Object Oriented Programming

Introduction to Java

Syllabus

School of AI. Software, Gachon University
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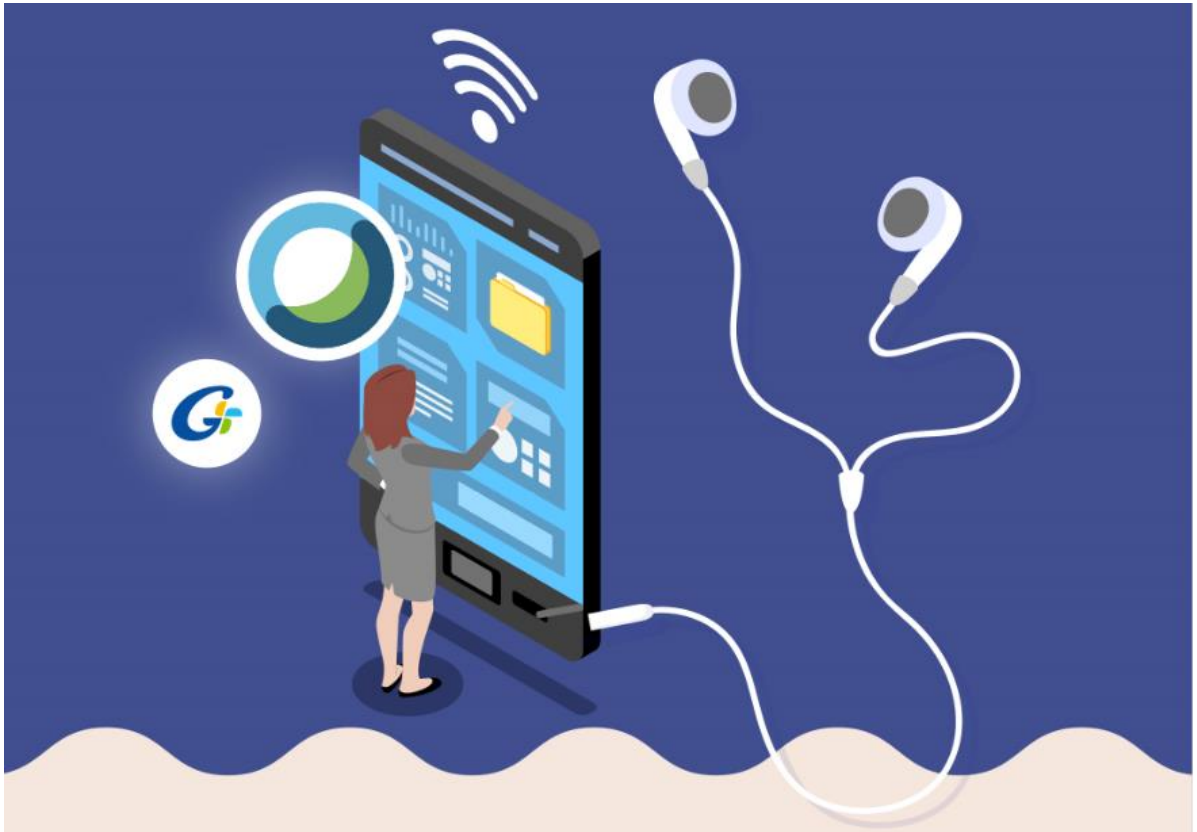
실시간 화상수업
에티켓
아름다운 인재의 샘
가천대학교



1 네트워크가 **최적화된 장소에서 접속하기**

2 실시간 화상 수업 수강 시 **이어폰을 착용하기**

*이어폰 미사용시 타인에게 불편을 주는 등 문제가 발생할 수 있음.

3 **단정한 복장으로** 수업 참여하기

*카메라 각도에 따라 의도치 않게 학생의 복장과 배경이 노출될 수 있음

4 **수업시간 5분 전 입장**하여 준비하기


5 입장 후 음소거(Mute) 상태로 대기하기
Mute 상태
Camera 꺼짐 상태
@ # !?
소리 ON 상태
소리 OFF 상태

1 고운말 사용하기

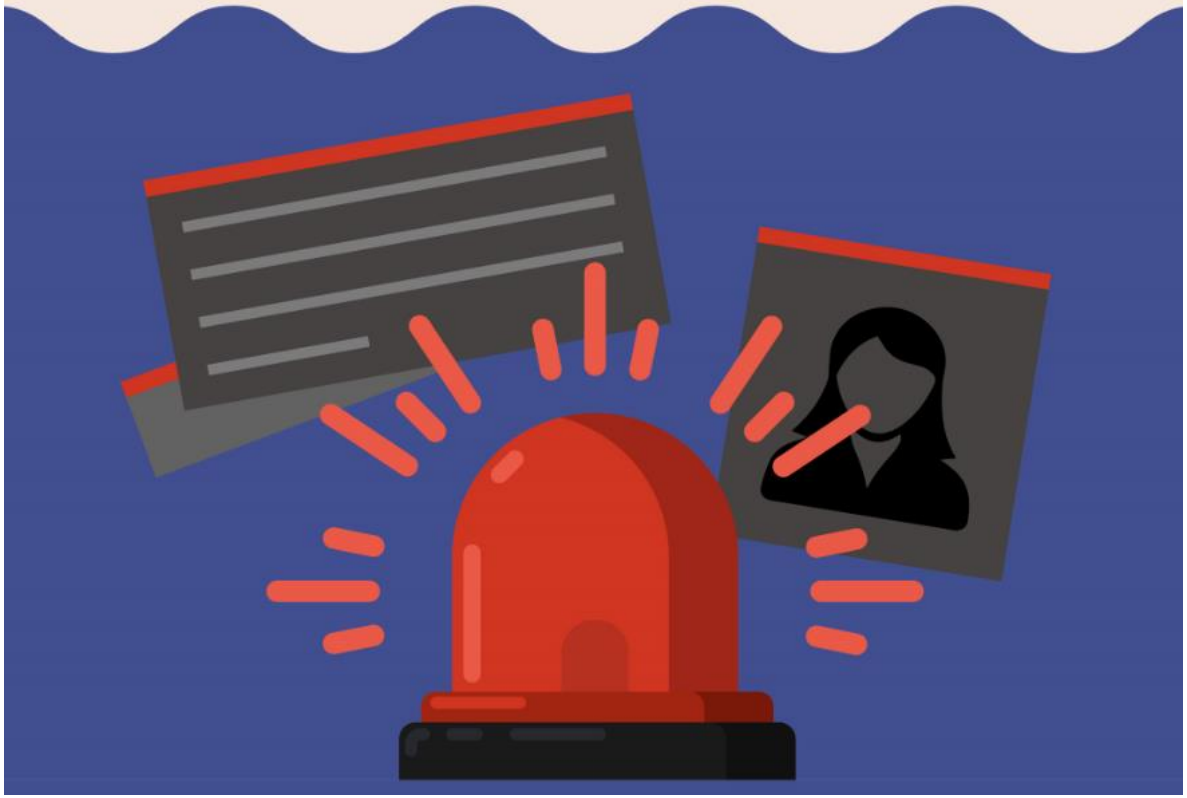
*비속어, 사회적 금기어, 수업과 관계없는 잡담은 금지!

