Packages and Imports

About me

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– Oracle® certified programmer 15+ Y

– end-to-end reactive fullstack apps with Java, ES6+, TypeScript, Angular, React and Vue.js

– 12+ years IT trainer: Spring, Java EE, Node.js, Express, GraphQL, SOA, REST, DDD & Reactive Microservices

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Packages and Imports

Package declarations, imports and default imports, static imports, classes and interfaces, visibility modifiers, modules

Packages

```
package course.kotlin

fun printMessage() { /*...*/ }
class Message { /*...*/ }
// ...
```

- All the contents, such as classes and functions, of the source file are included in this package. So, in the example above, the full name of printMessage() is org.example.printMessage, and the full name of Message is org.example.Message
- If the package is not specified, the contents of such a file belong to the default package with no name.

Default imports

Kotlin packages imported by default:

kotlin.*

kotlin.annotation.*

kotlin.collections.*

kotlin.comparisons.*

kotlin.io.*

kotlin.ranges.*

kotlin.sequences.*

kotlin.text.*

JVM packages imported by default:

java.lang.*

kotlin.jvm.*

JS packages imported by default:

kotlin.js.*

Imports

- The import keyword is not restricted to importing classes – you can also use it to import other declarations:
  - top-level functions and properties
  - functions and properties declared in object declarations
  - enum constants
- If a top-level declaration is marked private, it is private to the file it's declared in

```
package course.kotlin.other
import course.kotlin.Message // Message is now accessible without qualification
import course.kotlin.* // everything in 'course.kotlin' becomes accessible
import course.kotlin.Message2 // Message is accessible
import course.kotlin.Message as MyMessage // MyMessage for 'course.kotlin.Message'
```

Visibility modifiers

- public – used by default, which means that your declarations will be visible everywhere;
- private – only visible inside the file that contains the declaration.
- internal – visible everywhere in the same module
- protected modifier is not available for top-level declarations.

```
private fun foo() {  } // visible inside packages.kt

public var bar: Int = 5 // property is visible everywhere
    private set         // setter is visible only in packages.kt

internal val baz = 6    // visible inside the same module
```

Modules

- The internal visibility modifier means that the member is visible within the same module. More specifically, a module is a set of Kotlin files compiled together, for example:
  - An IntelliJ IDEA module.
  - A Maven project.
  - A Gradle source set (with the exception that the test source set can access the internal declarations of main).
  - A set of files compiled with one invocation of the <kotlinc> Ant task.

Class members visibility modifiers

- private – the member is visible inside this class only (including all its members);
- protected – the member has the same visibility as one marked as private, but that it is also visible in subclasses;
- internal – any client inside this module who sees the declaring class sees its internal members;
- public – any client who sees the declaring class sees its public members.

Class members visibility modifiers

```
open class Outer {
    private val a = 1
    protected open val b = 2
    internal open val c = 3
    val d = 4  // public by default

    protected class Nested {
        public val e: Int = 5
    }
}

class Subclass : Outer() {
    // a is not visible
    // b, c and d are visible
    // Nested and e are visible

    override val b = 5   // 'b' is protected
    override val c = 7   // 'c' is internal
}

class Unrelated(o: Outer) {
    // o.a, o.b are not visible
    // o.c and o.d are visible (same module)
    // Outer.Nested is not visible, and Nested::e is not visible either
}
```

And solve programming problem:

https://codeforces.com/contest/1157/problem/B

Learn Kotlin by Example & Kotlin idioms

https://play.kotlinlang.org/byExample/

https://kotlinlang.org/docs/idioms.html

Thank's for Your Attention!

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