Introduction to Java week#7

29/06/2023

week	Topic
1	JAVA IDE (NetBean) Installation ,Configuration and Compile
2	Basic structure of Java ,Data & Variable type, operator & basic logic
3	Function(Method) create & calling, Input & output
4	Loop statement ,Array variable
5	Object-oriented programming (OOP),Class & Object, Encapsulation
6	Inheritance, Polymorphism, Interfaces
7	Packages, Access Modifiers(Public ,Protected ,Private class)
8	Collections (Array list, HashMap, Stack)
9	Exception
10	Woking with files(Read, Write)
11	Thread Programing

Package

package is a group of similar types of classes, interfaces and sub-packages.

can be categorized in 2 forms,

1. **built-in package** (such as java, lang, awt, javax, swing, net, io, util, sql etc.)

2. **user-defined package**

Package

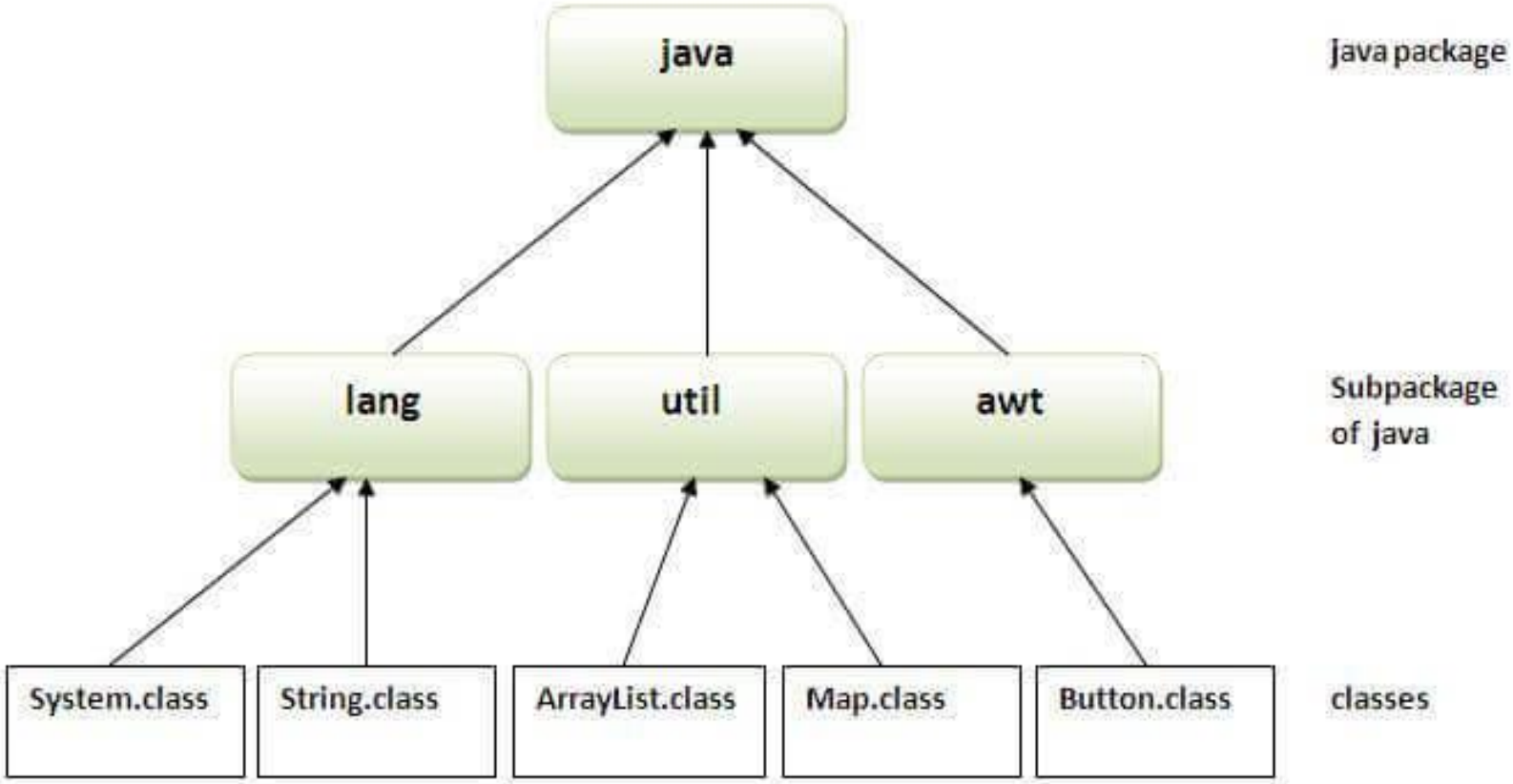
Advantage of Java Package

1) Used to categorize the classes and interfaces so that they can be easily maintained.

2) Provides access protection.

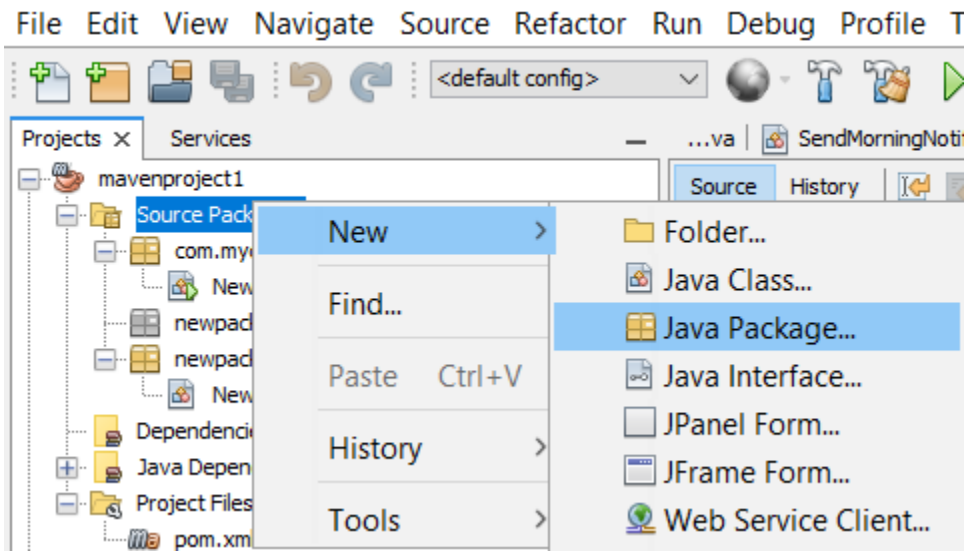
3) Prevent naming collision.