2 불필요한 행동 금지

*음식물 섭취 등 불필요한 행동 자제
*교수자가 제공한 링크, 수업자료를 타인과 공유하는 경우 문제 소지 발생!
*실시간 화상 강의를 무단 캡쳐하거나 저장하는 행위 또한 금지!

❸ 존중하고 배려하기

*타인의 사진을 무단으로 캡쳐하거나 공유하는 행위는 범죄입니다.
*무심코 지나친 행동이 성희롱일 수 있습니다.



화상강의 관련

- **강의 녹화 및 재배포 금지**
- 수업 중 질문?
  - 모든 질문은 전체 공개로 질문
  - 간단한 것은 채팅창 통해서
  - 복잡한 것은 사이버 캠퍼스 QA 게시판 통해서 질문
  - 상황에 따라 유동적으로 운영 예정
- 출석 채크 관련
  - 매 수강시간에 채팅창을 통해 출석 채크
  - 수강전 별도 공지 예정

General Info.

- **Instructor**
  - Prof. Ahyoung Choi
  - Office: AI공학관, 434호
  - E-mail: aychoi@gachon.ac.kr
  - Visit: Office hours or by appointment (e-mail or phone)

Goal of This Course

- You will learn **the basics of JAVA programming**
- Understand the concept of **Object-Oriented Programming**
  - **Be aware of the differences between C/C++ and JAVA**
- More importantly, **algorithmic thinking**
  - An algorithm is just a sequence of instructions used to solve a problem
  - That can be applied to any programming language (Java, C++, Python, Matlab, etc.)

Prerequisites

- Prerequisites
  - Basic computer skills
    - Sending emails, browsing websites, installing software
  - Basic mathematics
    - Elementary algebra, such as solving a simple equation
  - No programming experiences required
    - It is OK that you have some experiences but remember that others don't
    - But, I know that most of the students took 2 courses (C, Problem solving)

Schedule

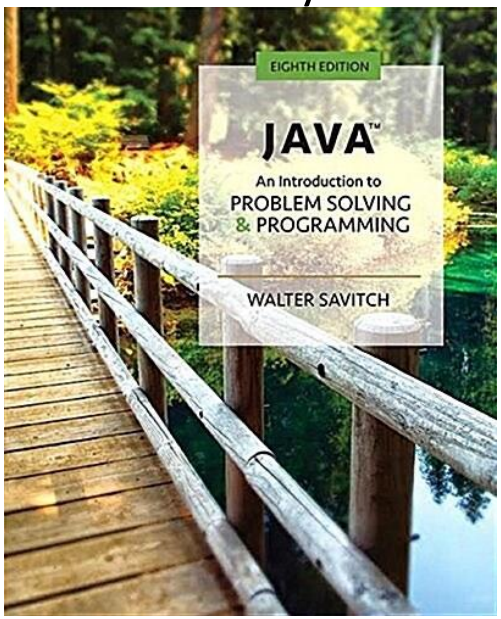
Week	Topic
1	Introduction
2	Basic computation
3	Flow of control: branching and loops
4	Classes and methods (1)
5	Classes and methods (2)
6	More about objects and methods
7	Arrays
8	Mid-term exam

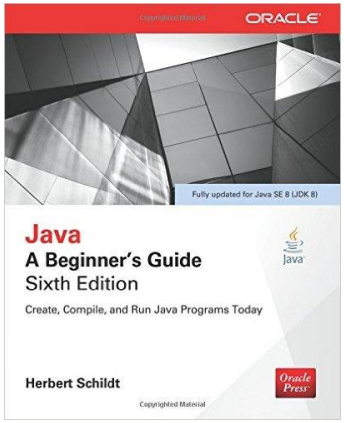
Schedule *cont'd*

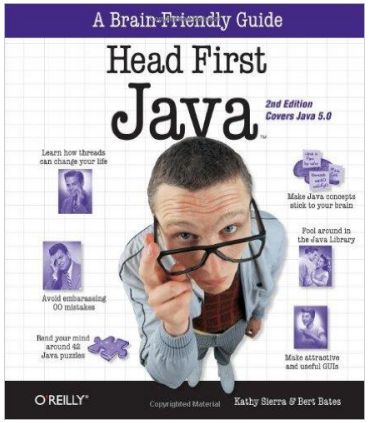
Week	Topic
9	Inheritance, polymorphism, and interfaces
10	Exception handling
11	Streams and File I/O
12	Recursion
13	Dynamic data structures
14	Window interfaces using Swing
15	Visual Java
16	Final exam

Textbook

- *Java: An Introduction to Problem Solving and Programming* (8th Edition), by Walter Savitch.
- References
  - Herbert Schildt, Java: A Beginner's Guide, McGraw-Hill Education
  - Kathy Sierra & Bert Bates, Head First Java, O'Reilly Media







- *Course PPTs are just supplementary materials*
- *You should study with the textbook!!*

Grading

- **Attendance & Presentation** **100**
- **Individual Assignments** **150** **// 7-9 assignments**
- **Midterm Exam** **300**
- **Final Exam** **300**
- **Lab & Quizzes** **150**

* **Extra credit** will occasionally be given on your assignments.

