The Story of ASE 285

Being on the Same Page

Read the following before the next class to be on the same page (Part of HW1).

- Students should know how to use three core tools.
- (For Windows Users) Students should know how to use WSL2.
- Students should understand Software Engineering and ASE courses structure.
- Students should understand ASE Team and Individual Projects.

Three Core Tools to Start

(`https://github.com/nkuase/ASE/tree/main/ase_onboard`)

Marp Source Files:

- VSCode: https://github.com/nkuase/ASE/blob/main/ase_onboard/1_vsc.md
- Markdown/Marp: https://github.com/nkuase/ASE/blob/main/ase_onboard/2_marp.md
- GitHub:

Converted PDF Files:

- VSCode: https://github.com/nkuase/ASE/blob/main/ase_onboard/1_vsc.pdf
- Markdown/Marp: https://github.com/nkuase/ASE/blob/main/ase_onboard/2_marp.pdf
- GitHub: https://github.com/nkuase/ASE/blob/main/ase_onboard/3_github.pdf

For Windows Users

As a software engineering student, you will need to use Windows Subsystem for Linux (WSL) in ASE courses.

- Marp: https://github.com/nkuase/ASE/blob/main/ase_onboard/4_wsl2_linux_on_windows.md
- PDF: https://github.com/nkuase/ASE/blob/main/ase_onboard/4_wsl2_linux_on_windows.pdf

Understanding Software Engineering & ASE Courses

(`https://github.com/nkuase/ASE/tree/main/ASE_story/SE`)

- SE and ASE Courses: https://github.com/nkuase/ASE/blob/main/ASE_story/SE/se_and_ase_courses.pdf

Understanding ASE Team & Individual Projects

(`https://github.com/nkuase/ASE/tree/main/ASE_story/project`)

- Project Theory: https://github.com/nkuase/ASE/blob/main/ASE_story/project/project_theory.pdf
- Team Project Practice: https://github.com/nkuase/ASE/blob/main/ASE_story/project/team_project_practice.pdf
- Individual Project Practice: https://github.com/nkuase/ASE/blob/main/ASE_stor

Two Information Sources

GitHub Repositories

- NKUASE/ASE (ASE Repo): Genaral ASE Course Materials
  - https://github.com/nkuase/ASE
- NKUASE/ase285 (ASE285 Repo): ASE 285 Specific Materials
  - https://github.com/nkuase/ase285

Canvas Page

- Schedules
- Announcements
- Assignment Submissions
- Grades

Why Two Sources?

