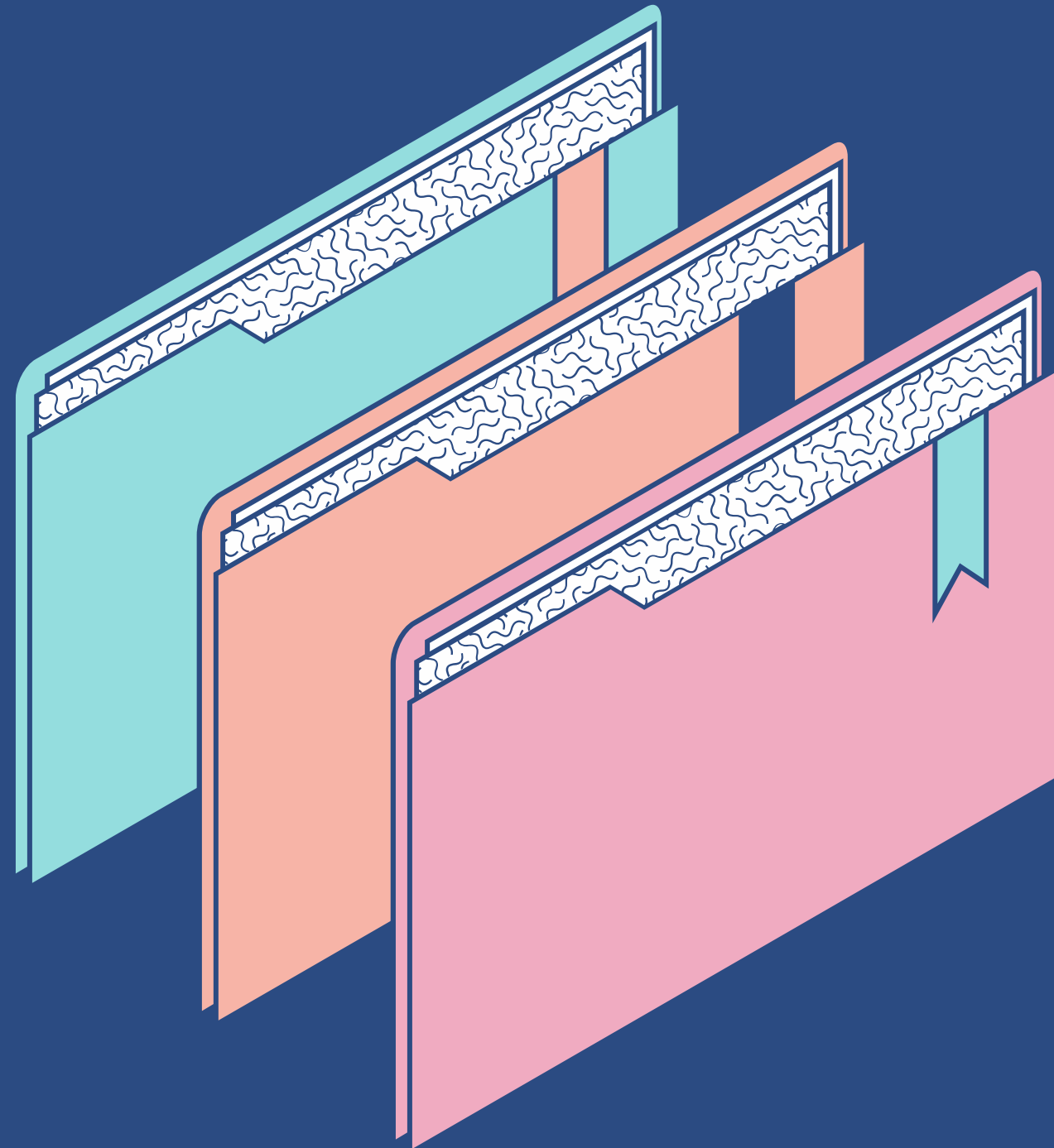# CODED. Demo

Beyza Çağlar
Emre Karataş
Selin Bahar Gündoğar
Zeynep Hanife Akgül
Zeynep Selcen Öztunç

Demo Agenda

PROBLEM DEFINITION

WHAT IS CODED.