Grading (2/2)

- **Grade ratio (Normal situation)**
  - **“A/A+” up to 35%**
  - **“B/B+” up to 75%**
  - **“C+ ↓” 45%+**

Tips & Rules

- This is a “Learn & practice” class
  - You will have in-class practices
  - You will have quizzes, homework, and projects
- Ask questions during class
  - It is boring to just sit and listen. Be active!
  - Asking questions means you are interested. Let others share your interest.
  - Do not be afraid to ask stupid questions. You are students.

Attendance

- "F" policy
  - "Not attending" 1/4 or more classes
  - Not attending or cheating in exams and quizzes
- "Not attending" also includes:
  - Leaving a class in the middle
  - Chatting and using the mobile phone in class
  - Any other actions that may disturb the class
  - Usual exceptions: emergency, etc.

Assignments

- You will have many assignments
  - Programs are very time-consuming
  - They weigh the high amount of credit!
- All reports are submitted only via e-class
  - One week (or more) is given for each assignment
- You will have no credit in cases:
  - Not submitted on time
  - Any submission problem (e.g., broken file)

Assignments

- **Start early!**

- Struggle with your assignment first before asking for help

- You are allowed to let others help you finding bugs. However, you must fix them yourself.

Assignments

- Collaboration is highly recommended, but
- Do not cheat! Do not share code!
  - You are encouraged to work together for better understanding of the course material and assignment requirements
  - But do the actual coding by yourself!
  - It is easy to cheat but it is also easy to detect plagiarism
    (표절)
    (I have a very nice testing program).
    Keep safe by writing your own codes

Question ?

Assignment

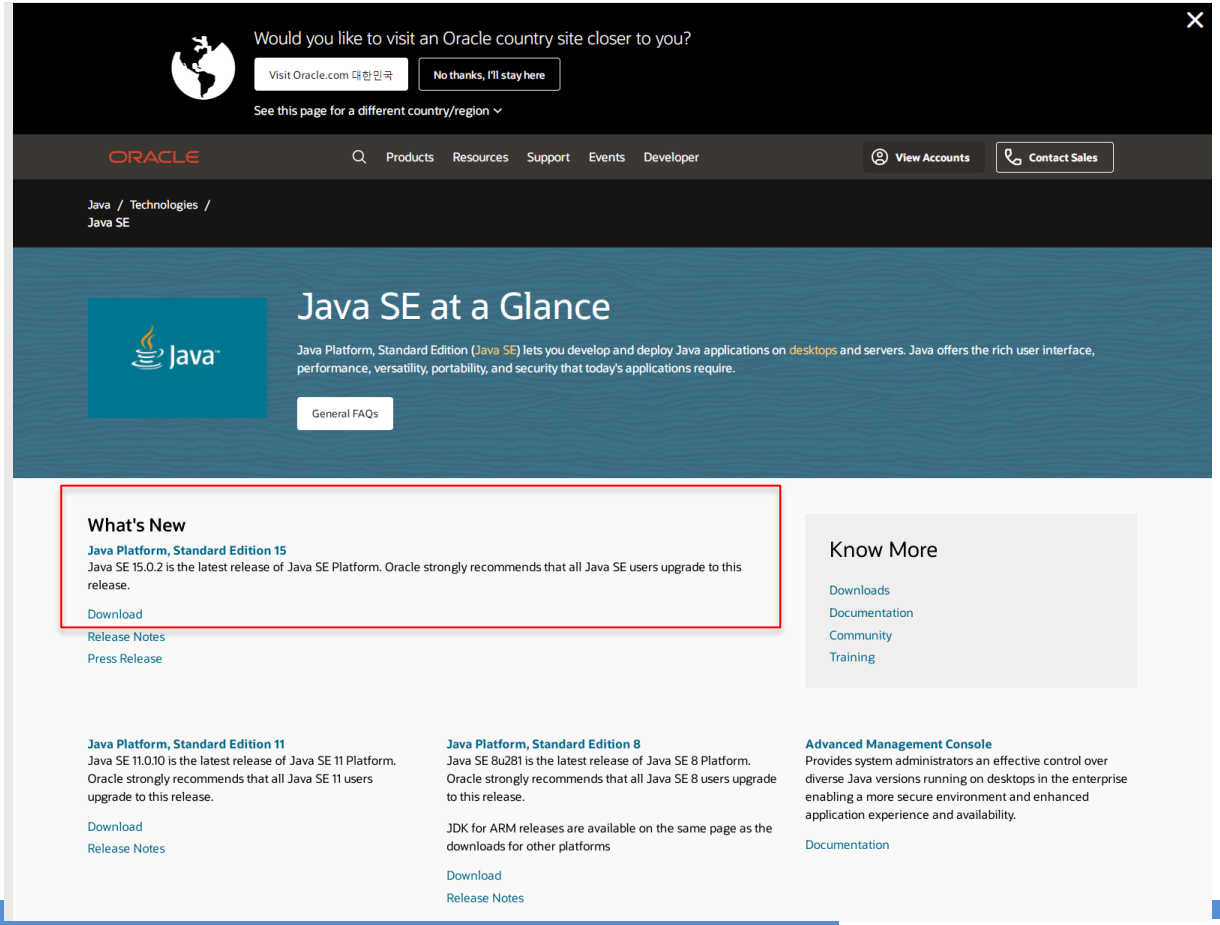
- Read syllabus
- Install JAVA IDE & Run first java program
- **Read Chapter 1.1-1.3**

