Access Modifiers

Engi- 5895

Hafez Seleim

<table>
<thead>
<tr>
<th>Variable Type</th>
<th>Access Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>public</td>
<td>accessed by any class in or out the package.</td>
</tr>
<tr>
<td>default</td>
<td>accessed by all classes within the same package</td>
</tr>
<tr>
<td>protected</td>
<td>by all subclasses within the same package</td>
</tr>
<tr>
<td>private</td>
<td>cannot be accessed by any other class.</td>
</tr>
</tbody>
</table>

Class Methods or Instance Methods

```java
private class Movie {
    private static float price = 3.5;
    private String rating;
    ...
    public static void setPrice(float newPrice) {
        price = newPrice;
    }
    public float getPrice() {
        return price;
    }
}
```

Movie.setPrice(9);
Movie mov1 = new Movie();
mov1.setPrice(9);
float a = Movie.getPrice(); // error
float b = mov1.getPrice();

final Variables

- A final Variable is a constant.
- A final variable cannot be modified.
- A final variable must be initialized.
- A final variable is often public to allow external access.

final Classes

- A final Class is one that cannot be inherited from.

final Methods

- A final Method is one that cannot be overridden in a subclass.
**final Class example**

```java
public final class Color {
    public final static Color Black = new Color(0,0,0);
    
    ..... 
}
```

Static variable is a global variable shared by all the instances of objects and it has only single copy. Final variable is a constant variable and it can't be changed.

---

### Review: Access Modifiers

<table>
<thead>
<tr>
<th>Modifier</th>
<th>Class</th>
<th>Package</th>
<th>Subclass</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td>public</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>protected</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>no modifier (package)</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>private</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
</tbody>
</table>