CURRENT STATUS AND PROGRESS
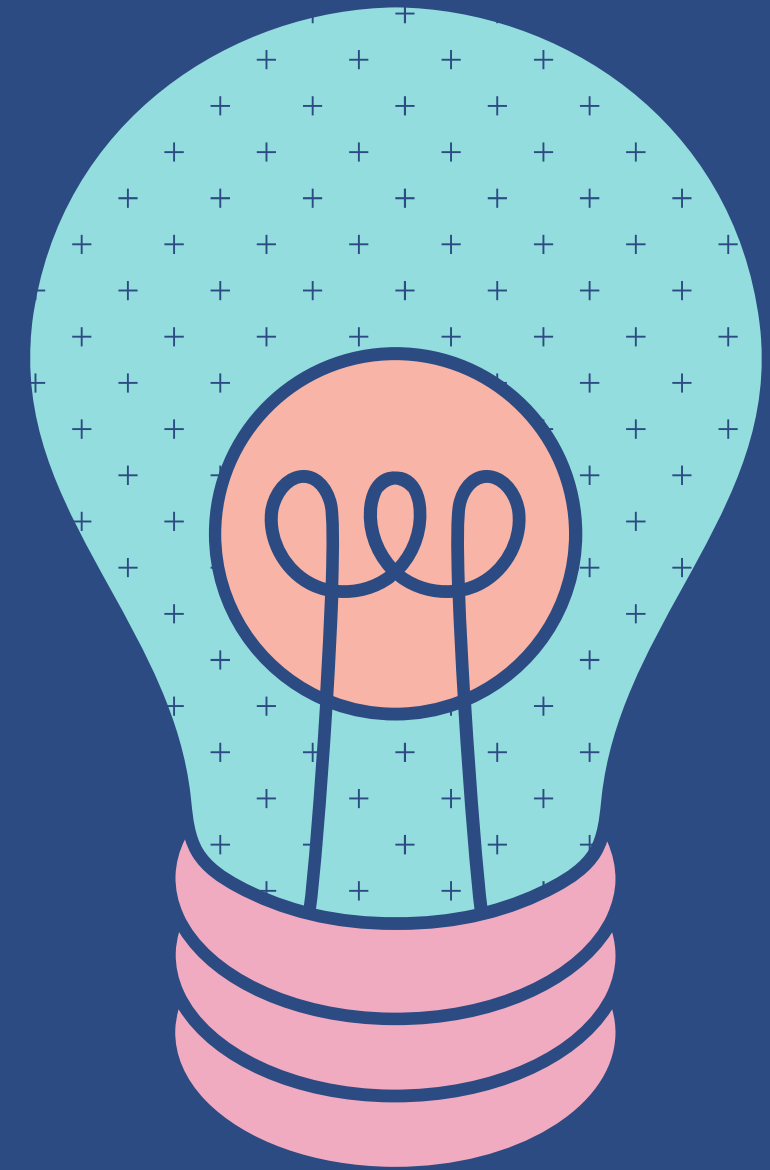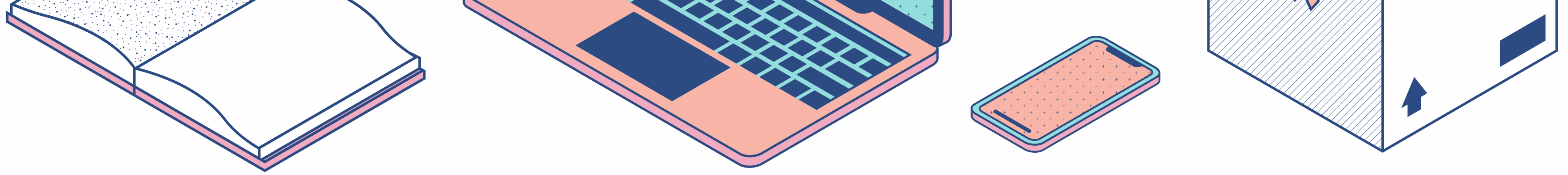
THE ARCHITECTURES