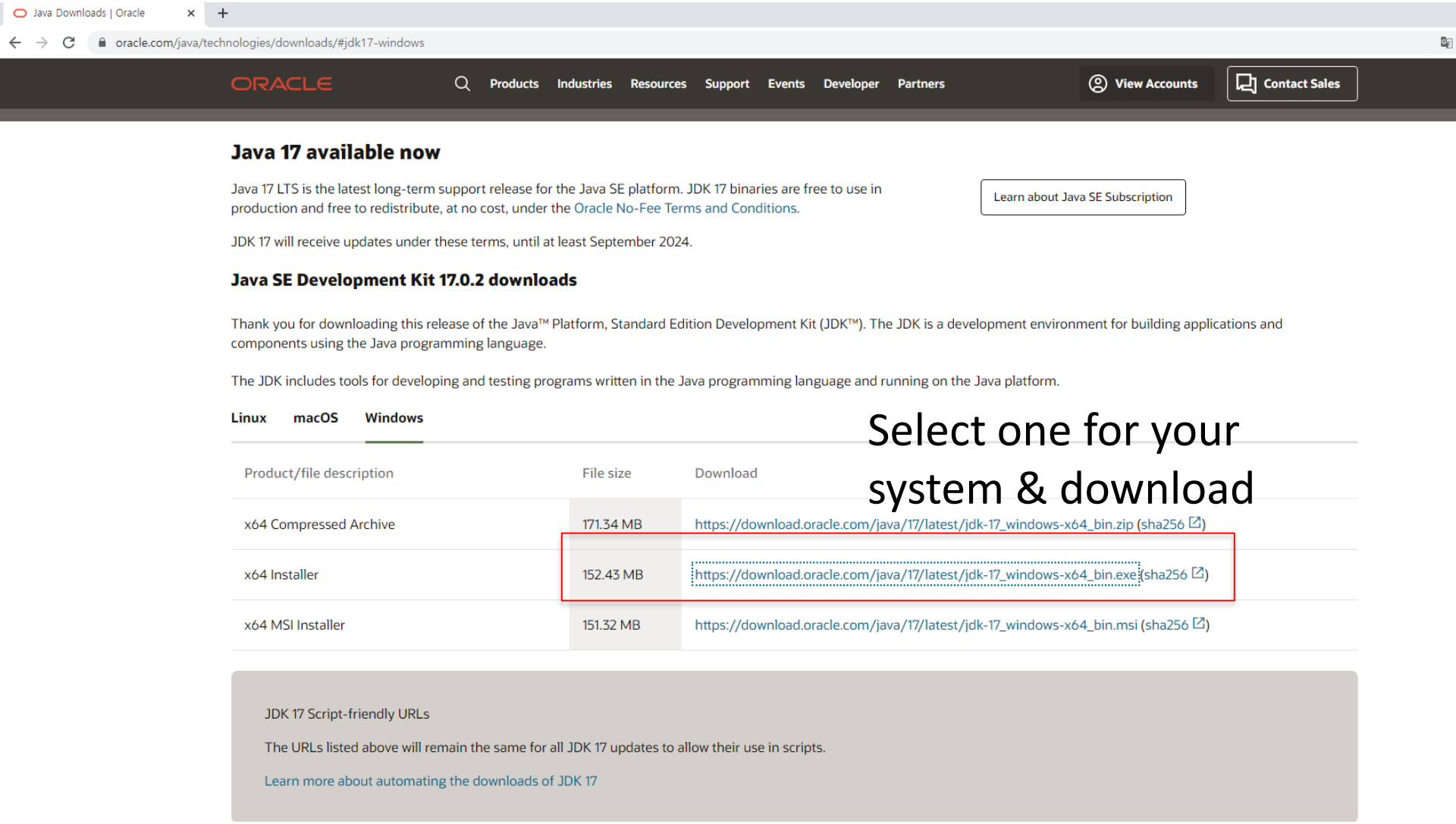
JAVA Development Environments

- For JAVA development, you can use a Mac, a Windows PC, or a Linux machine.
  - Every platform has several choices (IDEs) that you can use to develop Java programs
- Most the tools needed are free and can be downloaded from the Web
- We will use Eclipse IDE for Java SE Developers

JDK (Java Development Kit)

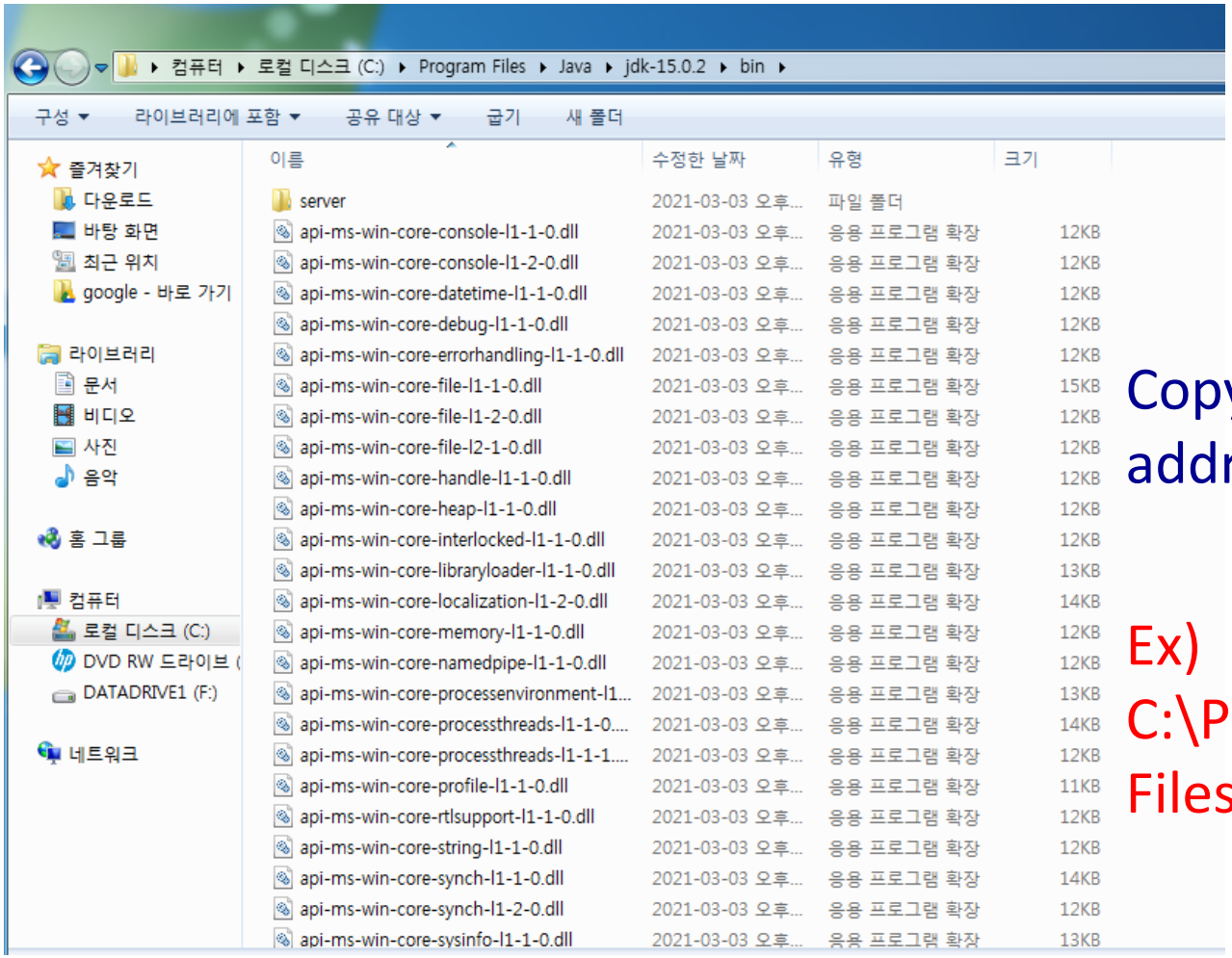
- JAVA SE (Standard Edition) Development Kit
- https://www.oracle.com/java/technologies/java-se-glance.html
- Install JDK





