CISC 3120
C02: Overview of Software Development and Java

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Outline

- Recap and issues
- Brief introduction to software development process
- Brief introduction to history of Java
- Writing simple Java program (from command line)
    - Review concepts of class, object
    - Text-based application user interface
- Assignments

How well am I doing?

- Check CUNY Blackboard
  - Updated every class to September 14
  - Peer and random inspections after September 14

Attendance

- A: you arrived on time and signed attendance sheet

- N: you missed the class

- L: you signed attendance sheet, but were late

- X: you were excused with support legitimate documentation

Individual Assignment

- Practice W01-1_08-31
  - Individual assignment
  - A: Accepted
  - U: Unaccepted, not submitted, or not submitted on time.

Practice W01-1_08-31

- What shows up in Github classroom?

- Feedback method

  - Created issues in Github

- Any problems?

  - Issue type 1: Accepted assignment, but did nothing. I don't even know who you are (unaccepted)

  - Issue type 2: The content of your file is wrong (unaccepted)

  - Issue type 3: You did not create the folder for the assignment (accepted, however, may not in the future)

Group Assignment

- Project 0
  - Group assignment
- Letter grade
  - A: may not be perfect, but I am very happy with what you team did.
  - B: at least two members completed something.
  - C: at least one member completed something.
  - F: nothing is done.

Project 0

- What shows up in Github classroom?

- Feedback method

  - Created issues in Github

- Any problems?

  - Issue type 1: some members did not join the team in Github

  - Issue type 2: some members joined, but did not make contribution

Questions?

- Attendance

- Practice assignment

- Team Assignment

- Github issues

Suggestion

- Use Github Issue Tracking in your assignments
  - Practice assignment: manage your own to-do, bugs, and other items
  - Team project: manage to-do, bugs, other items; delegate tasks to members
- Communicate effectively with the instructor and the fellow team members