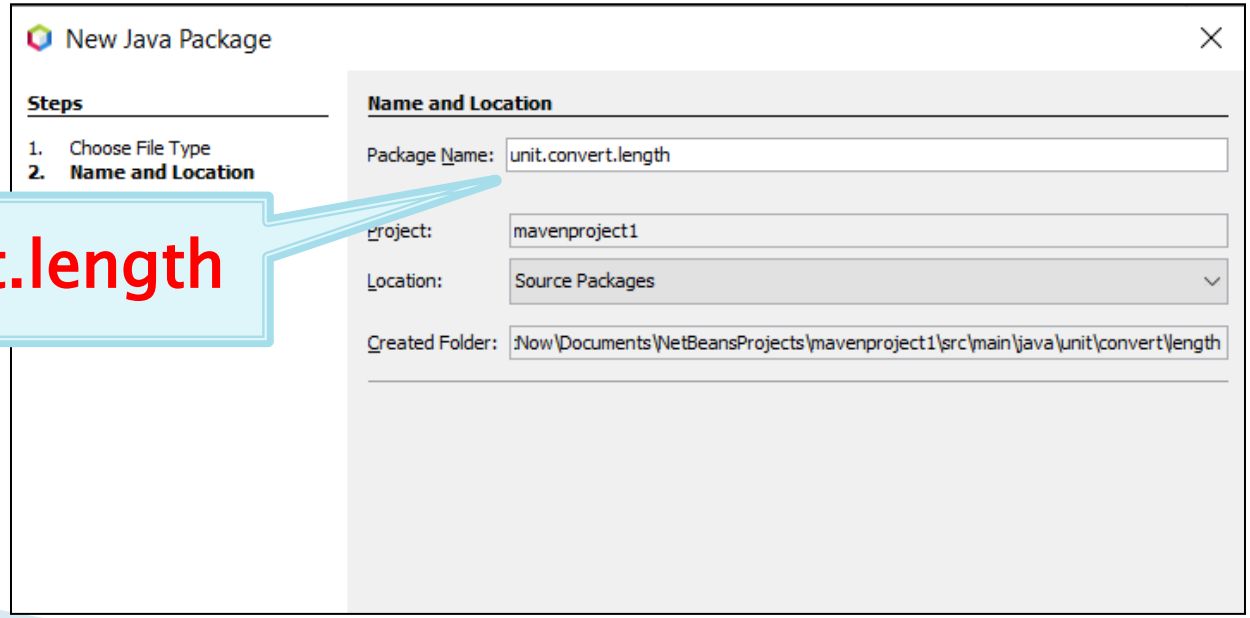
Package


java
Java package
lang
util
awt
Subpackage
of java
System.class
String.class
ArrayList.class
Map.class
Button.class
classes

