
ZIPCODE
<WILMINGTON>

JAVA ACCESS CONTROL

TOPICS

- What are access modifiers
- What access types are possible
- how do they differ
- what are packages
- how are packages defined

ACCESS MODIFIERS

Java keywords used to change how broadly classes and their member variables and methods can be accessed.

FOUR ACCESS TYPES

- Package
- Public
- Protected
- Private

PRIVATE

- Only accessible in the same class
- Strictest access type
- Modifier: `private` keyword

PROTECTED

- Only accessible to this class and its subclasses
- Modifier: `protected` keyword

PACKAGE

- Accessible to other members of the same package
- Default if no access modifier specified
- No modifier (The `package` keyword does something else)

PUBLIC

- Accessible anywhere
- Provides api-level access
- Modifier: `public` keyword

PUBLIC CLASSES

- one per compilation unit (file)
- Must match file name

WHAT CAN RECEIVE ACCESS MODIFIERS?

- Fields (static and instance variables)
- Methods
- Classes* and nested classes

KEEP FIELDS AND FUNCTIONS AS PRIVATE AS IS SENSIBLE

- Often instance variables should be private with accessors and mutators (getters and setters) if necessary
- Implementation details shouldn't matter to API users

PACKAGES

PACKAGE STATEMENT

- Specifies the package classes belong to
- Must be first line in a file (except comments and empty lines)
- Applies to the entire file

example: `package io.zipcoder.unitcorn.tests;`

PACKAGE NAME IMPLIES DIRECTORY STRUCTURE

- Java interpreter will look for classes in directories that match their package
- Normally will not run if these don't match (IntelliJ Circumvents this - do not rely on that)

DEFAULT PACKAGE BEHAVIOR

- Unique to each directory
- Default package members have access to other members in the same directory
- No access to members of explicitly defined package-member classes in same directory

A BIT ABOUT APIS

API MEANS:

- Application Programming Interface
- The set of functions and data members available to client code using your library
- Often also used to refer to the documentation of a particular API

PUBLIC ACCESS IS API ACCESS

- Any public members are accessible to client code
- Any changes to public members could break client code
- Changes should not impact the API unless absolutely necessary