In [8]:

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'''Python Program to solve basic problems of Mensuration.
Python features used in this program: Class, Object and function concepts of python'''

class Mensuration:
    class Mensuration_3D:
        def Cuboid():
            l=int(input("Entre the lenght of the Cuboid : "))
            b=int(input("Entre the breadth of the Cuboid : "))
            h=int(input("Entre the height of the Cuboid : "))
            v=0
            s=0
            d=0
            Question=input("What do you want to find? : ")
            if Question=="Volume" or Question =="volume":
                v=l*b*h
                print ("The volume of the cuboid is : ",v)
            elif Question=="Total surface area" or Question=="total surface area" or Question=="TSA" or Question=="tsa":
                s=2*(l*b+b*h+h*l)
                print ("The total surface area of the cuboid is ",s)
            elif Question=="Diagonal" or Question=="diagonal":
                import math
                d=math.sqrt((l**2)+(b**2)+(h**2))
                print ("The diagonal of the cuboid is : ",d)
            else:
                print ("Sorry, The question is invalid")
        def Cube():
            l=int(input("Entre the side of the Cube : "))
            v=0
            s=0
            d=0
            Question=input("What do you want to find? : ")
            if Question=="Volume" or Question =="volume":
                v=l**3
                print ("The volume of the cuboid is : ",v)
            elif Question=="Total surface area" or Question=="total surface area" or Question=="TSA" or Question=="tsa":
                s=6*l**2
                print ("The total surface area of the cuboid is ",s)
            elif Question=="Diagonal" or Question=="diagonal":
                import math
                d=l*math.sqrt(3)
                print ("The diagonal of the cuboid is : ",d)
            else:
                print ("Sorry, The question is invalid")
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    def Cylinder():
        r=int(input("Entre the radius of the Cylinder : "))
        h=int(input("Entre the height of the Cylinder : "))
        import math
        v=0
        s=0
        d=0
        Question=input("What do you want to find? : ")
        if Question=="Volume" or Question =="volume":
            v=(math.pi)*(r**2)*h
            print ("The volume of the cylinder is : ",v)
        elif Question=="Total surface area" or Question=="total surface area" or Question=="TSA" or Question=="tsa":
            s=2*(math.pi)*r*(r+h)
            print ("The total surface area of the cylinder is ",s)
        elif Question=="Curved Surface Area" or Question=="curved surface area" or Question=="CSA" or Question=="csa":
            d=2*(math.pi)*r*h
            print ("The Curved Surface Area of the cylinder is : ",d)
        else:
            print ("Sorry, The question is invalid")
    def Cone():
        r=int(input("Entre the radius of the Cone : "))
        h=int(input("Entre the height of the Cone : "))
        import math
        l=math.sqrt((r**2)+(h**2))
        v=0
        s=0
        d=0
        Question=input("What do you want to find? : ")
        if Question=="Volume" or Question =="volume":
            v=(1/3)*(math.pi)*(r**2)*h
            print ("The volume of the cone is : ",v)
        elif Question=="Total surface area" or Question=="total surface area" or Question=="TSA" or Question=="tsa":
            s=(math.pi)*r*(r+l)
            print ("The total surface area of the cone is ",s)
        elif Question=="Curved Surface Area" or Question=="curved surface area" or Question=="CSA" or Question=="csa":
            d=(math.pi)*r*l
            print ("The Curved Surface Area of the cone is : ",d)
        else:
            print ("Sorry, The question is invalid")
    def Sphere():
        r=int(input("Entre the radius of the Sphere : "))
        import math
        v=0
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            s=0
            Question=input("What do you want to find? : ")
            if Question=="Volume" or Question =="volume":
                v=(4/3)*(math.pi)*(r**3)
                print ("The volume of the sphere is : ",v)
            elif Question=="Total surface area" or Question=="total surface area" or Question=="TSA" or Question=="tsa":
                s=4*(math.pi)*r**2
                print ("The total surface area of the sphere is ",s)
            else:
                print ("Sorry, The question is invalid")
        def Hemisphere():
            r=int(input("Entre the radius of the Hemisphere : "))
            import math
            v=0
            s=0
            d=0
            Question=input("What do you want to find? : ")
            if Question=="Volume" or Question =="volume":
                v=(2/3)*(math.pi)*(r**3)
                print ("The volume of the Hemisphere is : ",v)
            elif Question=="Total surface area" or Question=="total surface area" or Question=="TSA" or Question=="tsa":
                s=3*(math.pi)*r**2
                print ("The total surface area of the Hemisphere is ",s)
            elif Question=="Curved surface area" or Question=="curved surface area" or Question=="CSA" or Question=="csa":
                d=2*(math.pi)*r**2
                print ("The Curved surface area of the Hemisphere is ",d)
            else:
                print ("Sorry, The question is invalid")
    class Mensuration_2D:
        def Square():
            s=int(input("Entre the side of the Square : "))
            import math
            a=0
            p=0
            d=0
            Question=input("What do you want to find? : ")
            if Question=="Area" or Question =="area":
                a=s**2
                print ("The area of the square is : ",a)
            elif Question=="Perimeter" or Question=="perimeter":
                p=4*s
                print ("The perimeter of the square is ",p)
            elif Question=="Diagonal" or Question=="diagonal":
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                d=s*math.sqrt(2)
                print ("The Diagonal of the square is ",d)
            else:
                print ("Sorry, The question is invalid")
        def Rectangle():
            l=int(input("Entre the length of the Rectangle : "))
            b=int(input("Entre the breadth of the Rectangle : "))
            import math
            a=0
            p=0
            d=0
            Question=input("What do you want to find? : ")
            if Question=="Area" or Question =="area":
                a=l*b
                print ("The area of the rectangle is : ",a)
            elif Question=="Perimeter" or Question=="perimeter":
                p=2*(l+b)
                print ("The perimeter of the rectangle is ",p)
            elif Question=="Diagonal" or Question=="diagonal":
                d=math.sqrt((l**2)+(b**2))
                print ("The Diagonal of the rectangle is ",d)
            else:
                print ("Sorry, The question is invalid")
        def Circle():
            r=int(input("Entre the radius of the Circle : "))
            import math
            a=0
            c=0
            d=0
            Question=input("What do you want to find? : ")
            if Question=="Area" or Question =="area":
                a=(math.pi)*(r**2)
                print ("The area of the circle is : ",a)
            elif Question=="Circumference" or Question=="circumference":
                c=2*(math.pi)*(r)
                print ("The circumference of the circle is ",c)
            elif Question=="Diameter" or Question=="diameter":
                d=2*r
                print ("The Diameter of the circle is ",d)
            else:
                print ("Sorry, The question is invalid")
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In [5]:
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1 xyz=Mensuration
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In [9]:
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1 xyz.Mensuration_3D.Sphere()
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Entre the radius of the Sphere : 8
What do you want to find? : mkmk
Sorry, The question is invalid
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In [ ]:
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