Package

Create new package

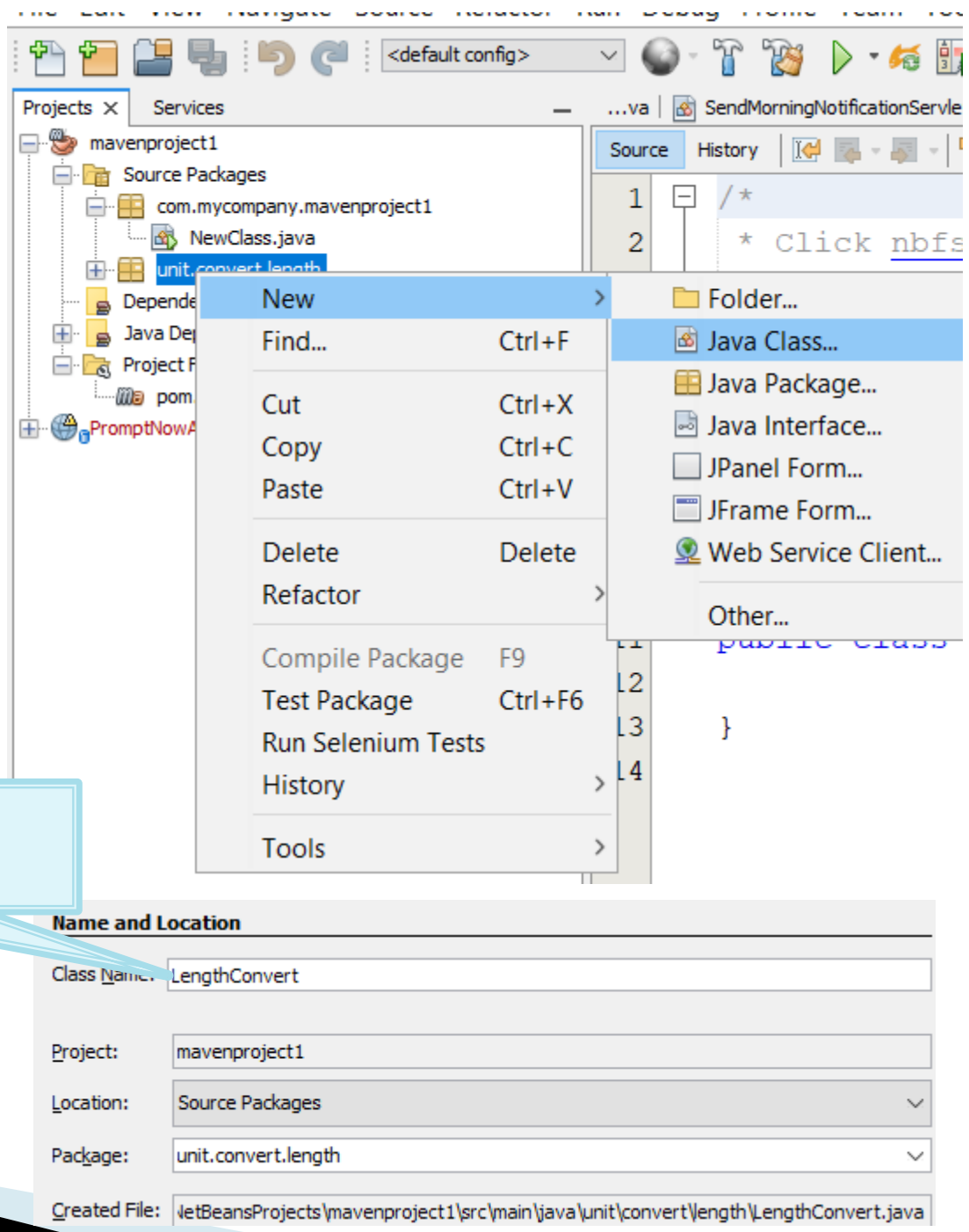




unit.convert.length

Package

Create Class in package



LengthConvert

Package

LengthConvert.java

```
package unit.convert.length;

public class LengthConvert {

   public static float meterToFeet (float m) {
      return m * 3.28084f;
