

2022/2023(1)
IF184301 Object Oriented Programming

Lecture #1b

Getting Started

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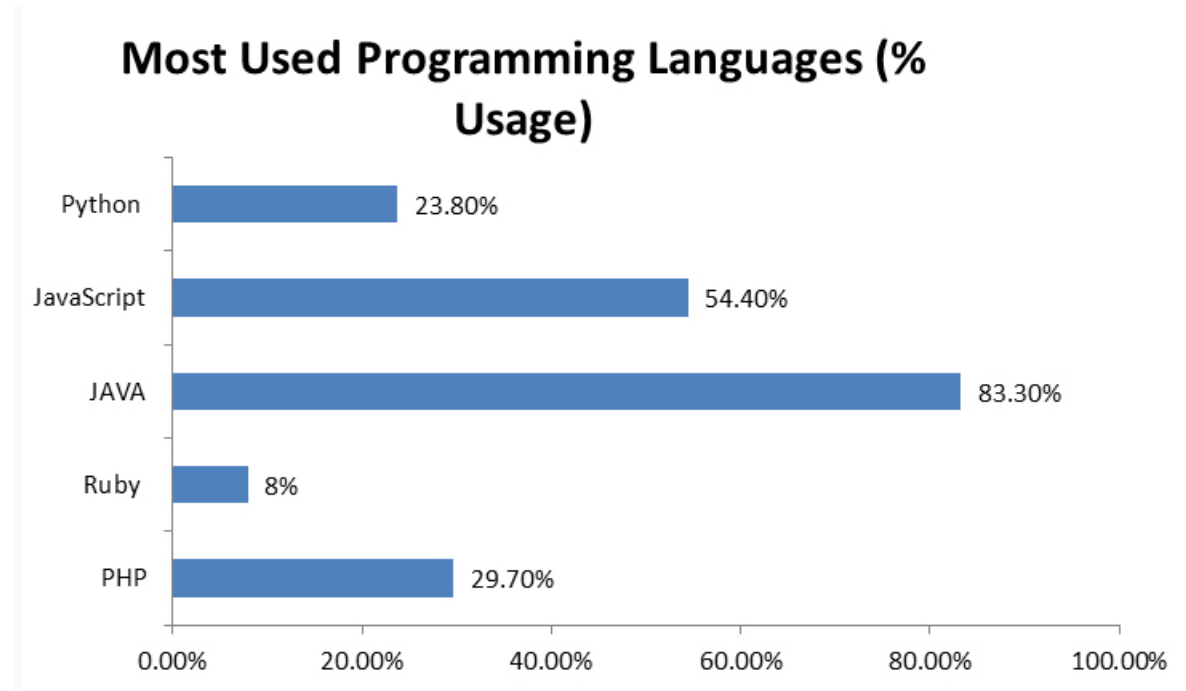
司馬伊凡

Мисбакхул Мунир **Ирфан Субакти**

Java: Why?