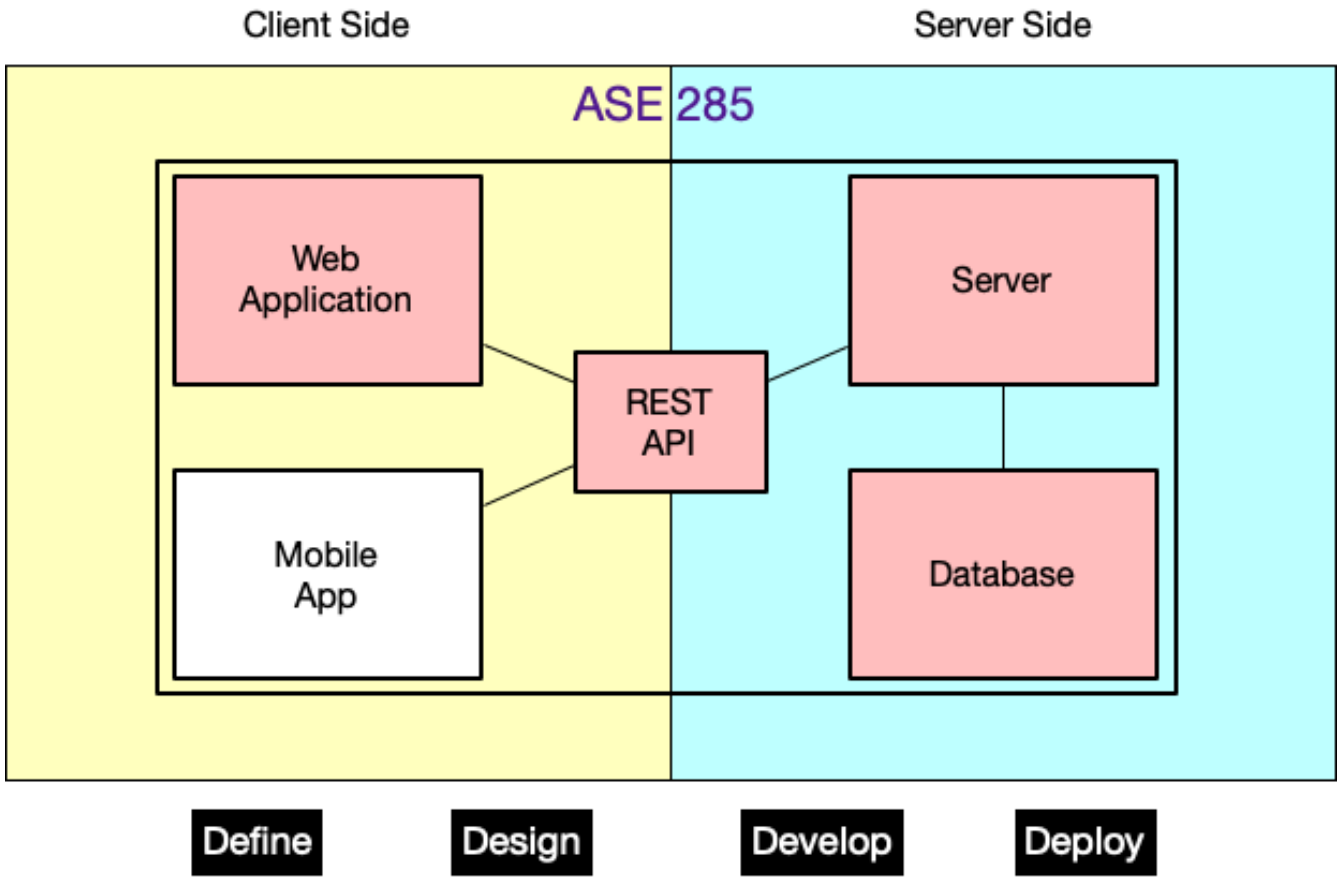
1. GitHub Repository

- Artifacts of the course
  - Documents: Slides, Project Prototypes, Code, and other files
- Students can access the materials before the course starts and after it ends

2. Canvas Page

- Course Management
    - Schedules, Announcements, Assignment Submissions, Exams, and Grades
    - Students need to log in to access the course materials
    - No access before the course starts and after it ends

The Position of ASE 285 in ASE Curriculum



1. It bridges the gap between low level ASE couress (ASE 220/230) and ASE 300/400 level courses.
2. It introduces team project to learn how to work in a team environment.
3. It introduces important software engineering tools and practices.

The Two Focuses of ASE 285

SWE Tools through Projects

- High Level Programming using Node.js and React
- Version Control using Git and GitHub
- Security Tools and their Usage

SWE Rules (Practices & Processes) through Projects

- Software Development Process using Agile Practices
- Project Management using Scrum Framework

The Two Goals of ASE 285

1. Students learn how to build "**High-Quality Software Product**".

- High Quality Software means the software that is effectively and easily *maintained* and *evolved* over time.
- Software Product means the software that people are paying money to use.
    - Professionals make money by building High-Quality Software Products.
    - Amateurs build software for fun.

2. Students learn how to "**Solve problems**" by "**Managing complexity**".

- Software Engineering is about managing complexity.
- Software Engineering is about problem solving using rules and tools.
- So, software engineers are **professionals** who **solve problems** by **managing complexity** using **rules** and **tools** in a **team**.

Software Engineering

- Software Engineering is about (1) rules and (2) tools to (3) build applications (Solve problems) in a (4) team.
    - We solve problems in the form of building applications.
- The name of Software Engineering game is **Managing Complexity**.
    - Most software engineering problems are from complexity from various sources, noticeably from changes.

Software Engineers

- We are professional **problem solvers**.
  - We **build high-quality** software products that people are willing to pay to use.
  - We **use rules and tools** to manage complexity in a team environment.

Software Engineering is Not

- Programming or Coding
  - Programming or Coding is just a small part of Software Engineering.
- Hacking or Quick and Dirty Solutions
  - Hacking or Quick and Dirty Solutions create more problems in the long run.
- Working alone
  - Software Engineering is a team sport.

