

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
```

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@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: "))

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# 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):
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        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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