

# Classes and Objects in Java



More details: Public vs. Private



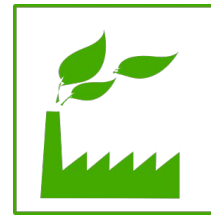
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by Christine Alvarado, Mia Minnes, and Leo Porter, 2015.

# 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);

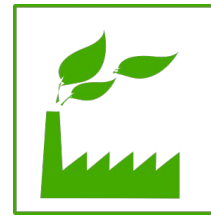
        lima.latitude = -12.04;

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



**allowed**

```
public class SimpleLocation  
{
```



```
    // ...
```

```
    public double distance(SimpleLocation other)
```

```
    {
```

```
        // Body not shown
```

```
    }
```

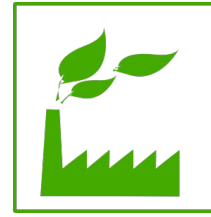
```
public class LocationTester
{
    public static void main(String[] args)
    {
        SimpleLocation ucsd =
            new SimpleLocation(32.9, -117.2);
        SimpleLocation lima =
            new SimpleLocation(-12.0, -77.0);

        lima.latitude = -12.04;
        System.out.println(ucsd.distance(lima));
    }
}
```



allowed

```
public class SimpleLocation  
{
```

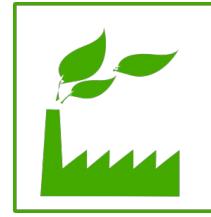


```
    private double latitude;  
    private double longitude;
```

```
    public static SimpleLocation create(  
        double lat, double lon)
```

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

```
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));
    }
}
```

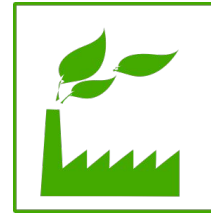


**ERRO**

R

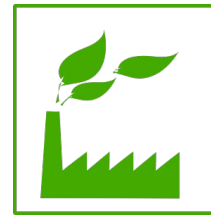
```
public class SimpleLocation  
{
```

```
    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);
    }
}
```



**ERRO**  
**R**

```
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);

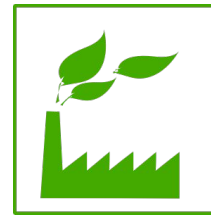
        System.out.println(lima.getLatitude());
    }
}
```



**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;
    }
}
```

