Python

Assignment-5

[8]:

1. Write a Python program to create a class representing a Circle. Include methods to calculate its area and perimeter.

**from math import** pi

**class Circle**:

**def** area(self,r): ar=pi\*r\*\*2

print("area of circle is "+str(ar))

**def** perimeter(self,r): pr=2\*pi\*r

print("perimeter of circle is "+str(pr))

cr=Circle()

rad=int(input("enter the radius ")) cr.area(rad)

cr.perimeter(rad)

[13]:

enter the radius 5

area of circle is 78.53981633974483 perimeter of circle is 31.41592653589793

1. Write a Python program to create a calculator class. Include methods for basic arithmetic operations.

**class Calculator**:

**def** add(self,a,b):

print("The sum is "+str(a+b))

**def** sub(self,a,b):

print("The difference is "+str(a-b))

**def** mul(self,a,b):

print("The product is "+str(a\*b))

**def** div(self,a,b):

print("The answer is "+str(a/b)) in1=int(input("enter 1st input")) in2=int(input("enter 2nd input")) op=input("enter the operator ") cl=Calculator()

**if**(op=="+"):

cl.add(in1,in2)

**elif**(op=="-"):

cl.sub(in1,in2)

**elif**(op=="\*"): cl.mul(in1,in2)

**elif**(op=="/"): cl.div(in1,in2)

**else**:

print("invalid operation")

[4]:

enter 1st input55 enter 2nd input22 enter the operator + The sum is 77

1. Write a Python program to create a class that represents a shape. Include methods to calculate its area and perimeter. Implement subclasses for different shapes like circle, triangle, and square.

**import math class Shape**():

**def** ar(self):

**pass**

**def** prm(self):

**pass**

**class Circle**(Shape):

**def**  init (self, r): self.rad = r

**def** cr\_ar(self): ar=math.pi\*self.rad\*\*2

print("area of circle is "+str(ar))

**def** cr\_pr(self): pr=2\*math.pi\*self.rad

print("perimeter of circle is "+str(pr))

**class Rectangle**(Shape):

**def**  init (self, length, breadth): self.length = length self.breadth = breadth

**def** rec\_ar(self):

r\_ar=self.length \* self.breadth print("area of rectangle is "+ str(r\_ar))

**def** rec\_pr(self):

r\_pr=2 \* (self.length + self.breadth) print("perimeter of rectangle is "+ str(r\_pr))

**class Triangle**(Shape):

**def**  init (self, base, height, a,b,c): self.base = base

self.height = height self.a = a

self.b = b self.c = c

**def** tri\_area(self):

tr\_ar=0.5 \* self.base \* self.height print("area of triangle "+str(tr\_ar))

**def** tri\_peri(self):

tr\_pr=self.a + self.b + self.c print("perimeter of triangle "+str(tr\_pr))

*#circle*

r=int(input("enter radius ")) c1 = Circle(r)

c1.cr\_ar() c1.cr\_pr()

*#rectangle*

l = int(input("enter length ")) b = int(input("enter breadth ")) r1 = Rectangle(l,b)

r1.rec\_ar() r1.rec\_pr()

*# triangle*

base =int(input("enter base ")) height = int(input("enter height ")) s1 = int(input("enter 1st side "))

s2 = int(input("enter 2nd side ")) s3 = int(input("enter 3rd side ")) tr = Triangle(base,height,s1,s2,s3) tr.tri\_area()

tr.tri\_peri()

enter radius 5

area of circle is 78.53981633974483 perimeter of circle is 31.41592653589793 enter length 5

enter breadth 6

area of rectangle is 30 perimeter of rectangle is 22 enter base 10

[ ]:

enter height 15 enter 1st side 10 enter 2nd side 20 enter 3rd side 15 area of triangle 75.0

perimeter of triangle 45