,(5\*n)+1):

for j in range(0,(5\*n)+1):

if i+j==0 or i%5==j%5==0:

print('+',end='')

elif(i==0 or i%5==0):

print('-',end='')

elif(j%5==0 or j==0):

print('|',end='')

else:

print(' ',end='')

print('')

sh(1)

sh(2)

#B. Write a python function to print following shape

def sh(n):

for i in range(0,(5\*n)+1):

for j in range(0,(5\*n)+1):

if i+j==0 or i%5==j%5==0:

print('+',end='')

elif(i==0 or i%5==0):

print('-',end='')

elif(j%5==0 or j==0):

print('|',end='')

else:

print(' ',end='')

print('')

sh(4)

#D. Write a function named rightjustify that takes a string named s as a parameter and prints the string with enough leading spaces

hs=20

def rightjustify(i):

l=len(i)

return " "\*(20-l)+i

s=""

print("Enter the String : ")

for i in iter(input,s):

if i=='0':

break

s=s+rightjustify(i)+'\n'

print(s)

'''E. A function object is a value you can assign to a variable or pass as an argument. For example, do\_twice is a

function that takes a function object as an argument and calls it twice: def do\_twice(f): f() f() Here’s

an example that uses do\_twice to call a function named print\_spam twice. def print\_spam(): print 'spam'

do\_twice(print\_spam)

1. Type this example into a script and test it.

2. Modify do\_twice so that it takes two arguments, a function object and a value, and calls the function twice,

passing the value as an argument.

3. Write a more general version of print\_sp, called print\_2ice, which takes a string as a parameter and prints it twice.

4. Use the modified version of do\_2ice to call print\_2ice twice, passing 'spam' as an argument.'''

def do\_twice(f,o):

f(o)

f(o)

def print\_spam(o):

print(o)

do\_twice(print\_spam,'hello')

#F. Write a function to print number 1 to 10 in ascending or descending order, based on user choice.

ch=input("Enter the Choice (A ,D) = ")

if(ch=='A'):

for i in range(1,11):

print(i)

elif(ch=='D'):

for i in range(10,0,-1):

print(i)

else:

print("Wrong Input")

**Lab Exercise 4**

#P1.Which among the following statements may result in an error?

# Assume that the statements are executed in the order in which it is written.

tup1=(5,10,15,20,25)

print(len(tup1))

print(tup1[4])

#print(tup1[5]) //IndexError: tuple index out of range

print(tup1[4:5])

#P2. Pure Gems Store sells different varieties of gems to its customers.

# Emerald, Ivory, Jasper, Ruby, Garnet and their prices are 1760, 2119, 1599, 3920, 3999

# respectively.

# Write a Python program to calculate the bill amount to be paid by a customer based on the list

# of gems and quantity purchased. Any purchase with a total bill amount above Rs.30000 is

# entitled for 5% discount. If any gem required by the customer is not available in the store,

# then consider total bill amount to be -1.

# Assume that quantity required by the customer for any gem will always be greater than 0.

# Perform case-sensitive comparison wherever applicable

gem=('Emerald','Ivory', 'Jasper', 'Ruby', 'Garnet')

price=(1760, 2119, 1599, 3920, 3999)

print(gem)

print(price)

g=input("Enter the gem Name = ")

q=int(input("Enter the Quantity = "))

if g not in gem:

amount=-1

else:

a=gem.index(g)

amount=price[a]\*q

if amount>30000:

amount=amount-((5/100)\*amount)

print("Total Bill Amount = ",amount)

#P3. Write a python function to check whether three given numbers can form the sides of a

# triangle.

# Hint: Three numbers can be the sides of a triangle if none of the numbers are greater than or

# equal to the sum of the other two numbers.

def tri(s1,s2,s3):

if s1>(s2+s3):

print("Invalid Triangle")

elif s2>(s1+s3):

print("Invalid Triangle")

elif s3>(s1+s2):

print("Invalid Triangle")

else:

print("Valid Triangle")

s1=int(input("Enter the length of side1 = "))

s2=int(input("Enter the length of side2 = "))

s3=int(input("Enter the length of side3 = "))

tri(s1,s2,s3)

#P4. Execute the program triangle.py available in the folder. The program triangle.py is

# written to display “\*” as per the expected output given below. But the code is having logical

# errors, debug the program and correct it.

counter1=0

while counter1<5:

star=""

counter2=5

while counter2>counter1:

star=star+"\*"

counter2-=1

print(star)

counter1+=1

'''P5. Write a python program to solve a classic ancient Chinese puzzle.

