Orbital'25 Summer Cohort 🚀

Briefing

by Lee Zong Xun

Who am I?

I recently graduated NUS, studying computer science and statistics.

- CVWO, Expensify, Jupyterlab, TikTok, QRT.
- ex-VP of NUS DG, ex-Chair of SoC TIPS.
- Full time offers at Meta, QRT, TikTok etc.
- Currently in Hong Kong 😁

Feel free to connect with me!
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What about you? 🤩

Software Development Lifecycle (SDLC)

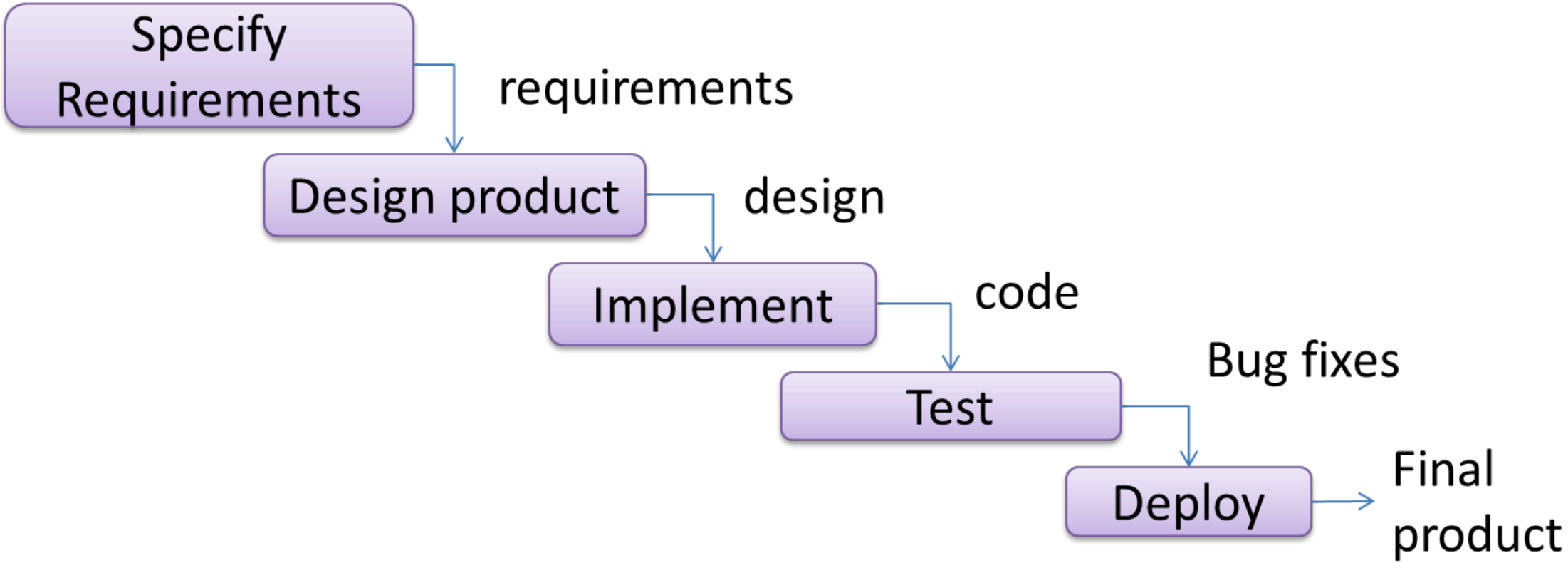
Software development goes through **different stages** such as requirements, analysis, design, implementation and testing. These stages are collectively known as the software development life cycle (SDLC).

Sequential Models

Also called the waterfall model, models software development as a linear process.

