

Ch8: static

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CMPT167

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A banner for 'Science in the Valley' featuring a photograph of two scientists in white lab coats and safety glasses. One scientist is holding a large, glowing, yellow-orange flame or reaction. The text 'Science in the Valley' is written in a large, red, serif font with a drop shadow effect.

Science in the Valley

Interactive Half-day Workshops for
Grade 6 and 7 Students

**Science in the Valley is
looking for TAs for the month of May**

Interested?

Thursday, Feb 22

1:10 - 2:30

NEU 41

Review last time

- Packages

 - ◆ `package ca.twu.cmpt167.lab3.seanho.FractalTree;`

- Access modifiers

 - `private`
 - (no modifier)
 - `protected`
 - `public`

- Jar

static keyword

- ◆ `public static void main(String args[]) {`
- **static** keyword: **class attribute**
 - **Shared** by all instances of this class
 - ◆ vs. **instance** attribute: **separate** for each object
 - Exists **before** class is instantiated
 - ◆ Invoke **class methods** as: `ClassName.method()`
- **Running** a class vs. **instantiating** a class:
 - **Run** a class from JRE: `java MyClass`
 - ◆ No instances made, just `MyClass.main()` invoked
 - **Instantiating**: `new MyClass()`
 - ◆ **Constructor** is run, `main()` is not run

Idioms for Swing programs

- ◆ (see FractalTree.java)
- `main()`: calls `createAndShowGUI()`
 - In a **thread**-safe manner: `invokeLater()`
- `createAndShowGUI()`:
 - Sets up **window** (`JFrame`)
 - Instantiates **panel** (`JPanel`, `FractalTree`)
 - ◆ This calls **constructor**
- `FractalTree()` constructor:
 - Creates **widgets**, **layout**
- `actionPerformed()` callback



The “this” reference

- **this** refers to the current **instance**
 - Not always necessary in Java
 - Use to distinguish between **local** variable/parameter and **instance**/class attribute



```
public class Complex {  
    double real, imag;  
    public Complex() { real = 0.0; imag = 0.0; }  
    public Complex( double real, double imag ) {  
        this.real = real;  
        this.imag = imag;  
    }  
}
```

- Can't use in **static** methods (why?)

static import

- ◆ `import static java.lang.Math.*;`
- Import all **static** members of a class
- New feature in Java **1.5** (J2SE 5.0)
- Brings static variables/methods into current **namespace**:
 - ◆ `sqrt(36.0);` instead of `Math.sqrt(36.0);`
 - ◆ `log(E);` instead of `Math.log(Math.E);`
- Can also bring in **one** particular member:
 - ◆ `import static java.lang.Math.sqrt;`

TODO

- Midterm this Wed 21Feb
 - Through lecture #11
- Lab3 pushed to Fri 23Feb
 - Recursion (fractal tree)