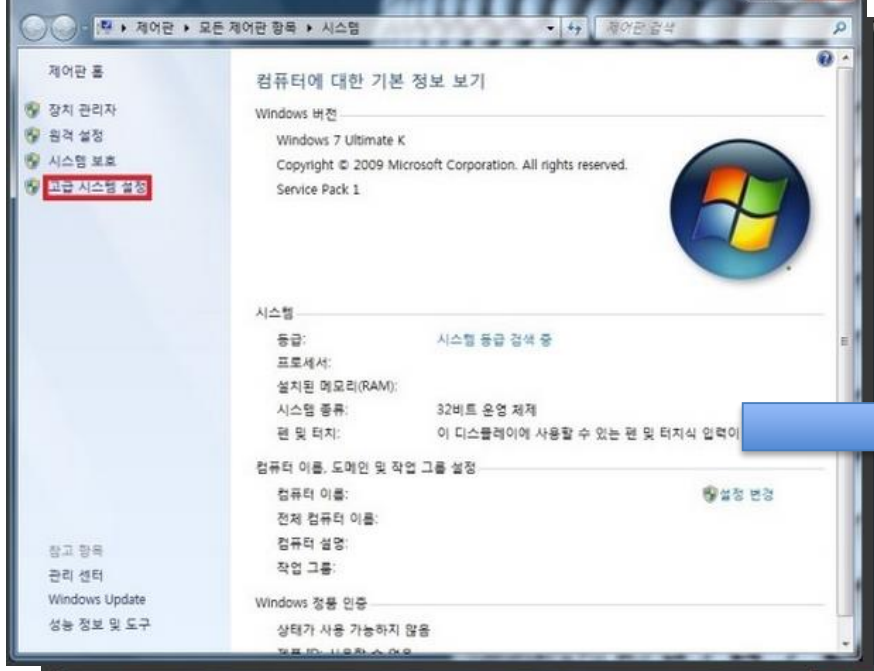
Select one for your system & download

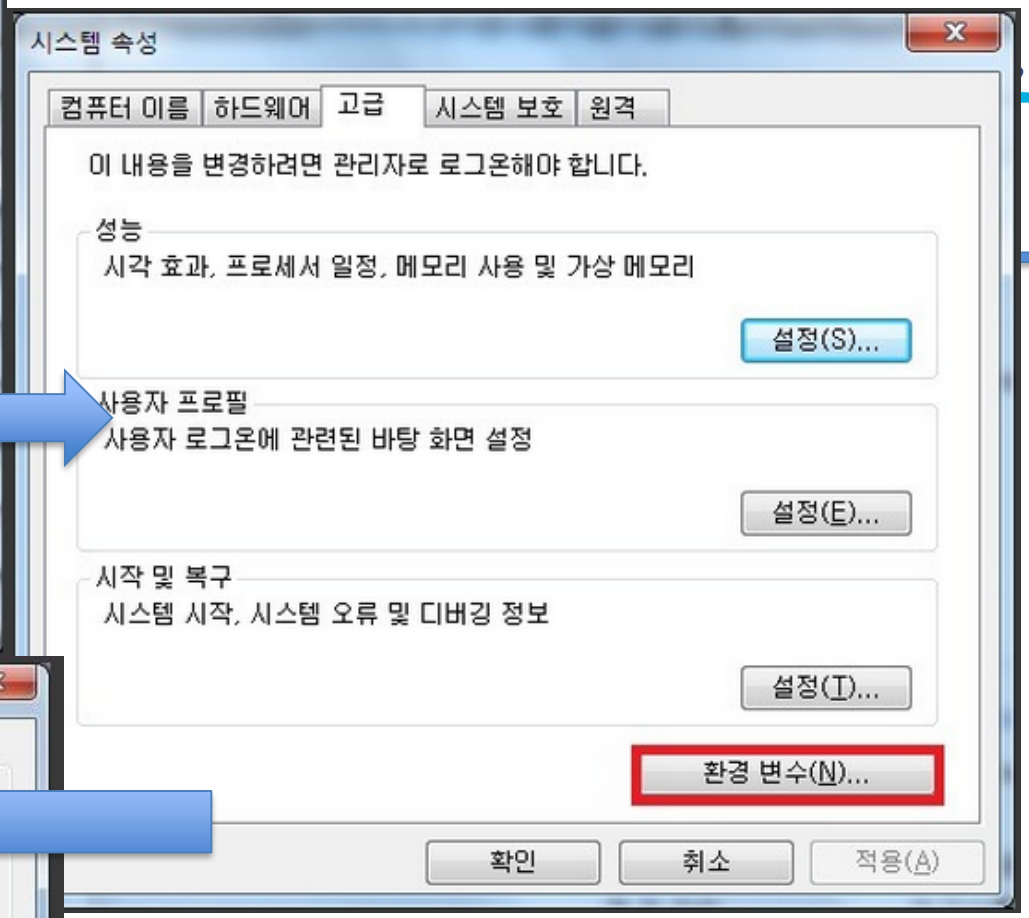
Find the Java installed folder



Copy JAVA bin folder address

Ex)
C:\Program Files\Java\jdk-15.0.2\bin


제어판 ▸ 모든 제어판 항목 ▸ 시스템
제어판 홈
장치 관리자
원격 설정
시스템 보호
고급 시스템 설정
컴퓨터에 대한 기본 정보 보기
Windows 버전
Windows 7 Ultimate K
Copyright © 2009 Microsoft Corporation. All rights reserved.
Service Pack 1
시스템
등급:
시스템 등급 점수 중
프로세서:
설치된 메모리(RAM):
시스템 종류:
32비트 운영 체제
펜 및 터치:
이 디스플레이에 사용할 수 있는 펜 및 터치식 입력이
컴퓨터 이름, 도메인 및 작업 그룹 설정
컴퓨터 이름:
설정 변경
전체 컴퓨터 이름:
컴퓨터 설명:
작업 그룹:
Windows 정품 인증
상태가 사용 가능하지 않음
참고 항목
관리 센터
Windows Update
성능 정보 및 도구


시스템 속성
컴퓨터 이름
하드웨어
고급
시스템 보호
원격
이 내용을 변경하려면 관리자로 로그온해야 합니다.
성능
시각 효과, 프로세서 일정, 메모리 사용 및 가상 메모리
설정(S)...
사용자 프로필
사용자 로그온에 관련된 바탕 화면 설정
설정(E)...