Communicate Effectively

- Follow Stack Overflow,
    - https://stackoverflow.com/help/how-to-ask

Develop Software Applications

- Apply engineering principles and scientific techniques to software development
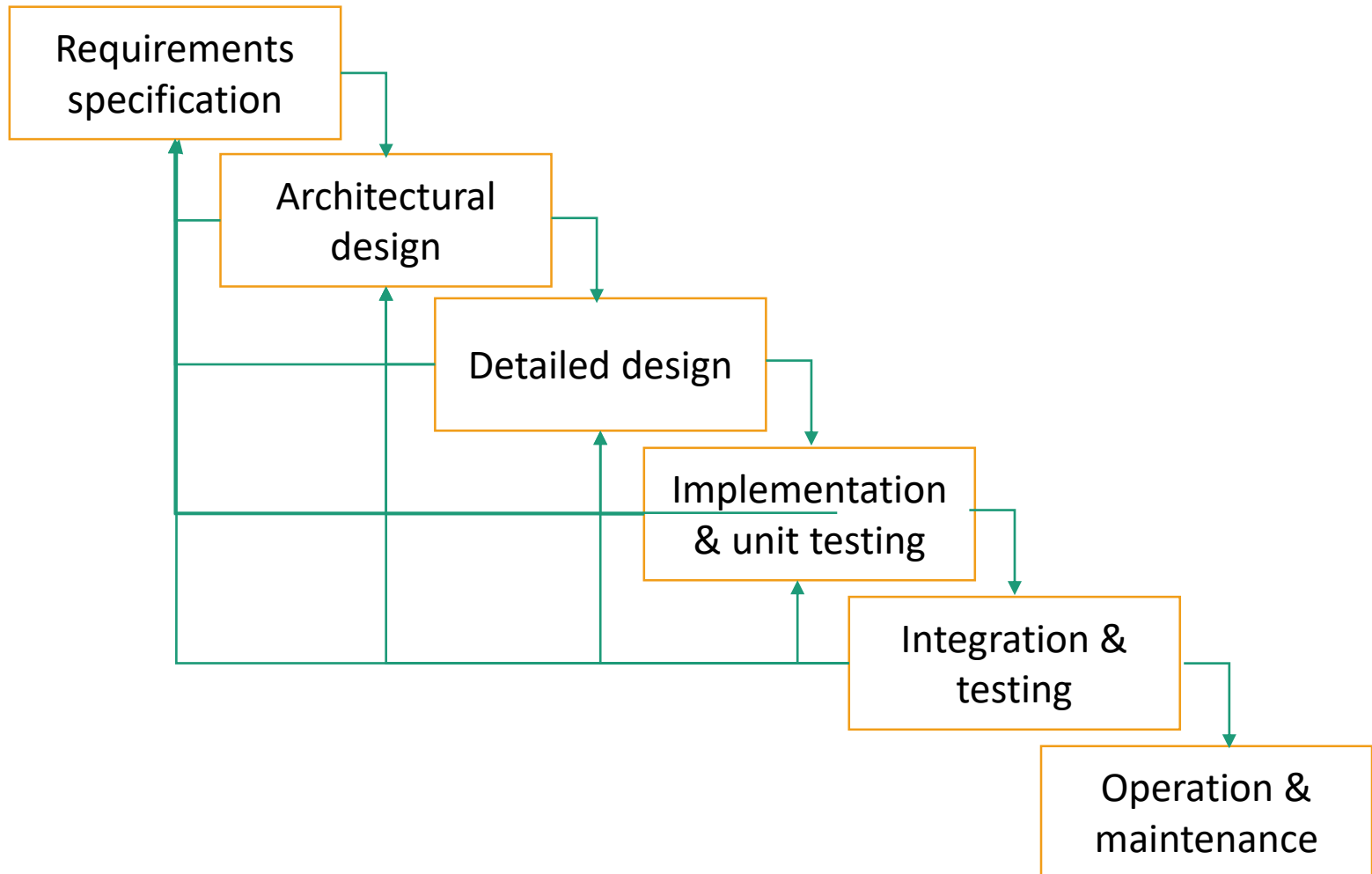
- Software engineering

Main Parties in Software Development

- Two main parties: customers, designers
  - Real word scenarios can be more complicated about who the customers and designers are

Software Life Cycle

- Main activities
  - Requirement analysis
  - Architectural specification
  - Detailed specification
  - Implementation and unit testing
  - Integration and testing
  - Operation and maintenance

Waterfall Model

Requirements specification → Architectural design → Detailed design → Implementation & unit testing → Integration & testing → Operation & maintenance

Lots of Documentation

Software Development Process

- Waterfall vs. Spiral vs. Agile

Validation and Verification

- Validation
  - Are we building the right product?
- Verification
  - Are we building the product right?
- Testing

In CISC 3120 …

- Projects
  - The instructor is your customer
  - You and your team members are the designers
  - You deliver a verified product to the customer
- How does the software life cycle fit in?
- Learn to design and develop applications in Java

Java

- An Object-Oriented Programming language after C++

- Designed for devices, later for the Web

- "Write once, run anywhere"

- Java Virtual Machine (JVM)

Writing Java Programs

- Create Java source code
  - Use a text editor (e.g., notepad) or an IDE (e.g., Eclipse)
- Compile Java source code to generate Java byte code
  - Use javac to compile the Java source code
- Run Java byte code in Java Virtual Machine
  - Use java to run the Java byte code program

The "Hello, World" Java Program

Create the HelloWorld.java file

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

Compile and Run

- Without using any IDE
- From the command line:
  - Compile

  javac HelloWorld.java

  - Run

  java HelloWorld

The Beer Song

- A little big program that prints out the lyrics of the song "99 bottles of beer".

Command Line Arguments

- What if I want to start at 10 beers?

Different iteration mechanisms?

Questions?

- Software development process
- Write your first Java programs

Assignments

- Practice examples to be posted at the class website