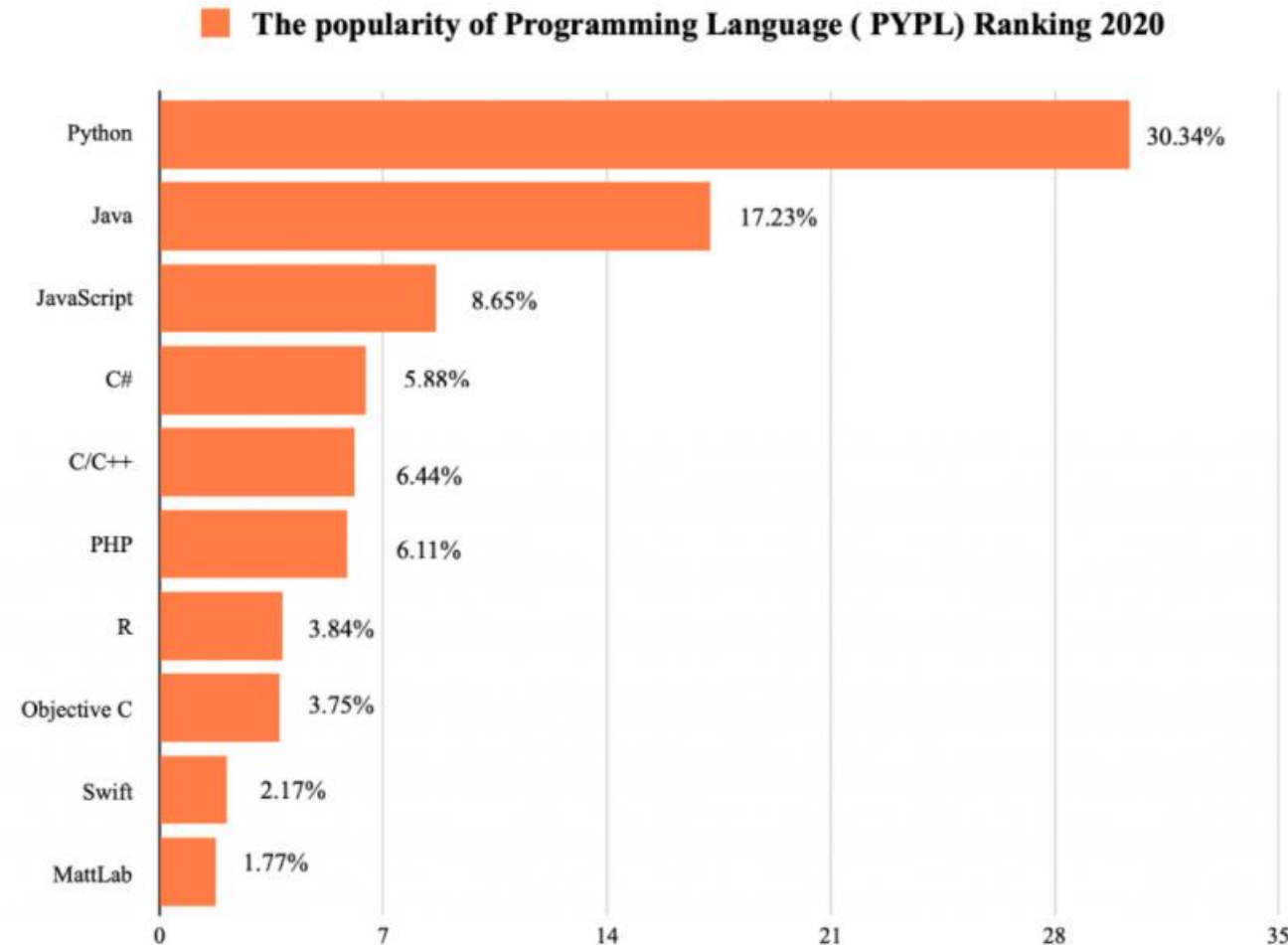
- Portable
 - Once built → can be run in all Java complied computational device's platforms
 - E.g., computer, laptop, smartphone, etc.
- WORA: Write Once, Run Anywhere
- Community support
 - Everywhere, around the world
- (One of) the most popular programming languages has been using
 - Mainly for client-server based web application

2015 StackOverflow Survey



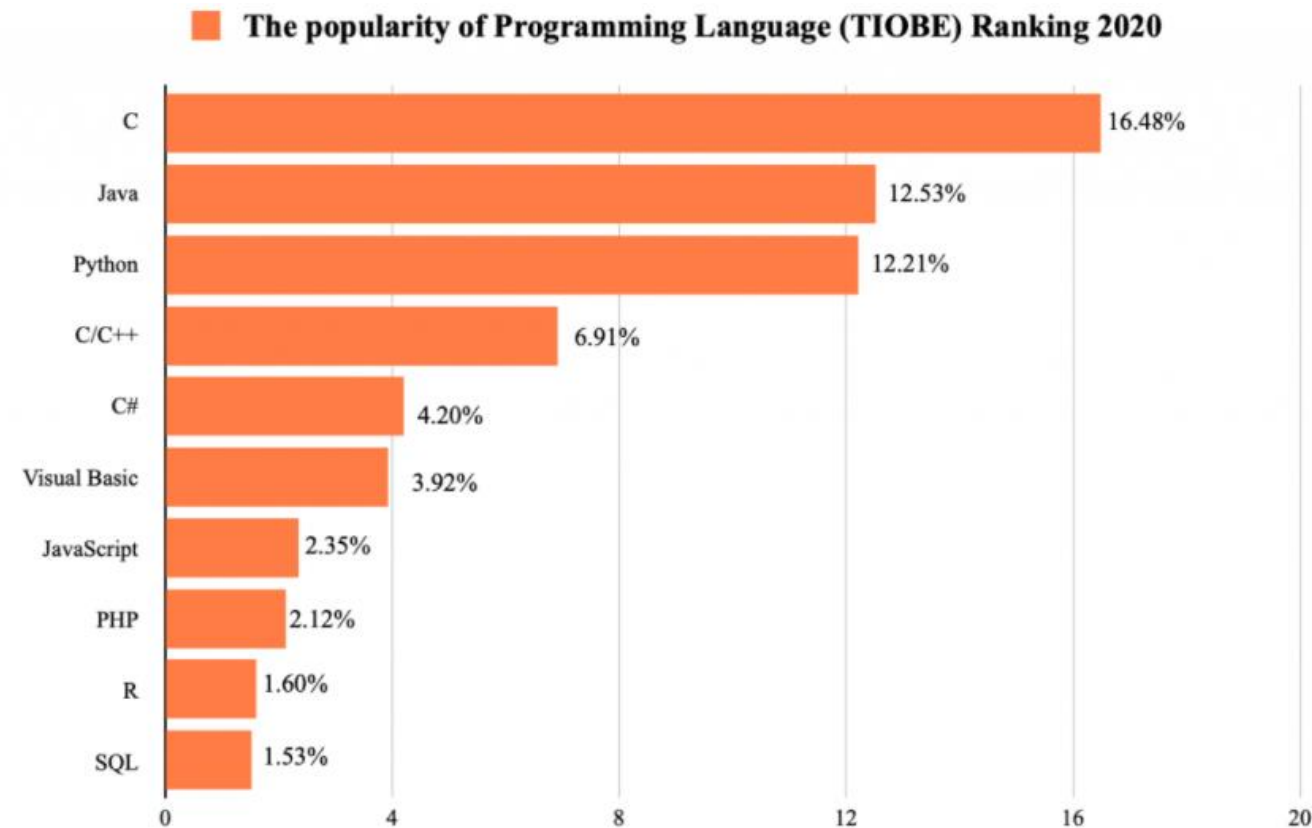
Popularity of Programming Language (PYPL) Ranking 2021

- Created by analysing how often language tutorials are searched on Google.
- The more a language tutorial is searched, the more popular the language is assumed to be. The raw data comes from Google Trends.
- The PYPL Popularity of Programming Language index can help you decide which language to study, or which one to use in a new software project.



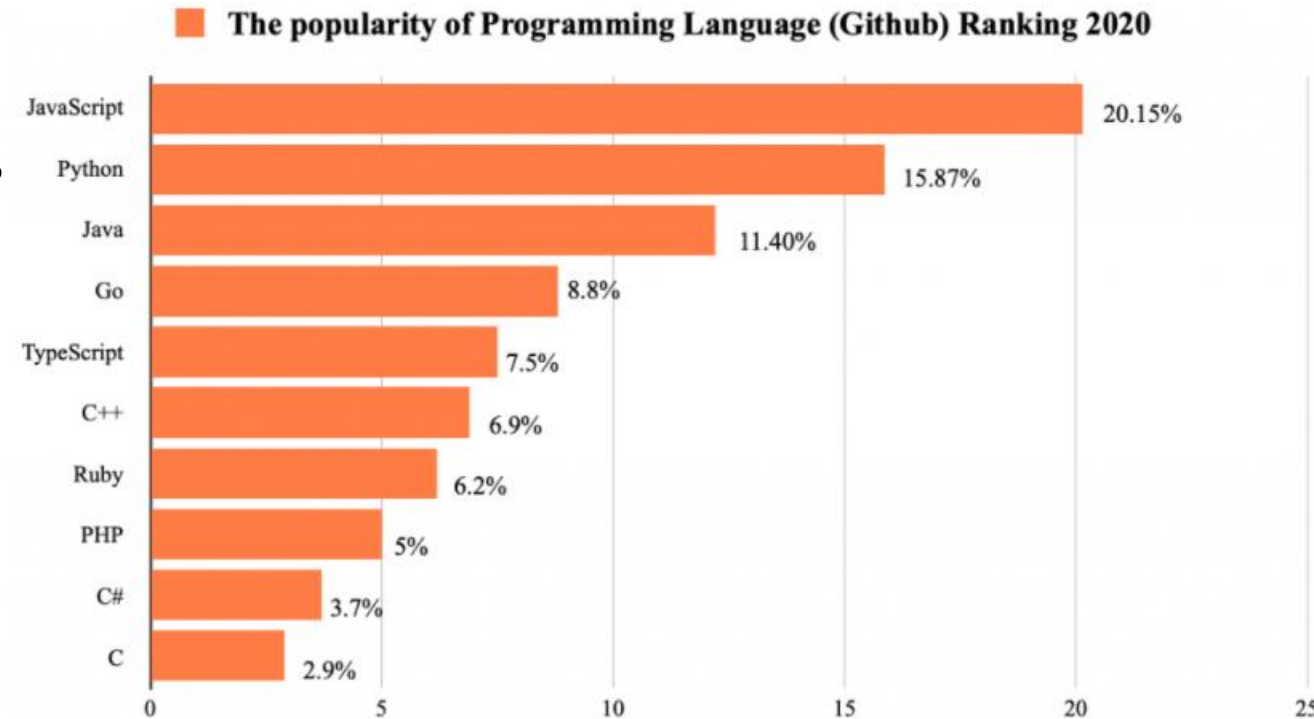
Popularity of Programming Language (TIOBE) Ranking 2021

- The TIOBE Programming Community index is an indicator of the popularity of programming languages. The index is updated once a month. The ratings are based on the number of skilled engineers world-wide, courses and third-party vendors. Popular search engines such as Google, Bing, Yahoo!, Wikipedia, Amazon, YouTube and Baidu are used to calculate the ratings.
- It is important to note that the TIOBE index is not about the best programming language or the language in which most lines of code have been written.



Popularity of Programming Language (GitHub) Ranking 2021

- GitHub is one of the biggest code repositories that boasts a massive developer community spanning across the globe. The repository is also growing at a blazing speed. Nearly 70% of global fortune 50 companies have lately made contributions to GitHub's open-source codes.
- GitHub also shares a yearly review of programming languages' popularity. Here are the top 10 programming languages ranking according to the latest GitHub report.



