Introduction to Java
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Historical

Once upon a time, when I was a freshman in NTU CSIE ......

- 計程有兩學期，上學期教C，下學期教C++
- 計概有兩學期，下學期計概教Lisp 和Java
- 物件導向剛開始流行，有一門研究所的選修課

Then, in my senior year ......

- 計程計概都變成一學期
- 每個人都在寫Java 程式：學校、打工、比賽
- 物件導向程式設計變成大一下必修課

Then, after I graduated from NTU CSIE ......

- 七年來我沒有再使用過Java, 直到2008 年

Is Java/OOP Necessary?

When I was interviewing for industrial jobs in the US ......

- 面試四家公司，四家都問了多型(會教到)
- 其中兩家問了virtual function(會教到)
- 待遇最好的那家還問了Java 和C 有何不同(會陸續提到)

> Java/OOP 和C 一樣，已成基本技

What is Java (0/4)?

一個印尼地名和生產的咖啡

- (wikipedia) Java (Indonesian: Jawa) is an island of Indonesia and the site of its capital city, Jakarta.
- (wikipedia) Java coffee is a coffee produced on the island of Java. In the United States, the term "Java" by itself is slang for coffee generally.

> From Java (coffee) to Java (language):
>   (folklore) programmers drink coffee when brainstorming
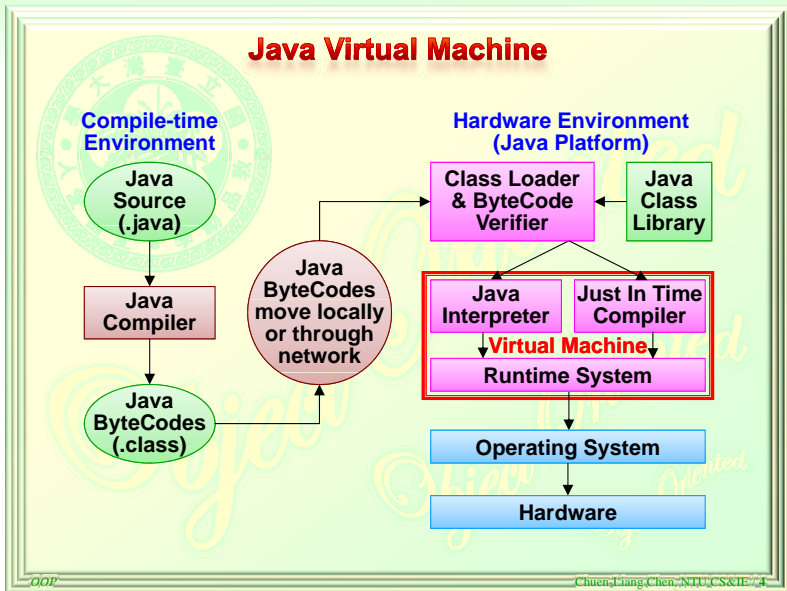
What is Java (1/4)?

a cross-platform language

- (1991) a Sun project called Green for consumer electronics (J. Gosling)
- target:
  - device with limited power/resources
  - device**s** of different types
- Java (Oak) solution (to the second task):

  > text code $\rightarrow$(compiler)$\rightarrow$ byte code
  > $\Longrightarrow$ virtual machine on your TV
  > $\Longrightarrow$ virtual machine on your cellphone
  > $\Longrightarrow$ virtual machine on your Sony DVD player

Compile once, run everywhere!

What is Java (2/4)?

a Internet-targeted language

- (1995) Java and HotJava browser announced
- along with the Internet development

  > text code →(compiler)→ byte code
  > ⟹ virtual machine in the HotJava browser
  > ⟹ virtual machine on your Windows system
  > with either Netscape or Firefox or IE or chrome
  > ⟹ virtual machine on your Linux system
  > ⟹ virtual machine on your MacOS

- **applet**: a special miniature application in Java suitable for browsers

arguably, most important factor for early success

What is Java (3/4)?

a popular platform on mobile phones

- (wikipedia) Java ME (Micro Edition): Specifies several different sets of libraries for devices which are sufficiently limited that supplying the full set of Java libraries would take up unacceptably large amounts of storage.

> text code $\rightarrow$(compiler)$\rightarrow$ byte code
> $\Longrightarrow$ virtual machine on your Nokia phone
> $\Longrightarrow$ virtual machine on your SE phone
> $\Longrightarrow$ virtual machine on your Motorola phone
> $\Longrightarrow$ virtual machine on your BENQ phone

regaining popularity nowadays

an object-oriented language

- 更結構化的思維
- 更模組化的設計
- ...

will discuss more later

Your Java Environment

- JRE (Java Runtime Environment): for users, JVM + basic libraries
- JDK (Java Development Kit): JRE + compilers + ...
  —`jdk-8u60-windows-i586.exe` or other platform
- Document —`jdk-8-doc.zip`
- some editions:
  - **SE: Standard Edition**
  - EE: Enterprise Edition
  - ME: Micro Edition

> 課程網頁上會有參考資料

From HelloWorld.c to HelloWorld.java

```c
1  /* HelloWorld.c */
2  #include <stdio.h>
3  int main(){
4    printf("Hello_World\n");
5    return 0;
6  }
```

```java
1  /* HelloWorld.java */
2  import java.lang.*;
3  public class HelloWorld{
4    /** The comment that
5     *  will show up in the doc
6     */
7    public static void main(String[] argv){
8      System.out.println("Hello_World"); //another cmt
9    }
10 }
```

Your Work Cycle

1. edit your Java source file(s)
2. compile
   - `javac HelloWorld.java`
   - output: HelloWorld.class
3. execute
   - `java HelloWorld`
4. generate document
   - `javadoc -d doc/ HelloWorld.java`