Exercise Problems OOP

January 19, 2022

1 Line (Distance and slope)

[14]:
```
import math
class Line():
    def __init__(self,c1,c2):
        self.c1 = c1
        self.c2 = c2
        print(f'Co-ordinate 1 = {self.c1}')
        print(f'Co-ordinate 2 = {self.c2}')
    def distance(self):
        return math.sqrt((self.c2[0] - self.c1[0])**2 + (self.c2[1] - self.
 ↪c1[1])**2)

    def slope(self):
        return (self.c2[1] - self.c1[1]) / (self.c2[0] - self.c1[0])
```

[15]:
```
myline = Line((1,2),(3,4))
```

```
Co-ordinate 1 = (1, 2)
Co-ordinate 2 = (3, 4)
```

[16]:
```
myline.distance()
```

[16]:
```
2.8284271247461903
```

[17]:
```
myline.slope()
```

[17]:
```
1.0
```

2 Cylinder volume and Surface area

[18]:
```
import math
class Cylinder():
    pi = 3.14
    def __init__(self, height = 2, radius = 1):
        self.height = height
```

```
        self.radius = radius
    def volume(self):
        return self.pi * self.radius ** 2 * self.height
    def surface_area(self):
        return (2 * self.pi * self.radius * self.height) + (2 * self.pi * self.
↪radius ** 2 * self.height)
```

[19]:
```
mycylinder = Cylinder()
```

[20]:
```
mycylinder.volume()
```

[20]: 6.28

[21]:
```
mycylinder.surface_area()
```

[21]: 25.12

3 The above Line problem can also be done as

[22]:
```
class Line():
    def __init__(self,c1,c2):
        self.c1 = c1
        self.c2 = c2
    def distance(self):
        x1,y1 = self.c1
        x2,y2 = self.c2
        return ((x2-x1)**2 + (y2-y1)**2)** 0.5
    def slope(self):
        x1,y1 = self.c1
        x2,y2 = self.c2
        return ((y2-y1)/(x2-x1))
```

[23]:
```
myline = Line((1,2),(3,4))
```

[24]:
```
myline.distance()
```

[24]: 2.8284271247461903

[25]:
```
myline.slope()
```

[25]: 1.0

[ ]: