

## More OOD + OOP Topics

- Inheritance & Polymorphism
- Proper use of static
- Interface & Abstract Class



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Slide 1

## Inheritance & Polymorphism

- Inheritance
  - A class inherits behavior from another class

```
public class classC extends classP
```

    - `classP` is parent or superclass; **a more general concept**
    - `classC` is child or subclass; **a more specific & related concept**
    - `classC` inherits instance variables and methods from `classP`
  - Protected Variables and Methods
    - Allow descendants of a class to access instance variables and methods
  - Discuss `demoInheritance.java`
- Polymorphism
  - Type of object is determined at run-time
  - Discuss `demoPolymorphism.java`



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## Proper use of static



- Java static keyword
  - Use to define a constant (i.e., final)
    - Make public if you want code anywhere to access constant
    - Make protected if you want descendants to access constant
    - Otherwise, make private
  - Use to define a variable for the class
    - This is called a **class variable**
      - i.e., it is NOT an instance variable
    - Only one value for this variable regardless of number of objects constructed
  - Use to define a method for the class
    - This is called a **class method**
      - i.e., it is NOT associated with any object instance
    - Called using `className.methodName(...)`
    - Can use static variables; cannot use instance variables

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## Interface & Abstract Class



- Interface
  - A blueprint used by a class
  - May contain
    - Static constants
    - Method headers (i.e., abstract methods)
      - What's a method header?
        - » A method that has no implementation (i.e., block of code)
- Abstract Class
  - A class that cannot be used to construct an object!
  - May contain
    - Abstract and concrete methods
    - Class and instance variables
    - Class and instance methods

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## Interface & Abstract Class

- Discuss
  - demoInterfaceCar.java
  - demoAbstractCar.java
  - demoUseInterfaceCar.java
  - demoUseAbstractCar.java