We count 35 heads and 94 legs among the chickens and rabbits in a farm. How many rabbits

and how many chickens do we have?

l=int(input("Enter the Number of Legs = "))

h=int(input("Enter the Number of Heads = "))

R=(l-(2\*h))/2

H=((4\*h)-l)/2

print(R,H)

**Lab Exercise 5**

#Prob1: Read elements into a list and show output by printing each elements

li1=[1,5,7,8,3.14, 4, 5]

li2=[1,[2,3],4,5,6]

li3=[1,2,[3,4,5],[6,7]]

li4=[[(1,2,3)]]

'''n=int(input("Enter the range = "))

while n>0:

#i=int(input())

li.append(i)

n-=1'''

print(li1)

print(li2)

print(li3)

print(li4)

#Prob3: Read a list from the user of arbitrary length, and show following:

# print the list entered by the user

# print least value and largest value

# swap positions of least and largest element

# print the list after swapping positions.

li=[]

n=int(input("Enter the range = "))

for i in range(0,n):

a=int(input())

li.append(a)

print(li)

mx=mn=li[0]

for i in li:

if i>mx:

mx=i

elif i<mn:

mn=i

print(mn," ",mx)

i=0

for i in range(0,n):

if li[i]==mx:

li[i]=mn

elif li[i]==mn:

li[i]=mx

print(li)

#Prob4: Read two lists enrol and name from the user of 10 elements. The list enrol contains

#enrolment numbers and list name contains names of the students. Now read enrolment

#number from the user to search in the list, if the enrolment is found in the list then print

#enrolment and name of the student. Otherwise print -1.

enrol=["211b001","211b002","211b003"]

name=["asdf","gsdfg","wtrrqr"]

ern=input("Enter the Enrollment Number = ")

p=0

for i in range(0,3):

if ern==enrol[i]:

print(enrol[i]," ",name[i])

p=1

break

if(p==0):

print(-1)

**Lab Exercise 6**

#1. Write a python script to create a dictionary week, the key to be integer and values should be name of the days of the week

week={1:'Sunday',2:'Monday',3:'Tuesday',4:'Wednesday',5:'Thursday',6:'Friday',7:'Saturday'}

#2. Write a python script to create a dictionary D1, enter details of the students in the form of enrolment and name (See details from the file “Std Record.pdf” ).

D1={141152:'Sanjay Jain',141153:'Abhinav Agarwal',141154:'Abhishek Nigam',141155:'Aditya Arora',141156:'Aditya Shrivastava',141157:'Aditya Thakur',141158:'Amit kumar',141159:'Aashi Jain',141160:'Deepak Singh',141161:'Mahendra Singh',141162:'Vijay Kumar',141163:'Aditya Pandey',141164:'Aditya Kumar',141165:'Aditi Bhardwaj',141166:'Anup Kumar Nigam',141167:'Abhishek Chatterjee',141168:'Abhimanyu Singh'}

#3. Write a python script to create a dictionary D2, enter details of the students in the form of enrolment and City (hometown) it belongs to.

D2={141152:'Jhansi',141153:'Kanpur',141154:'Lucknow',141155:'Agra',141156:'Shimla',141157:'Chandigarh',141158:'Mandi',141159:'Kanpur',141160:'Mathura',141161:'Guna',141162:'Bhopal',141163:'Patna',141164:'Gorakhpur',141165:'Lucknow',141166:'Kanpur',141167:'Nagpur',141168:'Bhopal'}

#4. Write a python script to create a dictionary D3, enter details of the students in the form of enrolment and mobile.

D3={141152:'9856687466',141153:'9856777466',141154:'8946687466',141155:'7756687412',141156:'9956687413',141157:'8856687414',141158:'7156687415',141159:'9156687416',141160:'9956687417',141161:'6656687418',141162:'9856687419',141163:'9856687420',141164:'9856687421',141165:'3356687422',141166:'9856687423',141167:'8836687424',141168:'9856687425'}

#5. Write a python script to create a dictionary D4, enter details of the students in the form of enrolment and State it belongs to.

D4={141152 :'Uttar Pradesh',141153:'Uttar Pradesh', 141154:'Uttar Pradesh',141155:'Uttar Pradesh',141156:'Himachal Pradesh',141157:'Punjab',141158:'Himachal Pradesh',141159:'Uttar Pradesh',141160:'Uttar Pradesh',141161:'Madhya Pradesh',141162:'Madhya Pradesh',141163:'Bihar',141164:'Uttar Pradesh',141165:'Uttar Pradesh',141166:'Uttar Pradesh',141167:'Maharastra',141168:'Madhya Pradesh'}

#6. Write a python script to create a dictionary D5, enter details of the students in the form of enrolment and marks in Phy,Chem, and Maths.

D5={141152:[78,66,90],141153:[88,65,69],141154:[77,93,64],141155:[88,65,70],141156:[77,93,65],141157:[88,65,71],141158:[77,93,66],141159:[88,65,72],141160:[77,93,67],141161:[88,65,73],141162:[77,93,68],141163:[88,65,74],141164:[77,93,69],141165:[88,65,75],141166:[77,93,70],141167:[88,65,76],141168:[77,93,71]}

#7. Write a python script to create a dictionary D6, enter details of the students in the form of enrolment and email-id.

D6={141152:['SanjayJain@gmail.com](mailto:'SanjayJain@gmail.com)',141153:'AbhinavAgarwal@gmail.com',141154:'AbhishekNigam@gmail.com',141155:'AdityaArora@gmail.com',141156:'AdityaShrivastava@gmail.com',141157:'AdityaThakur@gmail.com',141158:'Amitkumar@gmail.com',141159:'AashiJain@gmail.com',141160:'DeepakSingh@gmail.com',141161:'MahendraSingh@gmail.com',141162:'VijayKumar@gmail.com',141163:'AdityaPandey@gmail.com',141164:'AdityaKumar@gmail.com',141165:'AditiBhardwaj@gmail.com',141166:'AnupKumarNigam@gmail.com',141167:'AbhishekChatterjee@gmail.com',141168:'AbhimanyuSingh@gmail.com'}