   }

   public static float centimeterToinch (float centi) {
      return centi * 0.393701f;
   }

}
```

Package

Import package command

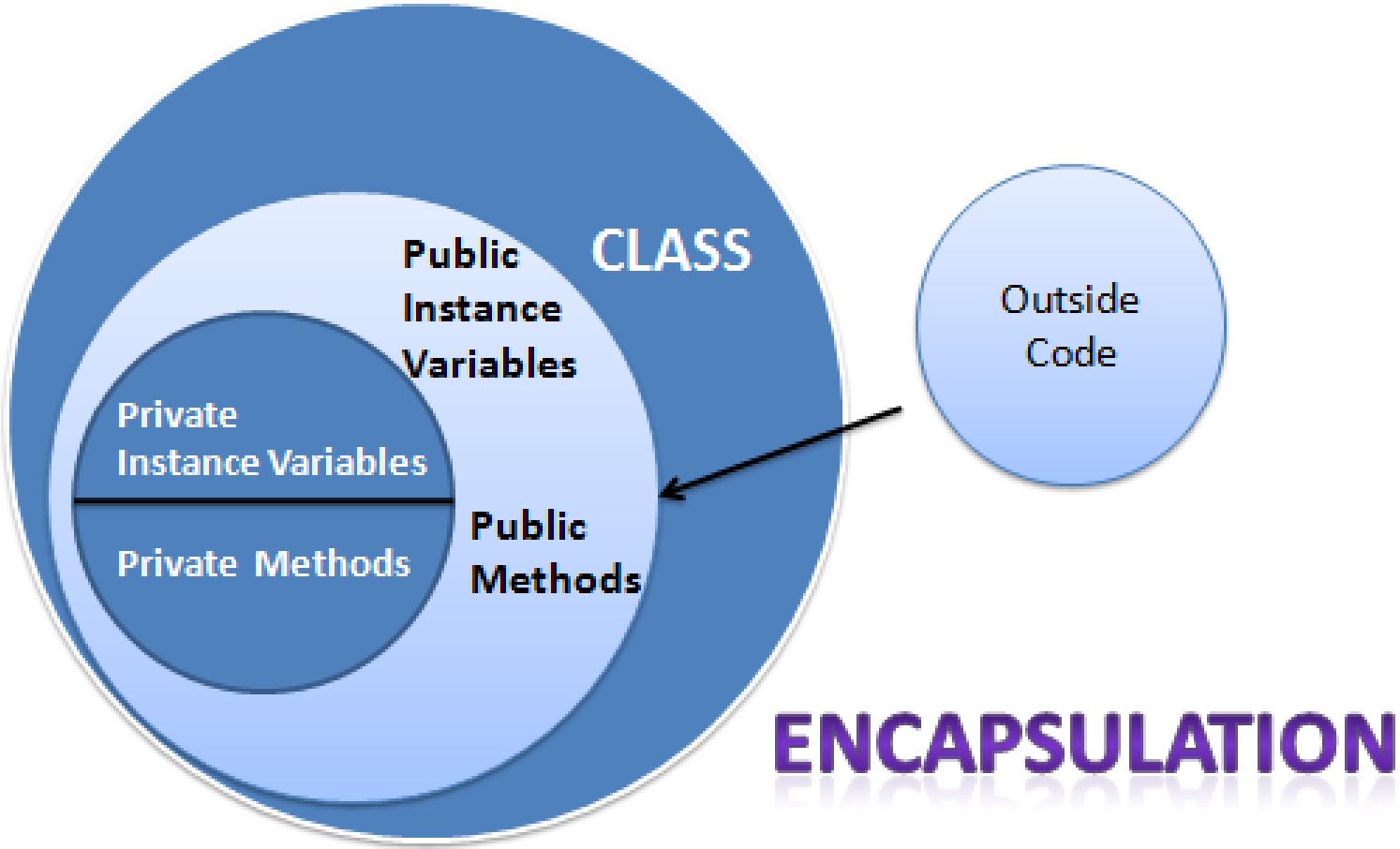
```
import package_name.ClassName; // import a class to program

import package_name.*; // import all classes to program
```