시작 및 복구
시스템 시작, 시스템 오류 및 디버깅 정보
설정(T)...
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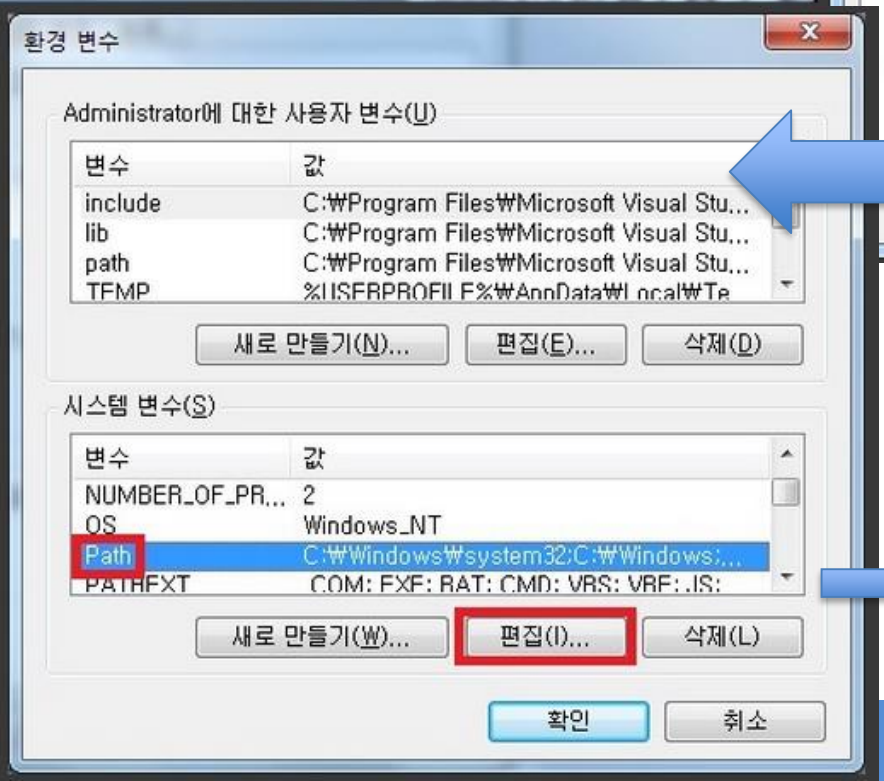
확인
취소
적용(A)


환경 변수
Administrator에 대한 사용자 변수(U)
변수
값
include
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lib
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삭제(D)
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삭제(L)
확인
취소


시스템 변수 편집
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Path
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gram Files₩Java₩jdk1.7.0_25₩bin;C:₩Prog
확인
취소

How to install Eclipse

- http://www.eclipse.org/downloads/
- Multi-language software development environment

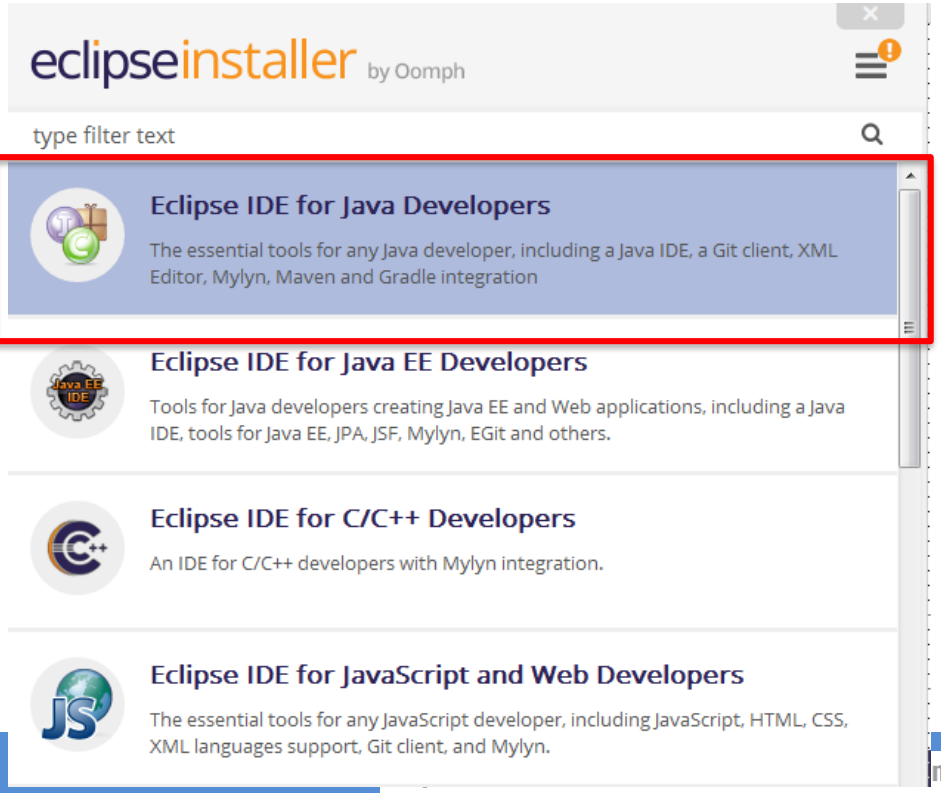
The Eclipse Installer 2020-12 R now includes a JRE for macOS, Windows and Linux.

