Basic Structure of Java Programming

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Learning Object

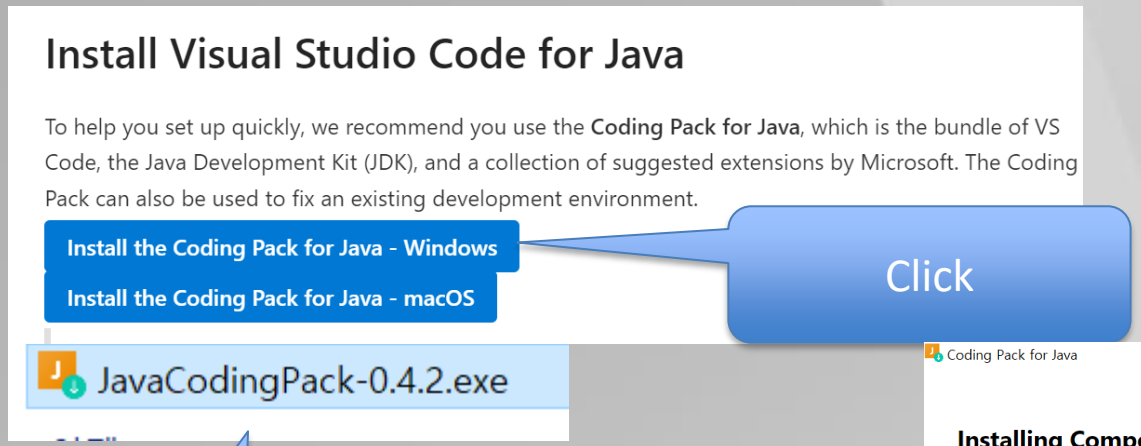
- Make First Java Program
  - Create new project and java file
  - Explain of the Code
- Basic Structure of Java Programs
  - Keywords
  - Statements
  - Code block
  - Indentation
  - Comments
- Console Window

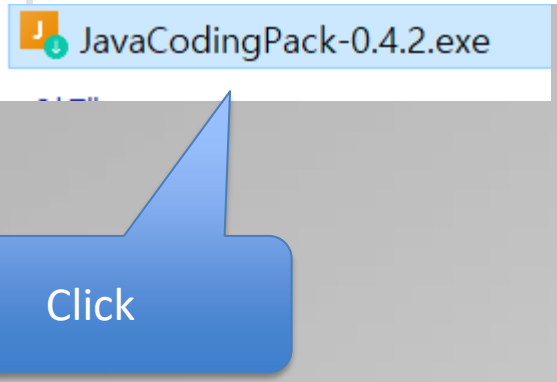
First Java Program

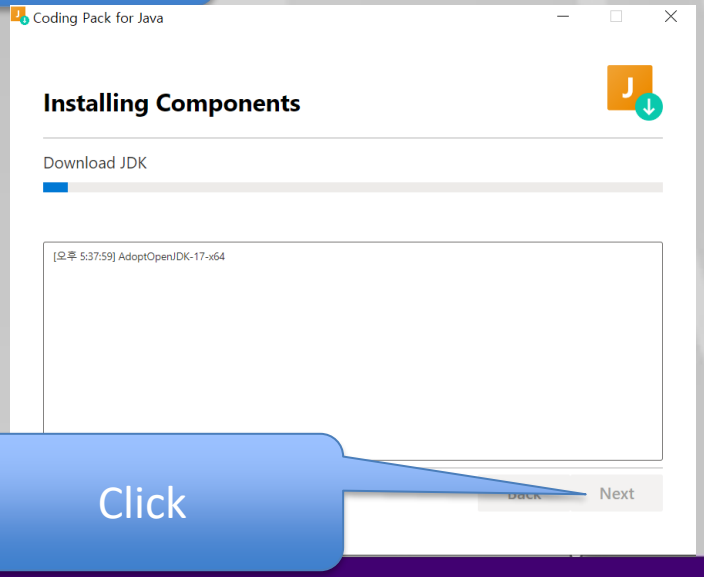
- Execute Eclipse
- Create New Project
  - Choose the right JRE
- Create a Java Class file in project
  - Make new file (.java)
  - Make own code on the java file
- Compile and run the file

