Notes on Inner Classes, based on

"Java Liaison", *Richard Gillam*, C++ Report, Vol. 11, No. 1, Jan 1999

and

The Java Programming Language, Second Edition, Ken Arnold and James Gosling, 1998, Addison Wesley

TYPES OF INNER CLASSES Java 1.1 **defines four types of inner classes:**

1. A *static inner class* is a class that is defined within the scope of another class using the **static keyword**. It can directly access **only static** members of the enclosing class.

2. A *non static inner class* is also a class that is defined within the scope of another class, but the definition **does *not* use the static keyword**. A member class behaves like a friend of the enclosing class and **has full access to all of its members**. Because this means ***all*** of the enclosing class's members, and not just the static ones, it means that an instance of the inner class has to be associated with an **instance of the outer class**.

Non static inner classes **can not have static members.**

3. A *local inner class* is a class that **is defined within a code block** (i.e., a **function**, a static initializer, or a code block within a function or static initializer). A local class **has all the features of a non static inner class**, plus it **has access to any final local variables in the enclosing function.** The name of the class can only be used within the function, but **a refernece to an instance of the class can be exported (returned) from the function** (this only makes sense, of course, if the local class descends from some other class or interface whose name is generally visible).

4. An *anonymous class* is a **local** class that is defined **without a class name**. The syntax for anonymous class definitions is an extension of the syntax for the new operator, so an **anonymous class definition can appear anywhere a new expression can appear**. This means, of course, that you can refer to the anonymous class in only one place: the expression that instantiates it.

An anonymous inner class allows you to
define a class right in the middle of an expression.