Classes and Objects in Java

More details: Public vs. Private

By the end of this video you will be able to…

- Describe what the keywords public and private mean and their effect on where variables can be accessed
- Explain what getters and setters are and write them in your classes

```
public class SimpleLocation
{
    public double latitude;
    public double longitude;
```

public means can access from any class

```
public class LocationTester
{
  public static void main(String[] args)
  {
     SimpleLocation ucsd =
          new SimpleLocation(32.9, -117.2);
     SimpleLocation lima =
          new SimpleLocation(-12.0, -77.0);

     lima.latitude = -12.04;

     System.out.println(ucsd.distance(lima));
  }
}
```

allowed

```
public class SimpleLocation
{
    // …
    public double distance(SimpleLocation other)
    {
        // Body not shown
    }
```

```
public class LocationTester
{
  public static void main(String[] args)
  {
     SimpleLocation ucsd =
          new SimpleLocation(32.9, -117.2);
     SimpleLocation lima =
          new SimpleLocation(-12.0, -77.0);

     lima.latitude = -12.04;

     System.out.println(ucsd.distance(lima));
  }
}
```

allowed

```
public class SimpleLocation
{
    private double latitude;
    private double longitude;

    public S

    {
        this.latitude = lat;
        this.longitude = lon;
    }
```

private means can access only from SimpleLocation

```
public class SimpleLocation
{
    private double latitude;
    private double longitude;

    public SimpleLocation(double lat, double lon)
    {
        this.latitude = lat;
        this.longitude = lon;
    }
```

allowed

```
public class LocationTester
{
  public static void main(String[] args)
  {
     SimpleLocation ucsd =
          new SimpleLocation(32.9, -117.2);
     SimpleLocation lima =
          new SimpleLocation(-12.0, -77.0);

     lima.latitude = -12.04;

     System.out.println(ucsd.distance(lima));
  }
}
```

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```
public class SimpleLocation
{
    private double latitude;
    private double longitude;
```

Rule of thumb: Make member variables private
(and methods either public or private)

```
public class SimpleLocation
{
    private double latitude;
    private double longitude;

    public double getLatitude()
    {
        return this.latitude;
    }
```

getter

```
public class LocationTester
{
  public static void main(String[] args)
  {
     SimpleLocation ucsd =
          new SimpleLocation(32.9, -117.2);
     SimpleLocation lima =
          new SimpleLocation(-12.0, -77.0);

     System.out.println(lima.latitude());
  }
}
```

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```
public class LocationTester
{
  public static void main(String[] args)
  {
     SimpleLocation ucsd =
          new SimpleLocation(32.9, -117.2);
     SimpleLocation lima =
          new SimpleLocation(-12.0, -77.0);

     System.out.println(lima.getLatitude());
  }
}
```

allowed

```
public class SimpleLocation
{
    private double latitude;
    private double longitude;

    public double getLatitude()
    {
        return this.latitude;
    }
    public void setLatitude(double lat)
    {
        this.latitude = lat;
    }
```

setter

```
public void setLatitude(double lat)
{
    if (lat < -180 || lat > 180) {
        System.out.println("Illegal value for latitude");
    }
    else {
        this.latitude = lat;
    }
}
```