Get **Eclipse IDE 2020-12**

Install your favorite desktop IDE packages.

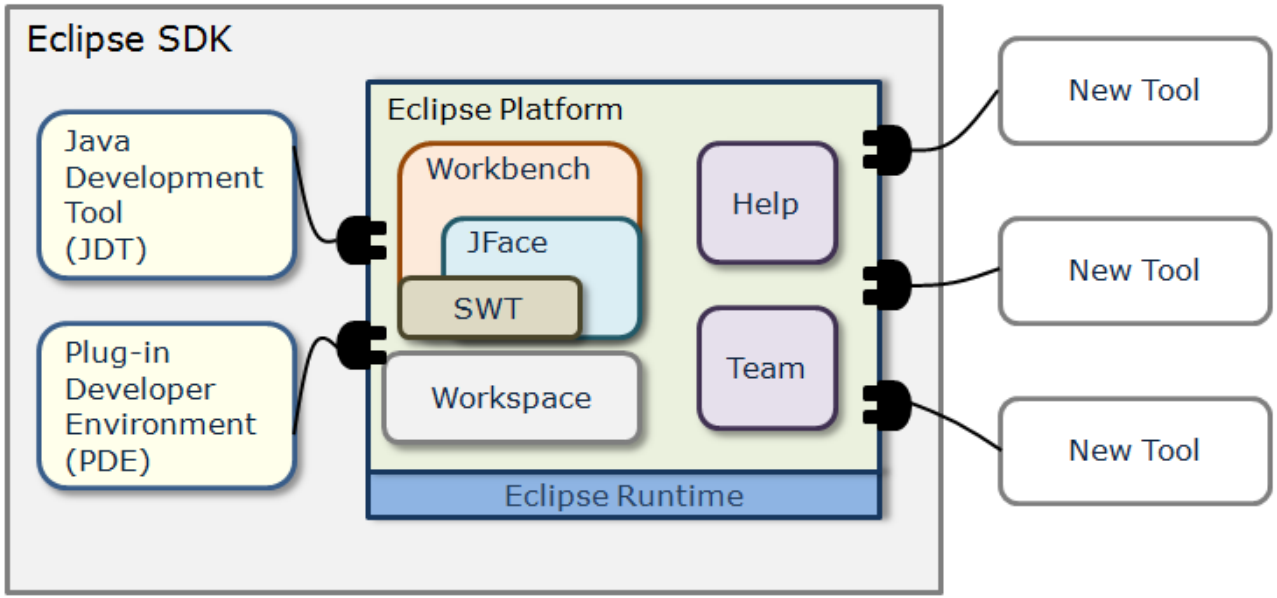
Download x86_64

Download Packages | Need Help?



How to install Eclipse

- Eclipse Platform
  - ✓ The Eclipse platform defines an open architecture to allow plug-in developers to add a variety of function to the basic tooling platform



Our First Java Application

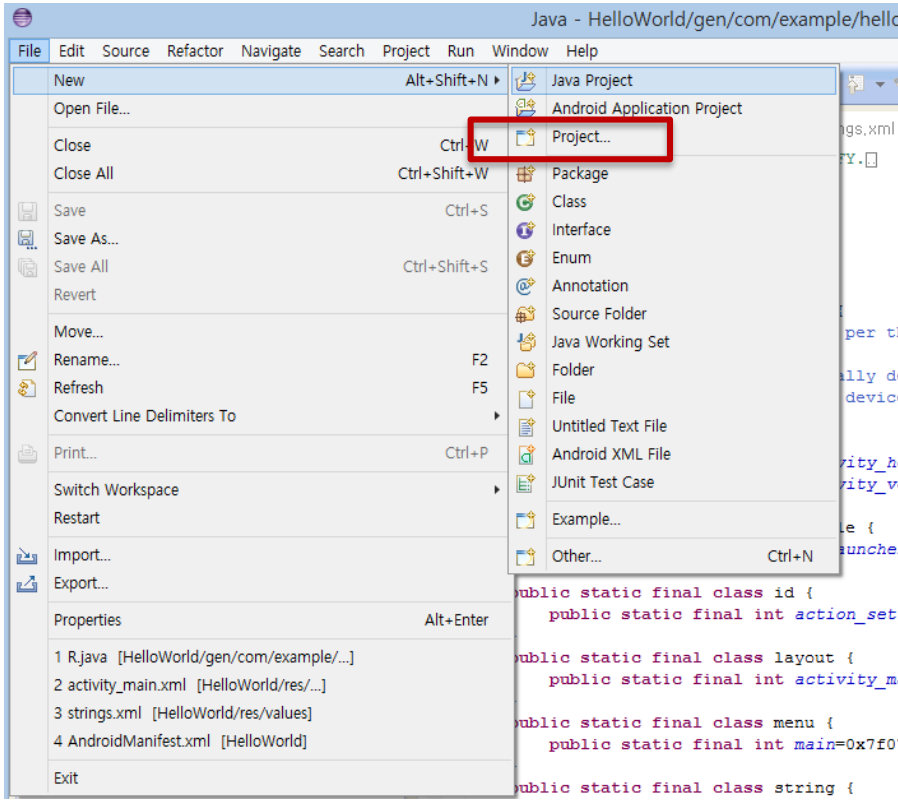
- Write a following Java program
  - Read two integers and display the number of integers between them, including themselves
  - E.g., print 4 for given two integers 3 and 6

```
Hello out there.
I will add two numbers for you.
Enter two whole numbers on a line:
12 30
The sum of those two numbers is
42
```

