



# COMPUTER PROGRAMMING

## WEEK 8

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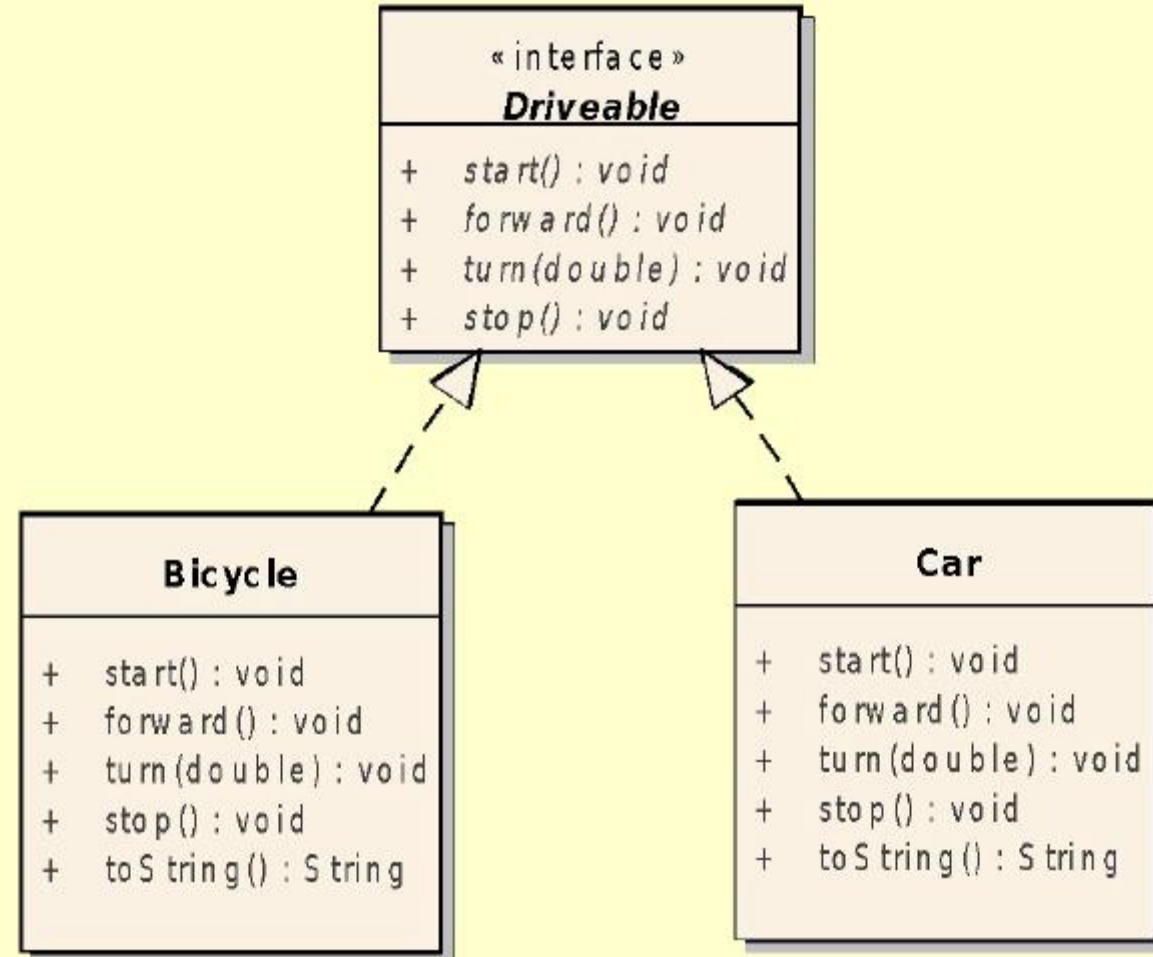
# ACKNOWLEDGMENT

