Csc18a Chapter 10 Notes

**Polymorphism and Interfaces**

Core Topics:

* Polymorphism
* Abstract classes and methods
* Interfaces

Notes:

Polymorphism

* Allows you to program “in general” instead of “specifics”
* Enables you to write programs that process objects that share the same super class as if they were all objects of the superclass.
  + Basically allows you to create a superclass of a category that acts differently within each subclass
  + Ie. Enemy super class with ghost, goblin, skeleton subclasses.

Interface

* Teacher def.
  + Contract of public member functions that tells us what functions a program needs to work.
  + The implementation of our functions is up to us.
  + \*\*\* **Member function declarations only!**
    - No member variables allowed
    - Must be public or protected
* Useful for assigning common functionality to possibly unrelated classes.
* Allows objects to be processed polymorphically
* Located under right-click project/new/Java Interface

Abstract classes

* Similar to templates in C++
* Teacher def.
  + A blue print/template for an object
  + Allowed to have member variables of any kind
    - Member functions and abstraction member functions.
  + Without the abstract member functions, it’s just a normal class
  + \*\*\***Cannot be instantiated**
* Purpose
  + To provide an appropriate superclass that other classes can inherit and share a common design.
  + Meant to be overridden.
* **Syntax:**
  + Public abstract void fName();
    - Must be explicitly declared abstract even if that class contains some non-abstract methods.
* Constructors and static methods cannot be abstract
  + Constructors are not inherited, thus cannot be implemented in abstracts

Abstract member functions (methods)

* Teacher def.
  + Functions that are declared but NOT implemented.

API

* Application programming interface

Refactor tool

* Netbeans tool
* Rename
  + Renames class name
    - Auto changes every instance of the name
* Encapsulate Fields
  + Contains a shortcut method for creating getters and setters
    - Auto Generates code
  + Location:
    - Toolbar/Refactor/encapsulate fields…
    - Checkmark methods to create
    - Refactor