Step 1: Install Java in VSCode

- Java in VS Code
  - https://code.visualstudio.com/docs/languages/java



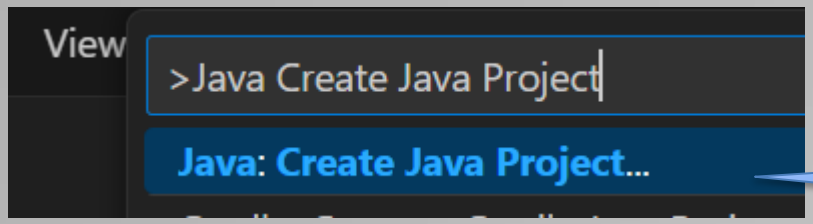




Step 2: Create a Java Class File

- 보기 -> 명령 펠레트
  - Ctrl + shift + p

- Java Create Java Project



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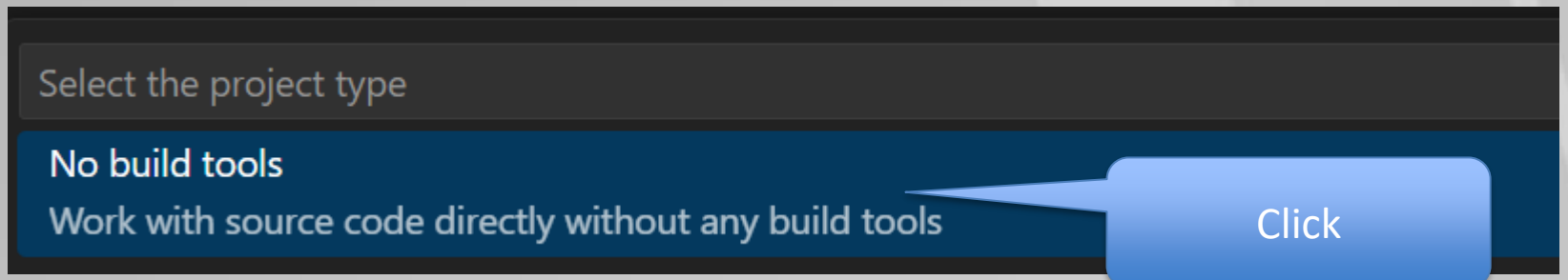

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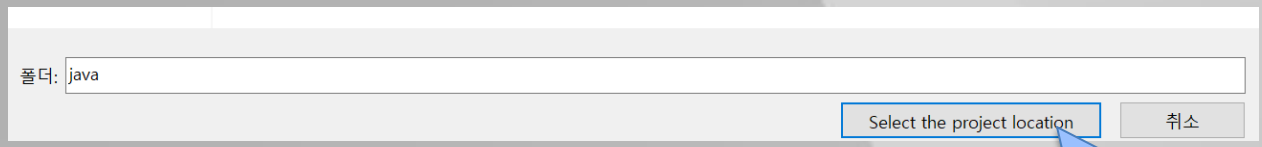
Step 2: Create a Java Class File

