



## CSE 215L: Programming Language II Lab

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Quiz 3–Summer 2020, Total: 60 points

Duration: 50 minutes (to code) + 5 minutes (to submit)

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### Submission guideline:

1. Create a single project with name Quiz3\_YOUR\_ID.
2. You need to submit your codes in “**Online Quiz 3**” assignment.

*Note: Your quiz will be marked on your submitted code only. Therefore, if you fail to submit legitimate files maintaining the given guidelines, you have to accept the consequences.*

### Task – 1

10 +05+10+10+15+10 = 60 points

#### Vehicle class:

First create an abstract Vehicle class that contains code common to all of the vehicles.

1. Vehicle class has a color, IDnumber, and a model.
2. The accessor and mutator methods for all three data fields.
3. Also include a void wheels() method which is declared abstract.

#### Comparable interface:

1. Declare an abstract method named equals which has a return type of Boolean.

#### Car class:

Car class is a subclass of Vehicle which implements the **Comparable** interface.

1. Write a class called Car which extends the Vehicle class and implements the Comparable interface.
2. Override the equals method in the Object class. Two Car objects are equal if their models are the same.
3. In the Car class override the wheels() method to display “A car has four wheels”.
4. A method named toString() that returns a string description for the car.

#### Bicycle class:

Bicycle class is a subclass of Vehicle which implements the **Comparable** interface.

1. Write a class called Bicycle which extends the Vehicle class and implements the Comparable interface.
2. Override the equals method in the Object class. Two Bicycle objects are equal if their models are the same.
3. In the Bicycle class override the wheels() method to display “A bicycle has two wheels”.
4. A method named toString() that returns a string description for the bicycle.

**Test class:**

1. Implement a test class to create an array of size x which can store both car objects and bicycle objects where, x = the 5th digit of your NSU ID. For example, if your ID is 1238765999, then x = 7.
2. Take parameters for the objects and invoke toString() and equals methods.

**UML Diagram:**

Draw the UML diagram showing relationship of all the classes.