TECHNOLOGIES

UI DEMO

OBSTACLES WE OVERCAME
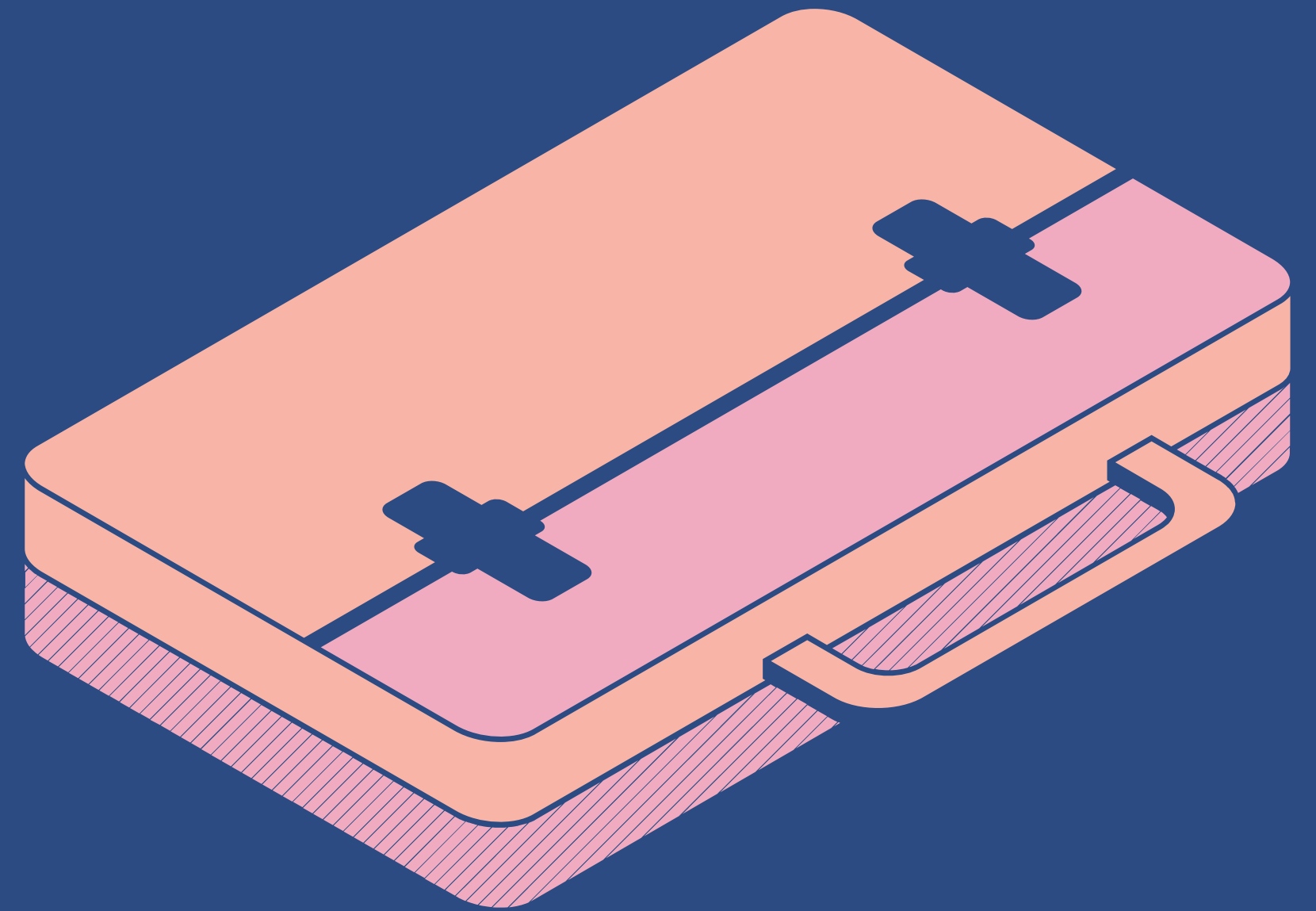
