**Ex2 Simple python programming-Sequential construct**

**Aim**

To do beginner level programs on python and understand the logic used to solve the problem

**Q.No 1 : Write a Python program to print the first and last name of the user**

1. **G**et the following input from the user:

*first name and last name.*

Write a Python program to print as

*Hello first name last name*

*Welcome to Python!*

**Python Code :**

*firstname=input("enter first name:")*

*lastname=input("enter lastname:")*

*print("Hello "+firstname+lastname+"\nWelcome to Python!")*

**Test Cases**

*Input:*

*enter firstname:Biancaa*

*enter lastname:Ramesh*

*Output:*

*Hello Biancaa Ramesh*

*Welcome to Python!*

**Q.No 2 :**

1. Assign x = 8 and y = 2. Evaluate the following expressions and write the output,

a) x + y \* 3=14

b) (x + y) \* 3=30

c) x \*\* y=64

d) x % y=0

e) x / 12.0=0.6666666666666666

f) x // 6=1

**Testcases:**

Program:

x=8

y=2

print(x+y\*3)

print((x+y)\*3)

print(x\*\*y)

print(x%y)

print(x/12.0)

print(x//6)

Output:

14

30

64

0

0.6666666666666666

1

**Q.No.3**

Print the following statements and note the output 52 + 2 and “52” + “2”

Program:

print(52+2)

print("52"+"2")

Output:

54

522

Q.No.4

Earth takes a period of revolution of 31558150 seconds. Write a program to convert

these seconds into minutes.

Program:

print(31558150/60)

Output:

525969.1666666666

5. Write a program in python  to add two numbers and print the result.

Program:

#program to add two numbers

num1=int(input("Enter the number one"))

num2=int(input("Enter the number two"))

sum=num1+num2

print("The sum of the two numbers is",sum)

Test cases:

summation of numbers is performed in all cases

Output:

Enter the number one23

Enter the number two45

The sum of the two numbers is 68

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1. Write a program in python to find the area of a triangle

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Program:

import math

choice=("Do you want to calculate the area of the triangle using base and height or using sides enter 1 or 2")

if choice==1:

    base=float(input("Enter the base of the triangle"))

    height=float(input("Enter the height of the triangle"))

    area=0.5\*base\*height

    print("The area of the triangle is",area)

if choice==2:

    a= float(input("Enter the side 1 of the triangle"))

    b= float(input("Enter the side 2 of the triangle"))

    c=float(input("Enter the side 3 of the triangle"))

    s=a+b+c/2

    x=s\*(s-a)\*(s-b)\*(s-c)

    area= math.sqrt(x)

    print("The area of the triangle is",area)

else:

    print("invalid choice")

Test cases:

Output:

Do you want to calculate the area of the triangle using base and height or using sides enter 1 or 21

Enter the base of the triangle5

Enter the height of the triangle6

The area of the triangle is 15.0

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Do you want to calculate the area of the triangle using base and height or using sides enter 1 or 22

Enter the side 1 of the triangle34

Enter the side 2 of the triangle67

Enter the side 3 of the triangle77

The area of the triangle is 8166.243877236339

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1. Write a program in python to calculate simple interest.

Program:

#Calculation of simple interest

principal=float(input("Enter the principal amount"))

n=float(input("Enter the number of years"))

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

simple\_interest=principal\*n\*r/100

print("The simple interest is",simple\_interest)

print("The total amount is",simple\_interest+ptincipal)

Test cases:

Enter the principal amount100000

Enter the number of years5

Enter the rate of interest7

The simple interest is 35000.0

The total amount is 135000.0

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s4@wpl-13:~/biancaa/Assignments/Assignment2$ python3 si.py

Enter the principal amount12345.78

Enter the number of years4.5

Enter the rate of interest4

The simple interest is 2222.2404

The total amount is 14568.020400000001

1. Write a program in python to swap two numbers using simultaneous assignment.

Program:

#Swapping two numbers by simultaneous assignment

num1=int(input("Enter the first number"))

num2=int(input("Enter the second number"))

num1,num2=num2,num1

print("The value of num1 now is",num1)

print("The value of num2 now is",num2)

#end

Test cases:

Output:

Enter the first number 3

Enter the second number 2

value of num 1 now is: 2

value of num2 now is: 3

 python3 swap.py

Enter the first number-8

Enter the second number6

The value of num1 now is 6

The value of num2 now is -8

1. Write a program in python to find quotient and reminder after division.

Program:

#Python program to find quotoent and reminder after divison

divident=int(input("Enter the divident"))

divisor=int(input("enter the divisor"))

quotient=divident//divisor

rem=divident%divisor

print("The quotient of the division is",quotient)

print("The reminder of the division is",reminder)

#end

Test cases:

The numbers can either be perfectly divided or give some reminder.

Output:

Enter the divident1000

enter the divisor5

The quotient of the division is 200

The reminder of the division is 0

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Enter the divident4567

enter the divisor6

The quotient of the division is 761

The reminder of the division is 1

10. Write a program in python to  determine the last digit of a given positive integer value.

Program:

#To determine the last digit of a number

num=int(input("Enter a number"))

if num<0:

    num=num\*-1

else:

    pass

last=num%10

print("The last digit of the number is",last)

Test cases:

The program is same for all numbers

Output:

Enter a number45789

The last digit of the number is 9

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11. Write a Python program to display the value of the base raised to that exponent. Your output should be in the following format:

What base? 10

What power of 10? 4

10 to the power of 4 is 1000

Program:

#To raise a number as the power of another number

num1=int(input("Enter the base value of the number"))

num2=int(input("Enter the power of the number"))

num=num1\*\*num2

print("The value of the number is",num)

Test cases:

Enter the base value of the number3

Enter the power of the number7

The value of the number is 2187

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python3 power.py

Enter the base value of the number-89

Enter the power of the number3

The value of the number is -704969

 12. Write a program to find the net salary of an employee by getting the basic pay (BP) as input. Compute the net pay based  upon the following formulae:

DA = 88% of BP

            HRA = 8% of BP

CCA = Rs. 1000

Insurance = Rs. 2000

PF = 10% of BP

Gross Pay = BP + DA + HRA + CCA

Deductions = Insurance + PF

Program:

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#Program to calculate the net salary of a person

bp=float(input("Enterthe basic pay of the employee"))

da=88/100\*bp

hra=8/100\*bp

cca = 1000

Insurance =2000

pf=10/100\*bp

GrossPay = bp+da+hra+cca

print("The gross pay of the employee is",GrossPay)

Deductions = Insurance + pf

print("The deductions of the employee is",Deductions)

print("The netsalary is",GrossPay-Deductions)

#end

Test cases:

Enterthe basic pay of the employee100000

The gross pay of the employee is 197000.0

The deductions of the employee is 12000.0

The netsalary is 185000.0

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1. Write a program in python to solve a quadratic equation.

Program:

a=eval(input("coefficient of x^2:"))

b=eval(input("coefficient of x:"))

c=eval(input("constant:"))

import math

sol1=(-b+math.sqrt((b\*\*2)-4\*a\*c))/(2\*a)

sol2=(-b-math.sqrt((b\*\*2)-4\*a\*c))/(2\*a)

print("the solutions of the quadratic equations are ",sol1, sol2)

Output:

coefficient of x^2:1

coefficient of x:-3

constant:2

the solutions of the quadratic equations are  2.0  and  1.0

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**Part – B (Optional)**

**1.** Light travels at 3 \* 10 8 meters per second. A light-year is the distance a light beam travels in one year. Write a program that calculates and displays the value of a lightyear. [Light year = speed of light \* number of seconds in a year]

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print("to calculate the distance travelled by light in one year in meters")

light\_yr=3\*(10\*\*8)\*24\*60\*60\*365

print(light\_yr, "is the distance travelled by light in one year")

Output:

to calculate the distance travelled by light in one year in meters

9460800000000000 is the distance travelled by light in one year

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2.  Five Star Video rents new videos for $3.00 a night and oldies for $2.00 a night. Write a program that the clerks at Five Star Video can use to calculate the total charge for a customer’s video rentals. The program should prompt the user for the number of each type of video and output the total cost.

