CSCI 2120:
Software Design & Development II

Naming Conventions

Overview

- Java Naming Conventions
- Packages
- Classes
- Interfaces
- Methods
- Constants
- Variables
- Type Parameters

Java Naming Conventions

- Oracle published the official Java Naming Conventions
    - https://www.oracle.com/java/technologies/javase/codeconventions-namingconventions.html

- Adopting the accepted conventions for naming variables, methods, and objects in Java makes your code easier for others to read
    - This includes you, for when you read your legacy code weeks or months after you wrote it.

Naming Conventions

- Packages
- Classes
- Interfaces
- Methods
- Constants
- Variables
- Type Parameters

Packages - Naming Conventions

- Always use lowercase.
- Package names should be unique
- Use your internet domain name, reversed, as a prefix for the package name
- Oracle specify a convention for package name at:
  - https://docs.oracle.com/javase/tutorial/java/package/namingpkgs.html
- Web Domain represents unique organizational identity:
  - it doesn't have to be a domain name but for an organization what uniquely identity it is usually its domain name, so it is more like a convention than a requirement.
- Example:
  - com.github.groupname

Package - Naming Conventions

Why doesn't java allow uppercase letters in package name?

Valid:

com.mycompany.projname.core.remotefilesystemsynchronization.*

Invalid:

com.myCompanyName.projName.core.remoteFileSystemSynchronization.*

Answer:

Package names are written in all lower case to avoid conflict with the names of classes or interfaces.

Package - Naming Conventions

Advantage of domain name convention:

1. It avoids collision between independent developers. A domain is unique. Two people can name two different project the same, but a domain has exactly one owner.

2. It makes it easier to find the maintainer. If you inherit a code base, that uses some open source library, it better be in a package that helps you find it.

Package - Naming Conventions

Non-domain Name Conventions:
The general format for a namespace name is as follows:

<Company>.(<Product>|<Technology>)[.<Feature>][.<Subnamespace>]

For example, microsoft.windows_mobile.directx

- Do prefix namespace names with a company name to prevent namespaces from different companies from having the same name and prefix.

- Do use a stable, version-independent product name at the second level of a namespace name.

- **Do not use organizational hierarchies as the basis for names in namespace hierarchies, because group names within corporations tend to be short-lived.**

- **The namespace name is a long-lived and unchanging identifier. As organizations evolve, changes should not make the namespace name obsolete.**

Invalid domain name components

- Replace invalid characters (i.e. -) in domain name with an underscore
- Domain name components starting with a number should instead start with an underscore _
- Domain name components that are Java keywords should have that component start with an underscore.

Invalid domain name components

Examples with replacements

- switch.github.com → com.github._switch //java keyword
- 3dview → _3dview //number
- ted-holmberg.github.com → com.github.ted_holmberg //hyphen

Example package names

- java.lang
- java.io
- com.github.ted_holmberg
- tedholmberg.textrpg.model

Class names

- CamelCase
- Class names should be nouns (they represent things)
- Should start with capital letter
- Each word in the name should also start with a capital (e.g. LinkedList)

Class names

- ArrayList
- LinkedList
- String
- TopSong
- GearBox
- Main

Interface names

- Capitalized like class names (CamelCase)
- Consider what objects implementing the interface will become of what they will be able to do
- Examples:
  - List
  - Comparable
  - Serializable

Method names

- mixedCase
- Often verbs
- Reflect the function performed or the result returned.

Examples:

- size()
- getName()
- addPlayer()

Constants

- ALL UPPER CASE
- Separate words with underscore _
- Declared using the final keyword

Examples:

- static final int MAX_INT
- static final short SEVERITY_ERROR
- static final double PI = 3.141592653

Variable names

- mixedCase
- Meaningful and indicative
- Start with a lowercase letter.
- Do not use underscores _

Examples:

- i
- league
- SydneySwans
- BoxLength

Type Parameters

- Single Character, Capital letters
- Guidelines given at:
    - https://docs.oracle.com/javase/tutorial/generics/types.html

Type Parameters Examples

- E - Element (used extensively by the Java Collections Framework)
- K - Key
- T - Type
- V - Value
- S, U, V, etc. - 2nd, 3rd, 4th types

END