OUR CONTRIBUTION
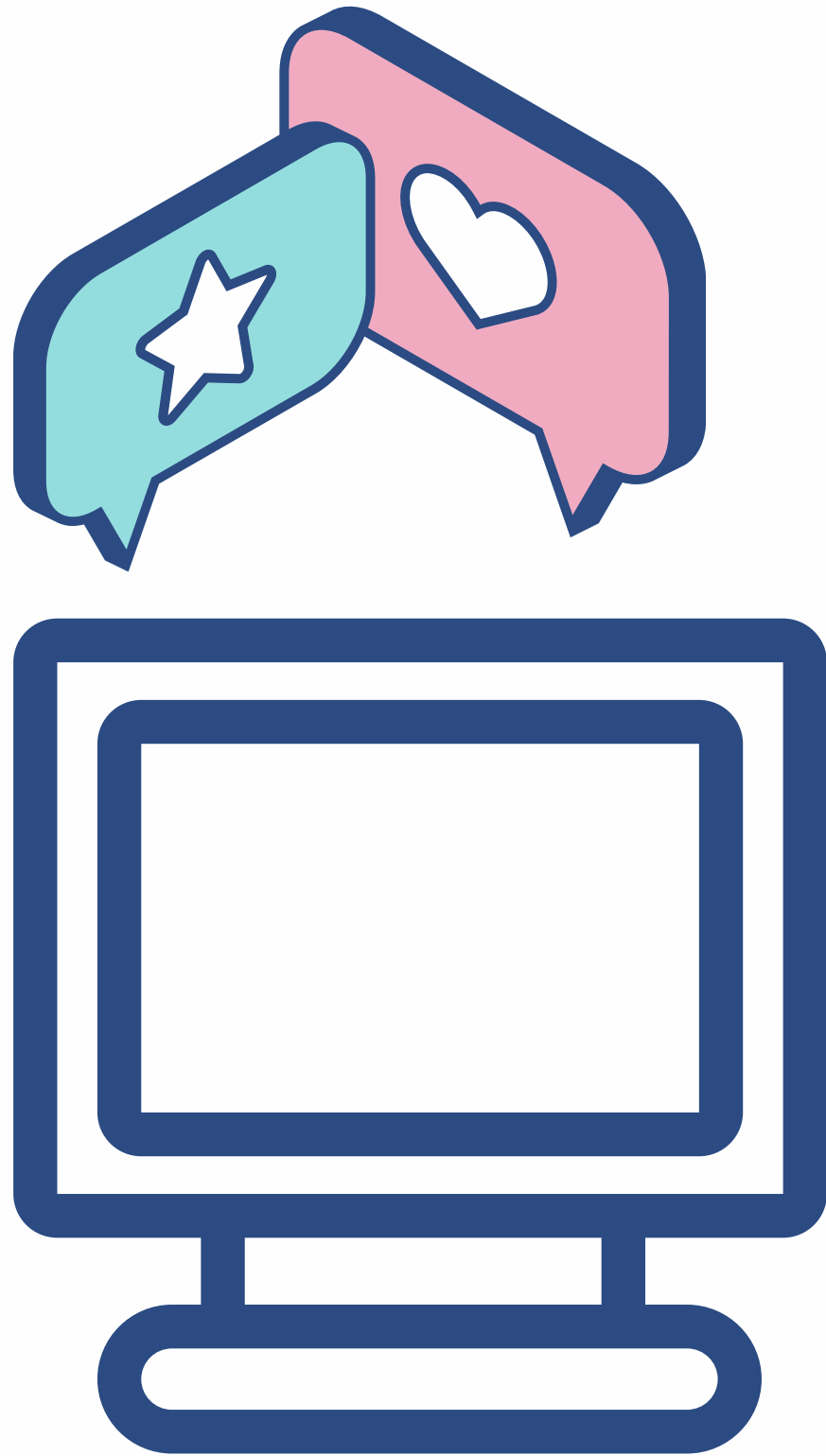
Q&A