Software Engineering is

- Making clients happy by delivering high-quality software products.
  - Keeping the promise we made to clients.
  - Making clients successful by solving their problems using the software we build.
  - Making clients come back by being reliable and trustworthy.

- Improving ourselves continuously to be better problem solvers.
    - Learning new tools and rules to manage complexity better.
    - Learning from our mistakes and successes.

In short, being a true professional problem solver to make our clients trust us and pay us to use.

- Think about any software engineering company that does not follow these principles. Maybe None!

Components of ASE 285

Open Schedule:

Two Projects (All 16 weeks)

- Team Project
    - 3-Tier Architecture Web Application
- Individual Project
    - React
    - Electron Translation of the React App

Module 1 (Before the first midterm)

- High Level Programming
  - JavaScript (Node.js)
  - TypeScript (Node.js)
  - React
- Software Development Process
  - Agile Practices
  - Scrum Framework

Module 2 (Before the second midterm)

- Version Control
  - Git
  - GitHub
- Security Tools
  - Many Security Tools in Softwre Engineering
  - Usage of Security Tools in Software Engineering

Module 3 (Before the final Presentation)

- Software Deployment (Optional)
  - Cloud Services
  - Deployment Tools

Quick Overview of ASE Ideas & Courses

- ASE Courses: https://github.com/nkuase/ASE/tree/main/pdf/ASE Courses
- Understanding the proven facts:
  - https://github.com/nkuase/ASE/blob/main/pdf/ASE Courses/1-Coures Introduction.pdf
- The Design & Architecture of ASE Courses:
  - <https://github.com/nkuase/ASE/blob/main/pdf/ASE Courses/2-The Architecture of ASE

- P4M4 Model (Dr. Cho's Software Engineering Model):
    - https://github.com/nkuase/ASE/blob/main/pdf/ASE Courses/2-The Architecture of ASE Courses.pdf
- Grading: Assignments + Projects + Exams + Quiz + Bonus
    - https://github.com/nkuase/ASE/blob/main/pdf/ASE Courses/4-Grading of the Course.pdf

- Course Rules: 2 Rules for students and 2 rules for instructors
    - https://github.com/nkuase/ASE/blob/main/pdf/ASE Courses/5-Course Rules.pdf
- Important Course Tools: You already know them!
    - https://github.com/nkuase/ASE/blob/main/pdf/ASE Courses/6-SWE Development Tools.pdf

AI Impact on ASE 285

- We are experiencing the biggest technological shift since the advent of the personal computer and the internet.
- Maybe (much) bigger than that.
- AI is transforming the way we work, learn, and live.
- AI is changing the software engineering landscape dramatically.

Adapting to the AI Era

- We have updated the course dramatically to meet the challenges and opportunities of the AI era.
- We virtually rebuilt the entire course from scratch.
- The focus is shifted to system design, architecture, and most importantly, problem solving using AI tools effectively.
- The meaning of coding/programming is changed dramatically, however, it is still important to understand the code.

Key Updates for ASE 285

- The two projects are the center of this course.
- All of the rest of the course companents are to support the successful completion of the two projects.
- We dive into project in the first week up to the week 16 in which we do the final presentations.
- We learn the necessary tools and rules along the way as needed for the projects.

Basic Rules of using AI Tools in ASE 285

- AI tools are your personal tutors, assistants, pair programmers, and coaches.
- You are encouraged to use AI tools to help you learn and complete your projects.
- They are co-pilots, when it becomes your pilot, and you become a passenger, you are in deep trouble.

When you use AI tools, it means you know what you are doing

- Using AI tools without understanding the results is regarded as cheating.
- ASE 220 story: about 10% of students were caught cheating using AI tools in ASE 220.
    - They just used AI and copied the results wihout knowing what they were doing.

Be the GOOD Problem Solver, Never be the replaceable

- Don't be that student. Don't waste your money and time.
- Integrity is everything in software engineering profession, if anyone loses integrity, that person is finished as a software engineer.
- You are smart, and you have two choices:
  - Use AI tools to become a better problem solver.
  - Just click the button and copy to be the person who cannot solve problems without AI tools.

- The choice is yours. Choose wisely.
- You cannot fool yourself; your future self will know the truth, and will be grateful if you make the right choice.