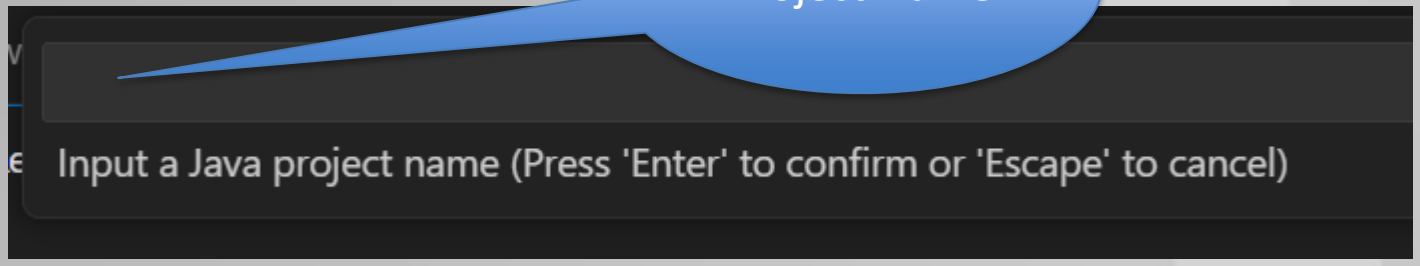
- Project Location



Project Location

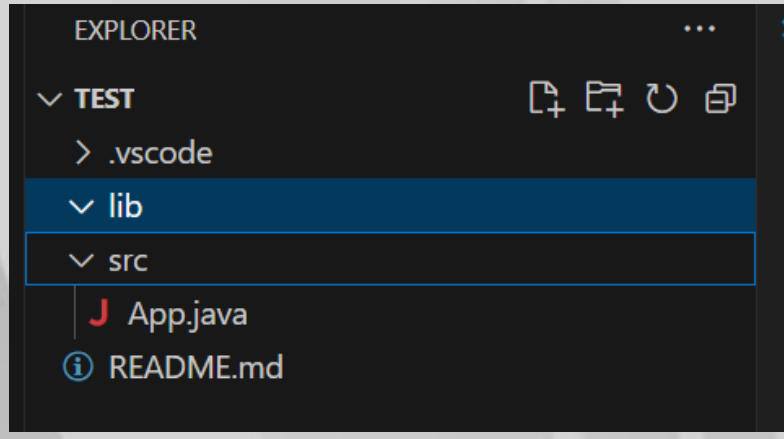
- Input Project Name

Project Name



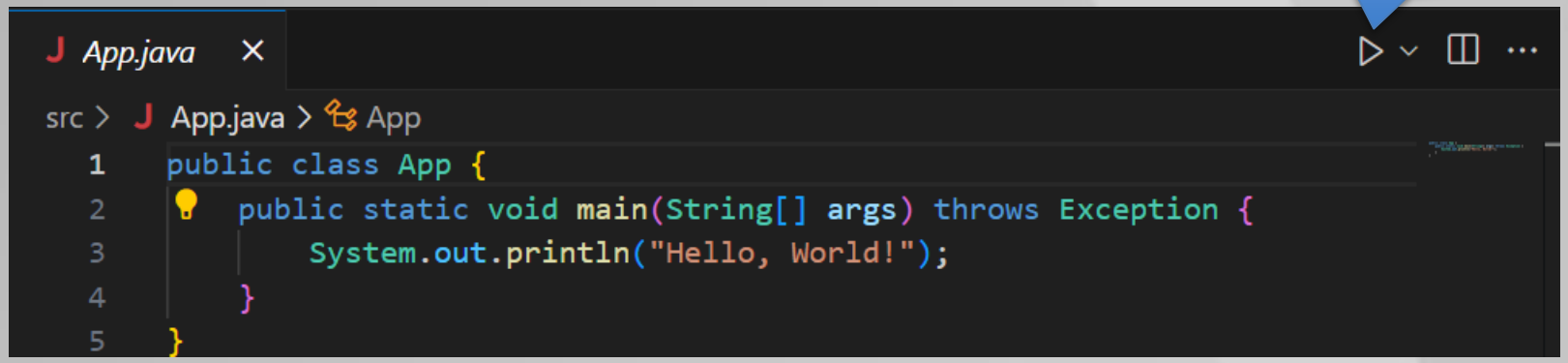
Step 3: Coding

- Project Folder



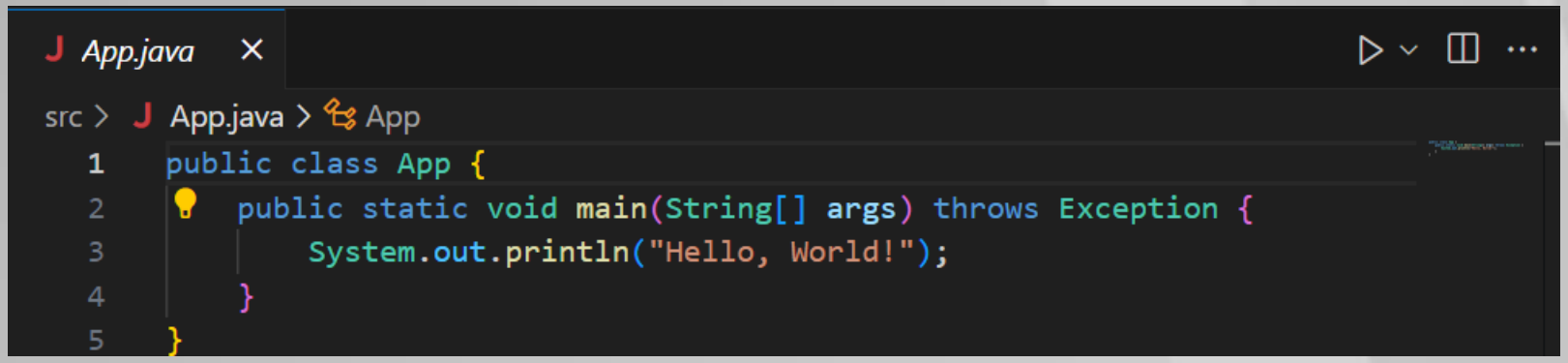
- Coding on App.java File

Click for run

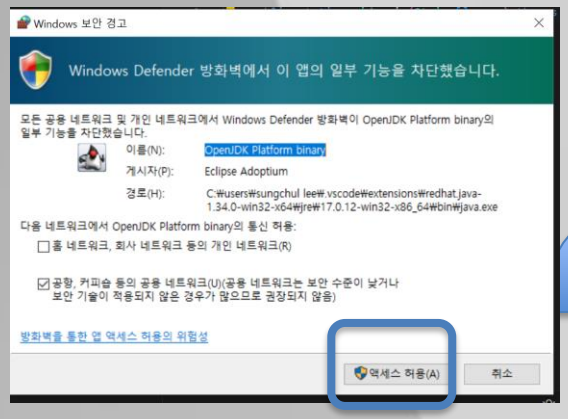


Step 3: Coding

```
public class App {
    public static void main(String[] args) throws
Exception {
        System.out.println("Hello, World!");
    }
}
```

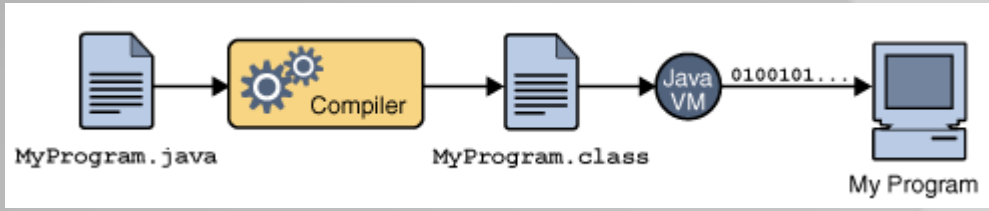


Step 4: Run



Click for run

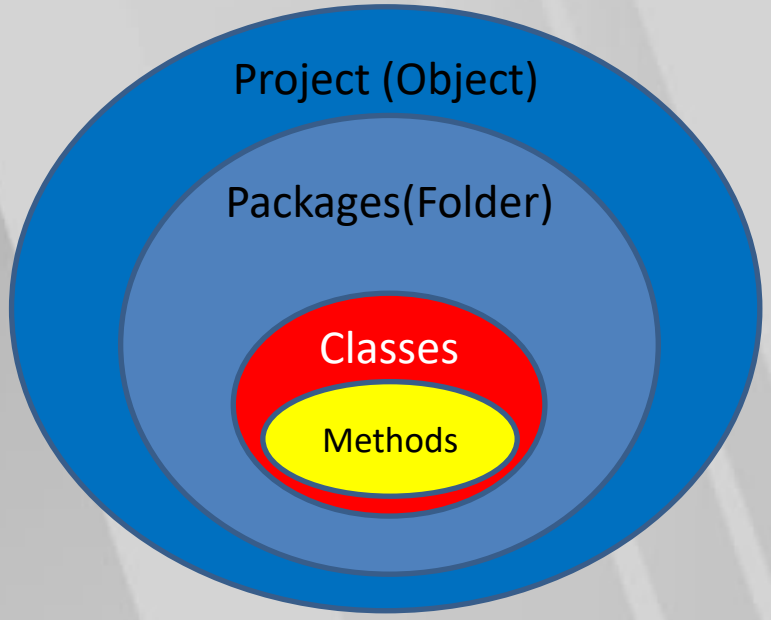
- Run
  - Compiler Makes compiled class file



- Result on Console Windows

```
C:\Users\Sungchul Lee\Downloads\java\Test\bin
Hello, World!
PS C:\Users\Sungchul Lee\Downloads\java\Test>
```

Explain of the Code



Everyone can access

This is class

Name of this class

Method

```
public class Example {
   // A Java program begins with a main() method.

   public static void main(String[] args) {
         System.out.println("Hello, World!");
   }
}
```

Basic Structure of Java Programs

- There is an entrance class file
  - Called main class
  - A main class has a single method: main

Entrance Class

```
public class Example{
        public static void main(String[] args){
        System.out.print("Hello, World!");
        }
}
```

Main Method

Simple code to print out "Java" on the screen

Keywords

- Reserved words, that have a specific meaning to the compiler.
  - **Cannot be used for other purposes** in the program
    - such as name.
    - Specific purpose and Location
  - E.g. public, class, void, static, …etc
    - main is not a keywords. it is predefined like function

```
public class Example{
        public static void main(String[] args){
        System.out.print("Hello, World!");
        }
}
```

Statements

- A statement represents an action or a sequence of actions.
- Every statement in Java ends with a **semicolon(;).**
- There are three statements
  - Declaration
  - Expression
  - Control flow

```
public class Example{
	public static void main(String[] args){
//Expression Statement
	System.out.print("Hello, World!");
	}
}
```

Code Block

- A list of statements inside braces ({ …}).
  - Does not need to end in a semicolon.
- The Case of Code block:
  - Every class has a class block that groups the data and methods of the class.
  - Every method has a method block that groups the statements in the method.
  - Most control flow statement has a statement block that groups of expression/declaration statements

```
public class Example{ //Start class block
    public static void main(String[] args){ //Start method block
    System.out.print("Hello, World!");
    } //End method block
} //End class block
```

Indentation

- The Java compiler doesn't care about indentation.
- Use indentation to make your code more readable.
- Indent one level for each opening brace and move back out after each closing brace.

Bad Indentation

```
public class Example{ public static void
main(String[] args){
System.out.print("Hello, World!");}}
```

Good Indentation

```
public class Example{
    public static void main(String[] args){
        System.out.print("Hello, World!");
    }
}
```

Comments

- The compiler ignores comments in program
- Three kinds of comments:
  - /* text */
    - The compiler ignores everything from /* to */.
  - /** documentation */
  - This indicates a documentation comment (doc comment, for short). The JDK javadoc tool uses doc comments when preparing automatically generated documentation.
  - // text
    - The compiler ignores everything from // to the end of the line.

Console Window

- Console window (also called standard output window)
  - Is a text user interface
  - Used to output data (e.g. computation results)
    - through a system object System.out

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    ···        Run: App

PS C:\Users\Sungchul Lee\Downloads\java\Test>  & 'C:\Program Files\Eclipse Adoptium
\jdk-17.0.12.7-hotspot\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp
' 'C:\Users\Sungchul Lee\Downloads\java\Test\bin' 'App'
Hello, World!
PS C:\Users\Sungchul Lee\Downloads\java\Test>
```

Summary

Comments

```
/*
   This is a simple Java program.
   Call this file Example.java.
*/
```

Everyone can access

This is class

Name of this class

```
public class Example {
   // A Java program begins with a main() method.

   public static void main(String[] args) {
         System.out.println("Welcome to learn Java!");
   }
}
```

Method

Code Block

Statements