Sample screen output

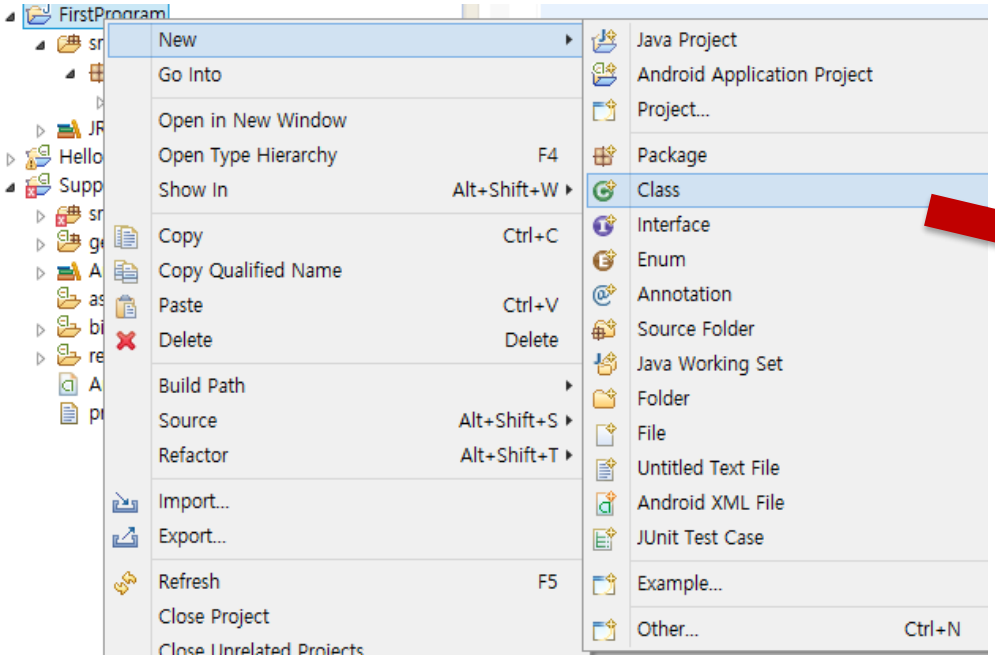
Lab: New Java Project

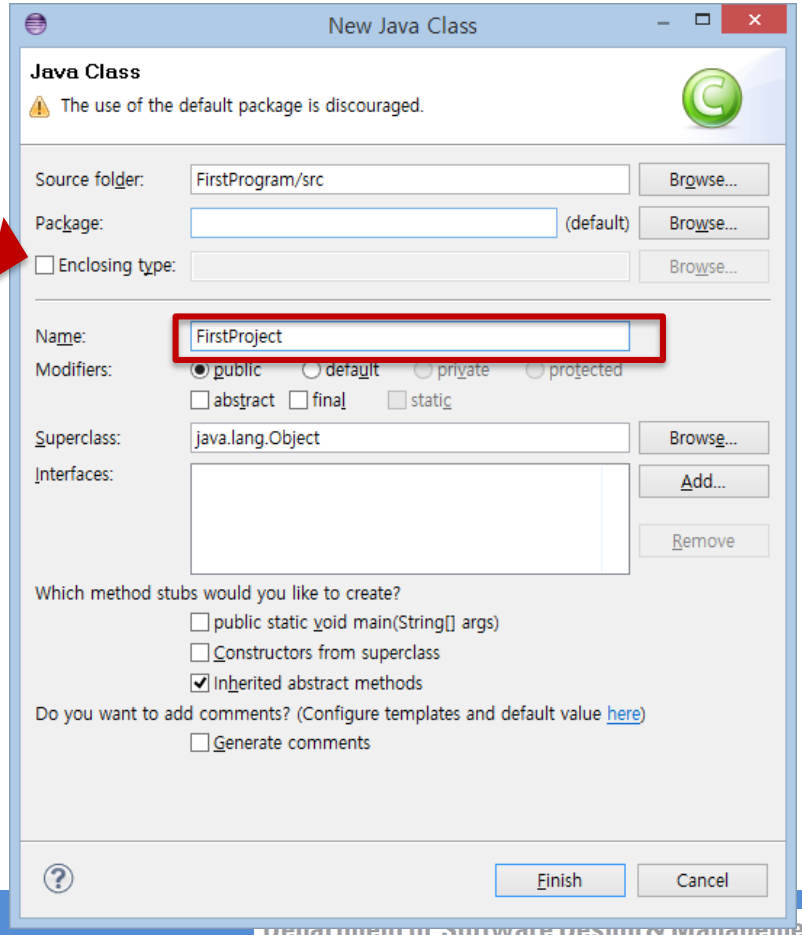
- New project
  - [New] – [Java Project]
  - Project Name : **FirstProgram**



Lab: New Java Project

- Right Click on your project (in Project Explorer)





Lab: Our First Program

```
import java.util.Scanner;

public class FirstProgram {
    public static void main(String[] args) {
    System.out.println("Hello out there.");
    System.out.println("I will add two number for you.");
    System.out.println("Enter two whole numbers on a line:");

    int n1, n2;

    Scanner keyboard = new Scanner(System.in);
    n1 = keyboard.nextInt();
    n2 = keyboard.nextInt();

    System.out.println("The sum of those two numbers is");
    System.out.println(n1 + n2);
    }
}
```

Run !

Sample Screen Output

```
Hello out there.
I will add two numbers for you.
Enter two whole numbers on a line:
12 30
The sum of those two numbers is
42
```