PROBLEM DEFINITION

Bilkent University

CS and CTIS departments

- CS and CTIS lab hours - TA's and tutors help
- Not enough tutors
- Tutors are selected among volunteers
  - 1/30 ratio of tutors to students

- Inefficient and unproductive lab sessions from both tutor and student perspectives

OUR SOLUTION: CODED.
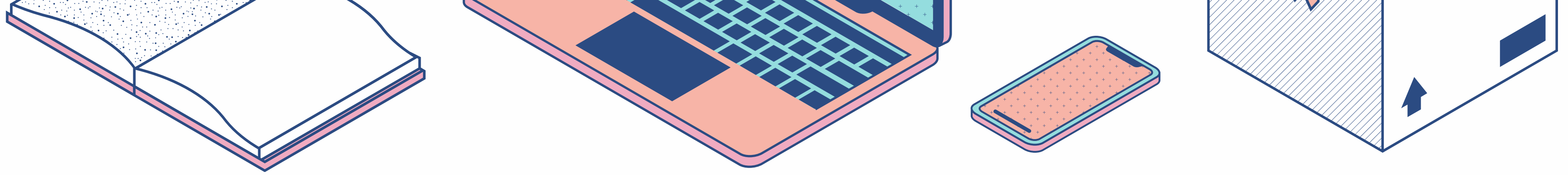
CODED.

- Web application

- Course coordinators, instructors, TA's, tutors, graders, students

- Chatbot (Generative AI) - Code Analysis - Plagiarism Check - Test Case Runner - Automatic Grading

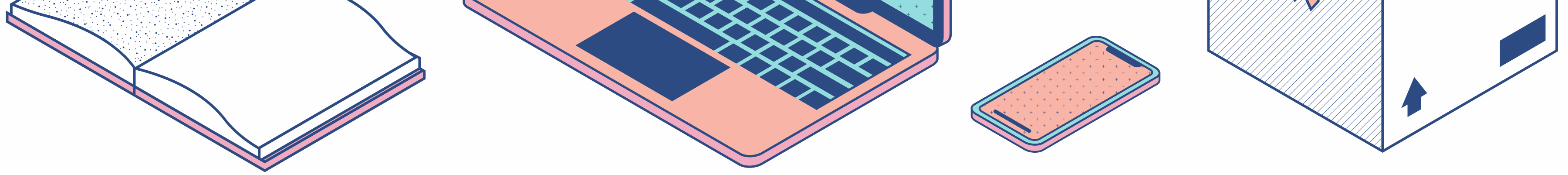- Decreases lab session workload

Codegrade

Chatbot (Generative AI)

- Answers student questions without revealing answers - teaching-based answers

- Does not write code, or give code outputs

- Decreases tutor workload

Code Analysis

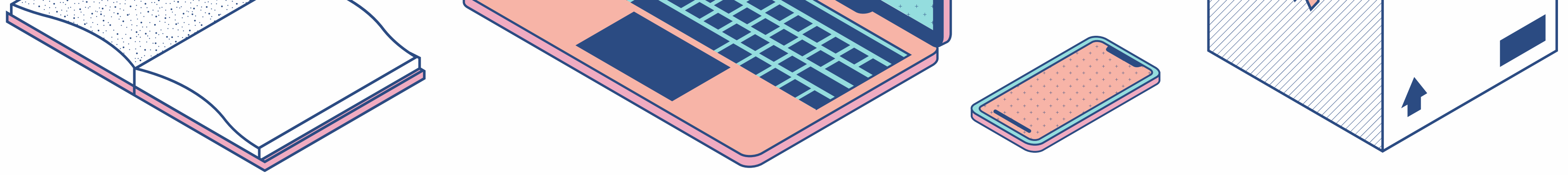- Locates code smell, errors, code quality, code security, possible bugs, and code conventions

Plagiarism Check

- Compares code to GenAI code, section code, all past codes etc.