- When one stage of the process is completed, it should produce some artifacts to be used in the next stage.
- Useful if problem statement is well-understood and stable.
- Real-world project are rarely well-understood. 🥲

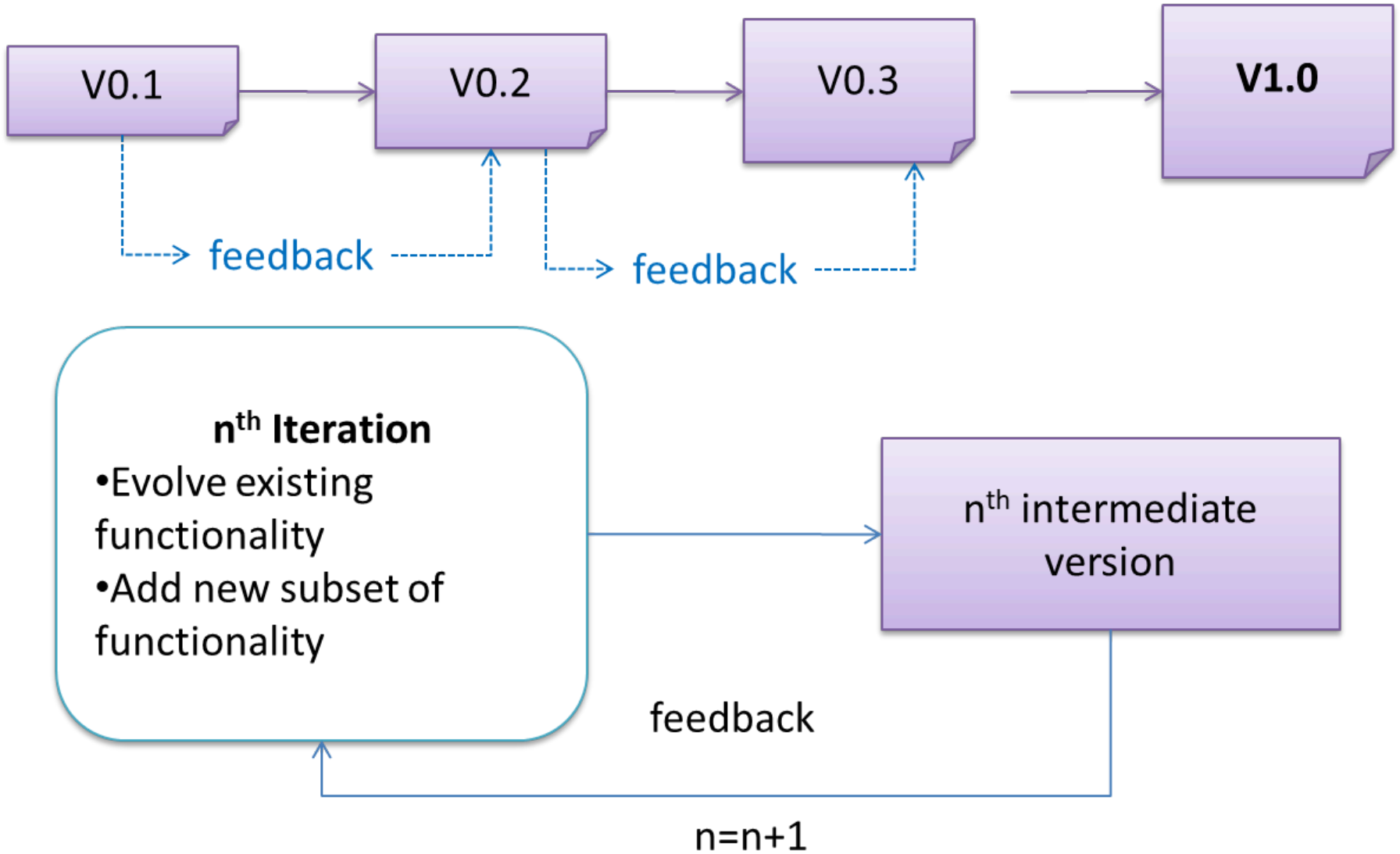
Waterfall


Specify Requirements
requirements
Design product
design
Implement
code
Test
Bug fixes
Deploy
Final product

Iterative

The iterative model (sometimes called iterative and incremental) advocates having several iterations of SDLC.

- **breadth-first**: an iteration evolves all major components in parallel.
- **depth-first**: an iteration focuses on fleshing out only some components.


V0.1
V0.2
V0.3
V1.0
feedback
feedback
nth Iteration
•Evolve existing functionality
•Add new subset of functionality
nth intermediate version
feedback
n=n+1

Agile

Popular Agile Methodologies:

- Scrum (https://www.mountaingoatsoftware.com/agile/scrum/meetings/daily-scrum)
- XP programming (http://www.extremeprogramming.org/)

Demo (real quick) 🐌

Level of Achievements 🏆

Gemini

Gemini projects are not meant to be complex but it can’t be just bare-bones.