Java: The history

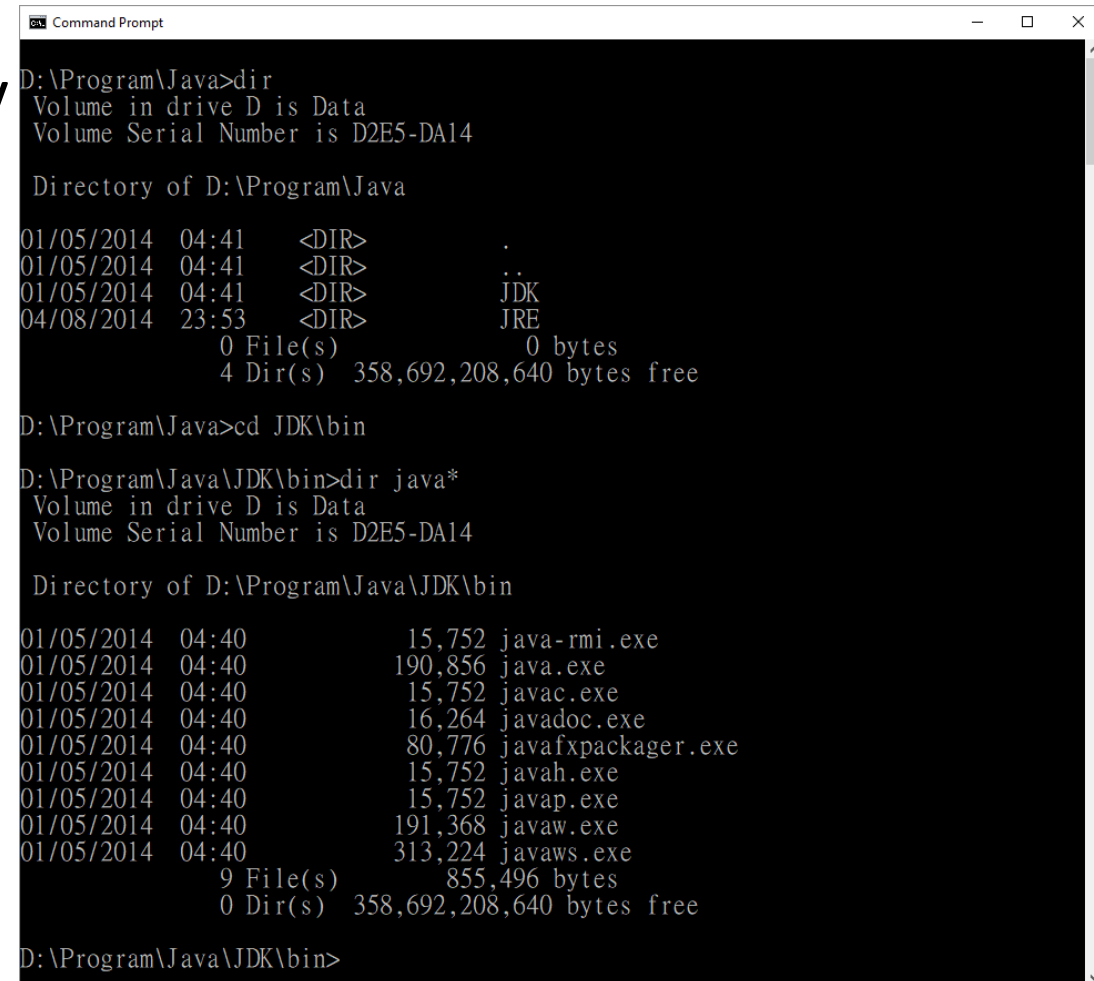
- Firstly developed by James Gosling at Sun Microsystem
 - Sun Microsystem then has been acquired by Oracle
- Released for the first time at 1995, as the main component of Sun Microsystem's Java platform
 - Syntax inherited from C & C++ languages
 - Java has less low level (close to machine language) programming facilities

Java: Download and installation

- There 2 program packages needed to be downloaded and installed
 - JDK (Java SE Development Kit). SE = Standard Edition → making the program
 - JRE (Java SE Runtime Environment) → running the program
- Source: oracle.com
- Once JDK & JRE have been downloaded, install them to the designated folder
 - E.g., in folder `D:\Program` we want to install JDK and JRE to the folder `Java` → `D:\Program\Java`
 - After installation has been done, then:
 - JDK installed on `D:\Program\Java\JDK`
 - JRE installed on `D:\Program\Java\JRE`

