Q1.

import math

class Circle:

    def \_\_init\_\_(self):

        self.\_\_r=float(input("Enter radius: "))

    def area(self):

        print("Area: ",round(math.pi\*self.\_\_r\*\*2,2))

    def peri(self):

        print("Perimeter: ",round(2\*math.pi\*self.\_\_r,2))

mycircle=Circle()

mycircle.area()

mycircle.peri()

Output :

Enter radius: 2.5

Area: 19.63

Perimeter: 15.71

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Q2.

class Rectangle:

    def \_\_init\_\_(self):

        self.\_\_length=float(input("Enter length: "))

        self.\_\_width=float(input("Enter width: "))

        self.isSquare()

    @property

    def getLength(self):

        return self.\_\_length

    @getLength.setter

    def setLength(self,length):

        self.\_\_length=length

    @property

    def getWidth(self):

        return self.\_\_width

    @getWidth.setter

    def setWidth(self,width):

        self.\_\_width=width

    def area(self):

        print("Area: ",self.\_\_length\*self.\_\_width)

    def isSquare(self):

        if self.\_\_length==self.\_\_width:

            print("It is a Square")

        else :

            print("It is not a Square")

myrect=Rectangle()

myrect.area()

Output :

Enter length: 6

Enter width: 3

It is not a Square

Area: 18.0

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Q3.

# import math

# class Point:

#     def \_\_init\_\_(self,a,b):

#         self.\_\_x=a

#         self.\_\_y=b

#     @staticmethod

#     def distance(p1,p2):

#         d=math.sqrt((p2.\_\_x-p1.\_\_x)\*\*2 + (p2.\_\_y-p1.\_\_y)\*\*2)

#         print("Distance is: ",d)

# a=float(input("Enter X: "))

# b=float(input("Enter Y: "))

# p1=Point(a,b)

# a=float(input("Enter X: "))

# b=float(input("Enter Y: "))

# p2=Point(a,b)

# Point.distance(p1,p2)

import math

class Point:

    x1=0

    x2=0

    y1=0

    y2=0

    distance=0

    def \_\_init\_\_(self,x1,x2,y1,y2):

        self.x1=x1

        self.x2=x2

        self.y1=y1

        self.y2=y2

    def calc\_dist(self):

        self.distance=math.sqrt((self.x2-self.x1)\*\*2 + (self.y2-self.y1)\*\*2)

        print("Distance between two points is : ",self.distance)

x1 = float(input("Enter x1 : "))

x2 = float(input("Enter x2 : "))

y1 = float(input("Enter y1 : "))

y2 = float(input("Enter y2 : "))

p=Point(x1,x2,y1,y2)

p.calc\_dist()

Output :

Enter x1 : 1

Enter x2 : 2

Enter y1 : 3

Enter y2 : 4

Distance between two points is : 1.4142135623730951

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Q4.

class Printer:

    def setString(self,x):

        self.\_\_mystr=x

    def printString(self,ch):

        if ch in 'Uu':

            print(self.\_\_mystr.upper())

        if ch in 'Ll':

            print(self.\_\_mystr.lower())

obj=Printer()

temp=input("Enter a string: ")

obj.setString(temp)

choice=input("Enter upper or lower (u/l): ")

obj.printString(choice)

Output :

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Q5.

from datetime import date

class Person:

    def \_\_init\_\_(self):

        self.\_\_name=input("Enter first name:")

        self.\_\_surname=input("Enter last name: ")

        self.\_\_bdate=date(int(input("Enter year: ")),int(input("Enter month: ")),int(input("Enter day: ")))

        self.\_\_addr=input("Enter address: ")

        self.\_\_ph=int(input("Enter phone number: "))

        self.\_\_email=input("Enter email id: ")

    def display(self):

        print("Name: ",self.\_\_name,self.\_\_surname,"\nBirthday: ",self.\_\_bdate,"\nAddress: ",self.\_\_addr,"\nPhone Number: ",self.\_\_ph,"\nEmail: ",self.\_\_email)

        self.\_\_myage()

    def \_\_myage(self):

        current=date.today()

        x=current.year-self.\_\_bdate.year - ((current.month,current.day)<(self.\_\_bdate.month,self.\_\_bdate.day))

        print("Current age is :" ,x)

obj=Person()

print("----User details----")

obj.display()

Output :

Enter first name:hrishikesh

Enter last name: wavhal

Enter year: 2000

Enter month: 10

Enter day: 12

Enter address: aundh

Enter phone number: 9552776288

Enter email id: hrishikwavhal@gmail.com

----User details----

Name: hrishikesh wavhal

Birthday: 2000-10-12

Address: aundh

Phone Number: 9552776288

Email: hrishikwavhal@gmail.com

Current age is : 21

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Q6.

