

Introduction to Programming – Concepts and Tools

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Week 5

Today's Goals

- Reminder of last week
- Where you should be by today
- Warm-up
- Lecture
 - Subclasses
 - Inheritance

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Last week: Classes

- Classes as blueprints of datatypes
- Classes consist of
 - Name
 - Instance variables
 - Constructor methods
 - Instance methods
- Class variables are pointer variables
- Data hiding by restricting access
- Static variables – independent of the objects of the class
- Java's classes and packages

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Last week: Pillars of OOP

- Classes and objects are the main ingredient in object oriented programming (OOP)
 - People refer to the following three concepts as the pillars of object oriented programming
 - Encapsulation (data hiding)
 - Polymorphism
 - Inheritance (today's topic)
- Don't think that this has become a course on OOP, we are just scratching the surface!

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Designing Classes

- Designing simple classes is simple (surprise)
- Designing the necessary classes for a big programming project is art: Once you see the final solution you will agree upon whether the solution is good or bad, but it is difficult to give clear guidelines as to what (or which) classes are needed.
- However, as with any art form, there are certain guidelines (but no recipes).

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Where you should be

- Theory
 - Read chapters up to (and including) chapter 4, and chapter 6
 - Understand classes and some of their uses
 - Understand the advantage of data hiding
- Praxis
 - Design classes, in particular, make a good choice about what kind of instance methods the class should have
 - Use classes and objects in your programs to structure them

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Addition: `this` in static methods

```
class TestThisInStatic{  
    public static void main(String[] args){  
        System.out.println(this.toString());  
    }  
}
```