Features

- 3~5 feature of sufficient complexity in total
- Use of database (workload must be justified otherwise there is no database)

Planning / Version Control (via Git + GitHub)

- GitHub repo + Basic version control (e.g., add / commit / push / pull)

Design

- Use cases and features
- Flow and architecture

Implementation

- Organization of files into folders
- Code level comments

Testing

- System testing by the developers

Documentation

- Proper description of the system in project README, project poster and project video

Quality of peer evaluation given

- Average feedback rating >= 3

Teamwork

- Proper contributions to the project (esp. in terms of coding) from both members of the team.

Apollo

Apollo teams need to showcase good evidence of SE and are expected to complete more work of higher quality within the same timeline.

Features

- 6~8 feature of sufficient complexity in total
- Use of database (workload must be justified otherwise there is no database)

Planning / Version Control (via Git + GitHub)

- GitHub repo + Basic version control (e.g., add / commit / push / pull)
- Github issues with (monthly) milestones / labels / tags / assignee + Intermediate version control (branching, pull request)

Design

- Use cases and features
- Flow and architecture
- Design diagrams (drawn with tools): Sequence diagram, activity diagram, class diagram, ER diagram, etc.
- Design principles + pattern
- Design decisions (alternatives, criteria, comparison and justification)

Implementation

- Organization of files into folders
- Code level comments
- Coding Standard

Testing

- System testing by the developers
- Multi-level (unit / integration / system) testing with automation + User testing
- Proper test strategy (planning / test case design)

Documentation

- Proper description of the system in project README, project poster and project video
- SE evidence in every stage of the development process in project README, project poster and project video
- 30+ pages of README

Quality of peer evaluation given

- Average feedback rating >= 4

Teamwork

- Proper contributions to the project (esp. in terms of coding).

Artermis

Artemis level is meant to be exclusive (top 5~10%) for projects that are complex and with strong evidence of SE, and expected to complete more work of higher quality roughly one Milestone ahead (e.g., completion of technical proof-of-concept within Liftoff).

Features

- 9+ feature of sufficient complexity in total
- Use of database (workload must be justified otherwise there is no database)

Planning / Version Control (via Git + GitHub)

- GitHub repo + Basic version control (e.g., add / commit / push / pull)
- Github issues with (monthly) milestones / labels / tags / assignee + - Intermediate version control (branching, pull request)
- 2-week sprint with objectives / allocation / tracking.
- Github Projects + Code Review + CI/CD

Design

- Use cases and features
- Flow and architecture
- Design diagrams (drawn with tools): Sequence diagram, activity diagram, class diagram, ER diagram, etc.
- Design principles + pattern
- Design decisions (alternatives, criteria, comparison and justification)

Implementation

- Organization of files into folders
- Code level comments
- Code Review

Testing

- System testing by the developers
- Multi-level (unit / integration / system) testing with automation + User testing
- Proper test strategy (planning / test case design)

Documentation

- Proper description of the system in project README, project poster and project video
- SE evidence in every stage of the development process in project README, project poster and project video
- 50+ pages of README

Quality of peer evaluation given

- Average feedback rating >= 4

Teamwork

- Proper contributions to the project (esp. in terms of coding) .

Lift Off Requirements

- An A4-size poster named as .jpg/.png (e.g., 1999.jpg).
- A ~1-minute presentation video named as .mp4 (e.g., 1999.mp4).
- The links should be Google Drive File Links and publicly accessible.

Lift Off Example 1 (with permission)

- Poster: https://drive.google.com/file/d/1GhANGcJOWDSWxmkzQ4ik3wGv1tcEAzPt/view
- Video: https://drive.google.com/file/d/1Uexjeg6JUD68PN-voyypULNUqZb7U8Ly/view

Lift Off Example 2 (with permission)

- Poster: https://drive.google.com/file/d/1td9zN11_imdD6b44G9agxm87ELuMs0Uj/view?usp=sharing
- Video: https://youtu.be/ccki3p1nzdo?list=PLLSECIsYjSIwLRWCruGapCHftSrGAPhmc

Let's go through your proposal 

Focus on the How's and Why's.