Object Oriented Programming

Exercise 1

Problem 1

Fill in the Line class methods to accept coordinates as a pair of tuples and return the slope and distance of the line.

In [3]:
```
class Line:

    def __init__(self, coor1, coor2):
        self.coor1 = coor1
        self.coor2 = coor2

    def distance(self):
        x1, y1 = self.coor1
        x2, y2 = self.coor2
        return ((x2 - x1)**2 + (y2 - y1)**2)**0.5

    def slope(self):
        x1, y1 = self.coor1
        x2, y2 = self.coor2
        return (y2 - y1) / (x2 - x1)
```

In [6]:
```
coordinate1 = (3, 2)
coordinate2 = (8, 10)

li = Line(coordinate1, coordinate2)

# Calculate and print the distance and slope
print("Distance:", li.distance())
print("Slope:", li.slope())
```

```
Distance: 9.433981132056603
Slope: 1.6
```

In [2]:
```
# EXAMPLE OUTPUT

coordinate1 = (3,2)
coordinate2 = (8,10)

li = Line(coordinate1,coordinate2)
```

In [4]:
```
li.distance()
```

Out[4]:
```
9.433981132056603
```

In [5]:
```
li.slope()
```

Out[5]:
```
1.6
```

Problem 2

Fill in the class

In [9]:
```
class Cylinder:

    def __init__(self, height=1, radius=1):
        self.height = height
        self.radius = radius

    def volume(self):
        return 3.14 * self.radius**2 * self.height

    def surface_area(self):
        return (2 * 3.14 * self.radius * self.height) + (2 * 3.14 * self.radiu
```

In [10]:
```
c = Cylinder(2, 3)

print("Volume:", c.volume())
print("Surface Area:", c.surface_area())
```

```
Volume: 56.52
Surface Area: 94.2
```

In [6]:
```
# EXAMPLE OUTPUT
c = Cylinder(2,3)
```

In [7]:
```
c.volume()
```

Out[7]:
```
56.52
```

In [8]:
```
c.surface_area()
```

Out[8]:
```
94.2
```