Java: Starting the program

- Once JDK has been installed, right away we can start our Java programming
 - All files needed are located inside `bin` folder in JDK folder →
D:\Program\Java\JDK\bin
 - Run the Java program → `java.exe`
 - Editing the Java program (`*.java`) → any available text editor (Windows's Notepad, Unix's **gedit** & **vim**, etc.)
- From the command prompt, we can perform editing, compiling and running a Java program



```
Command Prompt
D:\Program\Java>dir
Volume in drive D is Data
Volume Serial Number is D2E5-DA14

Directory of D:\Program\Java

01/05/2014  04:41    <DIR>          .
01/05/2014  04:41    <DIR>          ..
01/05/2014  04:41    <DIR>          JDK
04/08/2014  23:53    <DIR>          JRE
               0 File(s)              0 bytes
               4 Dir(s)  358,692,208,640 bytes free

D:\Program\Java>cd JDK\bin

D:\Program\Java\JDK\bin>dir java*
Volume in drive D is Data
Volume Serial Number is D2E5-DA14

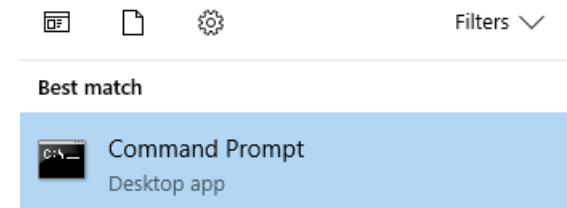
Directory of D:\Program\Java\JDK\bin

01/05/2014  04:40             15,752 java-rmi.exe
01/05/2014  04:40            190,856 java.exe
01/05/2014  04:40             15,752 javac.exe
01/05/2014  04:40             16,264 javadoc.exe
01/05/2014  04:40             80,776 javafxpackager.exe
01/05/2014  04:40             15,752 javah.exe
01/05/2014  04:40             15,752 javap.exe
01/05/2014  04:40            191,368 javaw.exe
01/05/2014  04:40            313,224 javaws.exe
               9 File(s)              855,496 bytes
               0 Dir(s)  358,692,208,640 bytes free

D:\Program\Java\JDK\bin>
```

Java: Starting the program (continued)

- From the button Search in task bar , type `cmd` → Windows suggests in the following. Click that suggestion.



- However, for convenience in calling `javac.exe` and `java.exe` from the folder `bin` in folder `JDK`, we can set `PATH` of the folder `bin` from the command prompt.

- `set path=D:\Program\Java\JDK\bin`

A screenshot of a Windows Command Prompt window. The title bar reads 'Command Prompt'. The command prompt shows the current directory as 'D:\>'. The user has entered the command `set path=D:\Program\Java\JDK\bin`, and the prompt is now `D:\>_` with a cursor.

Eclipse: The IDE for (Java) programming

- Website: `www.eclipse.org`
- It's an Integrated Development Environment (IDE) used in computer programming
- It contains a base workspace and an extensible plug-in system for customizing the environment
- It's written mostly in Java and its primary use is for developing Java applications
 - It may also be used to develop applications in other programming languages via plug-ins, including Ada, ABAP, C, C++, C#, Clojure, COBOL, D, Erlang, Fortran, Groovy, Haskell, JavaScript, Julia, Lasso, Lua, NATURAL, Perl, PHP, Prolog, Python, R, Ruby (including Ruby on Rails framework), Rust, Scala, and Scheme
 - It can also be used to develop documents with LaTeX (via a TeXlipse plug-in) and packages for the software Mathematica. Development environments include the Eclipse Java development tools (JDT) for Java and Scala, Eclipse CDT for C/C++, and Eclipse PDT for PHP, among others

NetBeans: The IDE for (Java) programming

- **Website:** `netbeans.apache.org`
- It's an integrated development environment (IDE) for Java.
- It allows applications to be developed from a set of modular software components called modules.
- It runs on Windows, macOS, Linux and Solaris.
- In addition to Java development, it has extensions for other languages like PHP, C, C++, HTML5 and JavaScript.
- Applications based on NetBeans, including the NetBeans IDE, can be extended by third party developers.