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# INTERFACES

- The interface contains **method declarations** and may contain constants
- All the methods are **public** (even if the modifier is missing)
- Interfaces cannot be instantiated
- The implementer classes should **implement all the methods** declared in the interface
- A **class** can **extend a single class** but may **implement any number of interfaces**

## class interfaces



# THE DRIVEABLE INTERFACE

```
public interface Driveable{  
    public void start();  
    public void forward();  
    public void turn( double angle);  
    public void stop();  
}
```

```
public class Bicycle implements Driveable{
    @Override
    public void start() {
        System.out.println("The bicycle has been started");
    }

    @Override
    public void forward() {
        System.out.println("The bicycle moves forward");
    }

    @Override
    public void turn( double angle) {
        System.out.println("The bicycle turns "+angle+
                           " clockwise");
    }

    @Override
    public void stop() {
        System.out.println("The bicycle has been stopped");
    }
}
```

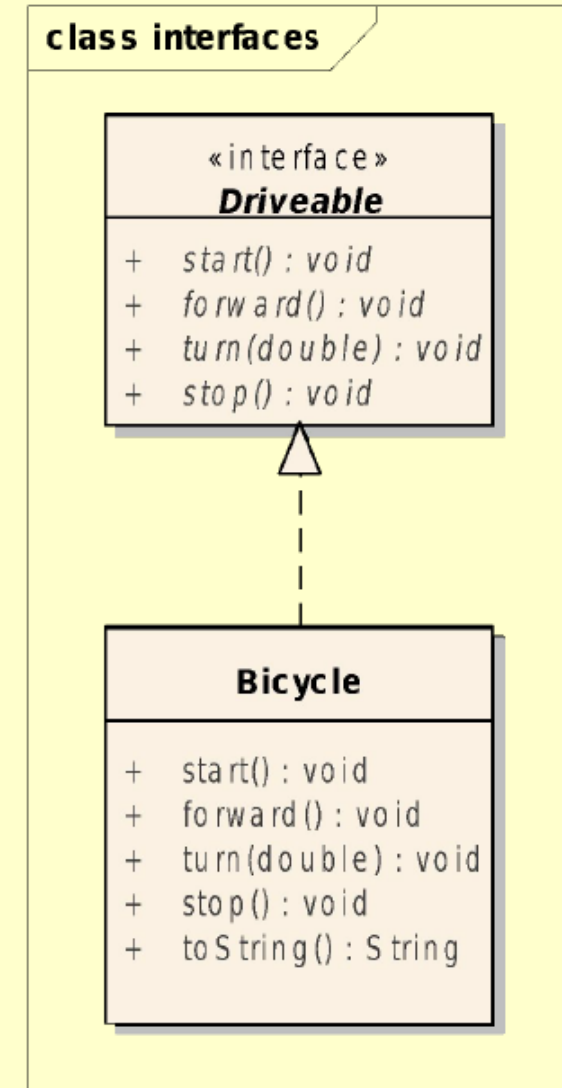
# Interfaces vs. Classes

- **Interface:**

- User-defined type
- Set of methods
- No implementations provided
- Cannot be instantiated

- **Class:**

- User-defined type
- Set of data and methods
- All the methods are implemented
- Can be instantiated



# JAVA INTERFACE **DEFAULT** METHOD

```
public interface Animal{  
    void eat();          // Abstract method  
    // Implemented method  
    default void log( String str ){  
        System.out.println("Animal log: "+str);  
    }  
}
```





```
public class Bear implements Animal{
```

```
// Mandatory!!!
```

```
    void eat(){
```

```
        System.out.println("Bear eats");
```

```
    }
```

```
// It is not mandatory to provide implementation for the log method
```

```
}
```

# JAVA INTERFACE **STATIC** METHOD

```
public interface MatrixOperations{  
    static Matrix add(Matrix a, Matrix b){  
        //...  
    }  
  
}
```

- **Helper methods** – associated with class, not instances
- **Cannot be overridden** in implementer classes