Package

Import package command

```java
// Main.java
import unit.convert.length.LengthConvert;

public class Main {

      public static void main (String[] args) {

          System.out.println("1 meter equal " + LengthConvert.meterToFeet(1) + " feets");

          System.out.println("14 m equal " + LengthConvert.meterToFeet(14) + " feets");

          System.out.println("5 cm equal " + LengthConvert.centimeterToinch(5) + " inches");
      }

}
```

Access Modifiers



Access Modifiers

There are 4 types of Java access modifiers:

1. **Private**: The access level of a private modifier is only within the class. It cannot be accessed from outside the class.

2. **Default**: The access level of a default modifier is only within the package. It cannot be accessed from outside the package. If you do not specify any access level, it will be the default.

3. **Protected**: The access level of a protected modifier is within the package and outside the package through child class. If you do not make the child class, it cannot be accessed from outside the package.

4. **Public**: The access level of a public modifier is everywhere. It can be accessed from within the class, outside the class, within the package and outside the package.

Access Modifiers

Modifiers	Class	Package	Sub class	World
public	Yes	Yes	Yes	Yes
protected	Yes	Yes	Yes	No
default	Yes	Yes	No	No
private	Yes	No	No	No

Access Modifiers

```
class Person {
   public String firstName;
   public String lastName;
   protected int age;
   private int height;

   public String getFullname() {
      return firstName + " " + lastName;
   }
   public void setHeight(int h) {
      height = h;
   }
   public int getHeight() {
      return height;
   }
}
```

Access Modifiers

```
public class PublicExample {

    public static void main(String[] args) {

        Person p1 = new Person();
        p1.firstName = "Shawn";
        p1.lastName = "Roberts";
        p1.age = 32;
        p1.setHeight(178);

        System.out.println(p1.getFullname());
        System.out.println("Age " + p1.age + " years");
        System.out.println("Height " + p1.getHeight + " m");

    }

}
```

Assignments

ให้ลองสร้าง Package สำหรับการคำนวณ

- หาพื้นที่สามเหลียม จากความกว้าง และความยาว
- หาพื้นที่สี่เหลี่ยม จาก ความกว้าง และความยาว
- หาเส้นรอบวงจาก ค่ารัศมี

แล้วลองทำการ import package ไปใช้ในโปรปกรมหลัก

Thank you