class vehicle:

    def \_\_init\_\_(self):

        self.max\_speed=float(input("Enter max speed : "))

        self.mileage=float(input("Enter mileage : "))

class bus(vehicle):

    def seating\_capacity(self,x=50):

        if x > 50 or x < 0:

            self.capacity=0

        else :

            self.capacity=x

    def setfare(self):

        self.fare=((self.capacity\*100)/5)+((self.capacity\*100)/5)\*0.1

        return self.fare

class taxi(vehicle):

    def seating\_capacity(self,x=3):

        if x > 3 or x < 0:

            self.capacity=0

        else:

            self.capacity=x

    def setfare(self):

        self.fare=((self.capacity\*100)/5)

        return self.fare

while True:

    print("Enter travelling mode: \n1. Taxi \n 2. Bus \n3. Exit")

    ch=int(input("Enter choice: "))

    if ch==1:

        obj=taxi()

        obj.seating\_capacity(int(input("Enter no of seats for taxi: ")))

        print("per kilometer charge : ",obj.setfare())

        print("for 100 km total fare for taxi will be : ",100\*obj.setfare())

    elif ch==2:

        obj=bus()

        obj.seating\_capacity(int(input("Enter no of seats for bus: ")))

        print("per kilometer charge : ",obj.setfare())

        print("for 100 km total fare for bus will be : ",100\*obj.setfare())

    elif ch==3:

        break

    else:

        print("invalid choice!")

Output :

Enter travelling mode:

1. Taxi

2. Bus

3. Exit

Enter choice: 1

Enter max speed : 60

Enter mileage : 15

Enter no of seats for taxi: 2

per kilometer charge : 40.0

for 100 km total fare for taxi will be : 4000.0

Enter travelling mode:

1. Taxi

2. Bus

3. Exit

Enter choice: 2

Enter max speed : 40

Enter mileage : 17

Enter no of seats for bus: 2

per kilometer charge : 44.0

for 100 km total fare for bus will be : 4400.0

Enter travelling mode:

1. Taxi

2. Bus

3. Exit

Enter choice: 3

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Q7.

from tkinter import E

class triangle():

    def \_\_init\_\_(self,angle1,angle2,angle3):

        self.angle1=angle1

        self.angle2=angle2

        self.angle3=angle3

        self.number\_of\_sides=3

    def check\_angles(self):

        self.tot=self.angle1+self.angle2+self.angle3

        if self.tot==180.0:

            return True

        else:

            return False

x = float(input("First angle:"))

y = float(input("Second angle:"))

z = float(input("Third angle:"))

my\_triangle=triangle(x,y,z)

print("Number of sides: ",my\_triangle.number\_of\_sides)

print("Check angles: ",my\_triangle.check\_angles())

Output :

First angle:90

Second angle:60

Third angle:30

Number of sides: 3

Check angles: True

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Q8.

from abc import abstractmethod,ABC

#abc stands for abstract base class

class employee(ABC):

    def \_\_init\_\_(self):

        self.fname=input("Enter name: ")

        self.lname=input("Enter last name: ")

        self.salary=0

    @abstractmethod

    def my\_sal(self):

        pass

class full\_time(employee):

    def my\_sal(self):

        self.salary=float(input("Enter salary: "))-float(input("Enter deductions:  "))

        print("CTC is : ",self.salary\*12,"per anum.")

class hourly(employee):

    def my\_sal(self):

        self.salary=float(input("Enter number of working hours: "))\*(float(input("Enter rate per hour: ")))

        print("wage per day is : ",self.salary)

while True:

    print("1.Full time employee\n2.Part time employee\n3.exit")

    ch=int(input("Enter choice: "))

    if ch==1:

        obj=full\_time()

        obj.my\_sal()

    elif ch==2:

        obj=hourly()

        obj.my\_sal()

    elif ch==3:

        break

    else:

        print("Enter valid choice!")

Output :

1.Full time employee

2.Part time employee

3.exit

Enter choice: 1

Enter name: hrishi

Enter last name: wavhal

Enter salary: 21000

Enter deductions: 2100

CTC is : 226800.0 per anum.

1.Full time employee

2.Part time employee

3.exit

Enter choice: 2

Enter name: hrishi

Enter last name: wavhal

Enter number of working hours: 8

Enter rate per hour: 50

wage per day is : 400.0

1.Full time employee

2.Part time employee

3.exit

Enter choice: 3

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