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new=int(input("Enter the number of new video rentals"))

old=int(input("Enter the number of old video rentals"))

total\_charge= new\*3+old\*2

print("The total charge in dolars is",total\_charge)

while True:

    choice=input("Do you want to add more rentals? y/n")

    if choice in ["n","N"]:

        break

    new1=int(input("Enter the number of new video rentals"))

    old1=int(input("Enter the number of old video rentals"))

    new=new+new1

    old=old+old1

    total\_charge= new\*3+old\*2

    print("The total charge in dolars is",total\_charge)

print("The end")

Output:

Enter the number of new video rentals5

Enter the number of old video rentals7

The total charge in dolars is 29

Do you want to add more rentals? y/ny

Enter the number of new video rentals5

Enter the number of old video rentals6

The total charge in dolars is 56

Do you want to add more rentals? y/nn

The end

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3. An employee’s total weekly pay equals the hourly wage multiplied by the total

number of regular hours plus any overtime pay. Overtime pay equals the total

overtime hours multiplied by 1.5 times the hourly wage. Write a program that takes as

inputs the hourly wage, total regular hours, and total overtime hours and displays an

employee’s total weekly pay.

'''An employee’s total weekly pay equals the hourly wage multiplied by the total number of regular hours plus any overtime pay. Overtime pay equals the total overtime hours multiplied by 1.5 times the hourly wage. Write a program that takes as inputs the hourly wage, total regular hours, and total overtime hours and displays an employee’s total weekly pay. '''

hour\_wage=float(input("Enter the hourly wage of the employee"))

reg\_hours=float(input("enter the regular hours of the employee"))

ov\_hours=float(input("enter the over hours of the employee"))

actual\_pay=reg\_hours\*hour\_wage

bonus=ov\_hours\*1.5\*hour\_wage

total=actual\_pay+bonus

print("The employee worked for ",reg\_hours+ov\_hours, "hours")

print("The final pay of the employee is",total)

Output:

Enter the hourly wage of the employee5000

enter the regular hours of the employee7

enter the over hours of the employee4

The employee worked for  11.0 hours

The final pay of the employee is 65000.0

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4.Write a Python program that prompts the user to enter an upper or lower case letter and displays the corresponding Unicode encoding.

'''Write a Python program that prompts the user to enter an upper or lower case letter and displays the corresponding Unicode encoding. '''

def unitlen():

    lower=input("Enter a lower case character")

    if len(lower)!=1:

        print("Enter exactly one character, valid ")

        unitlen()

    else:

        lower=lower.lower()

        value=ord(lower)

        print("The ascii value of the character is",value)

def unitlen1():

    upper=input("Enter a upper case character")

    if len(lower)!=1:

        print("Enter exactly one character, valid ")

        unitlen1()

    else:

        upper=upper.upper()

        value=ord(upper)

        print("The ascii value of the character is",value)

unitlen()

unitlen1()

Output

QNo.5.

Write a program to read two complex numbers from the user and find their sum,

difference and product.

Python code:

'''Write a program to read two complex numbers from the user and find their sum,

difference and product.'''

c1=complex(input("enter the first complex number"))

c2=complex(input("enter the second complex number"))

Sum=c1+c2

prod=c1\*c2

print(Sum," is the sum of the complex numbers",prod,"is the product of the complex numbers")

**Learning outcome:**

The students are well versed with the basic syntax in python

The ability to think on basic problem solving is instilled.