- Plagiarism rate is calculated

Test Case Runner

- Submission codes are run for the given test cases

- Test cases may be uploaded by the instructor/TA or created by the chatbot
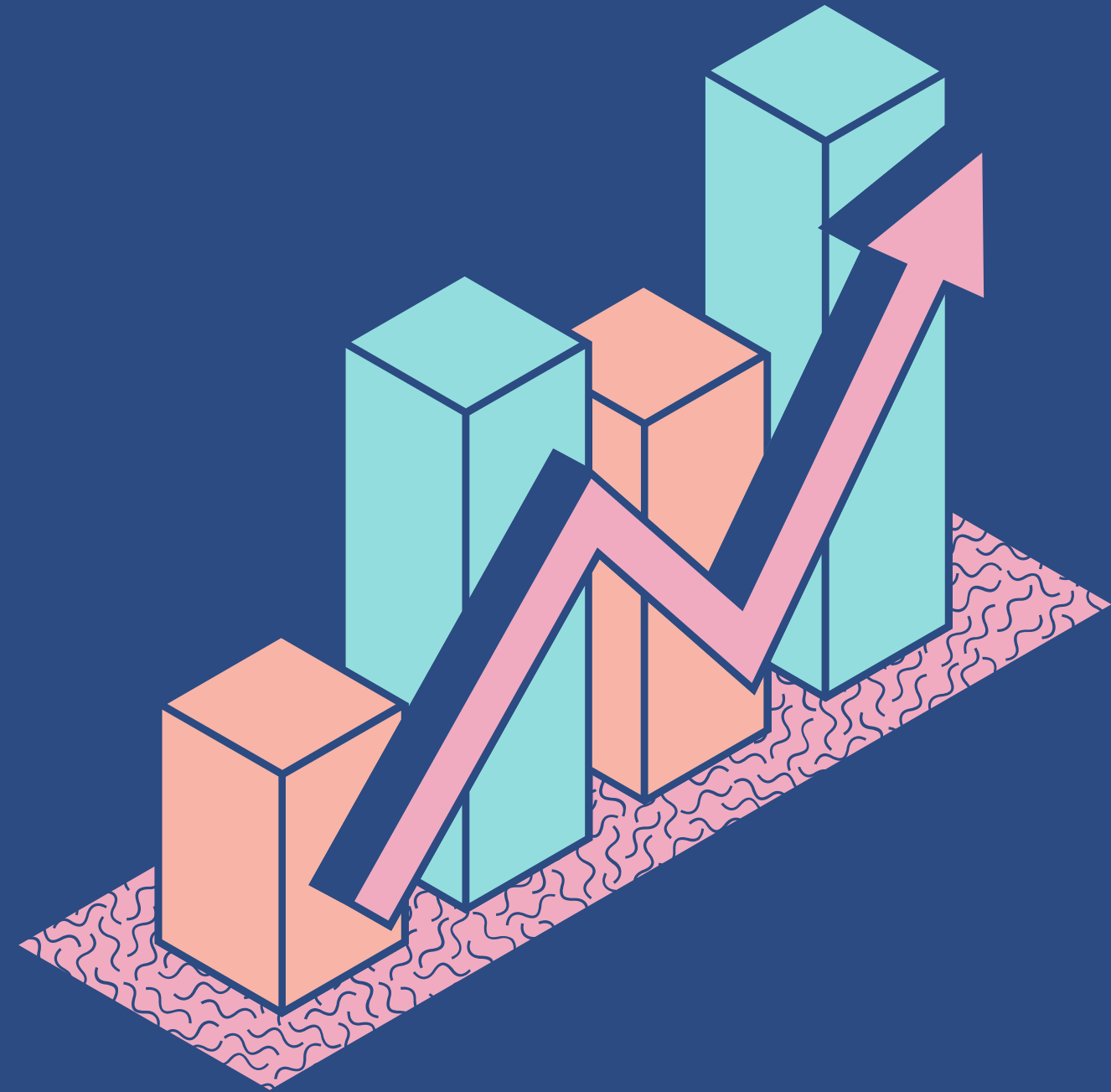
Automatic Grading

Grade Objection

Application gives feedback on how the grade was decided

- Test case runner determines a grade for - correctness/testing, readability/design, style/coding

- Plagiarism rate is calculated

- Automatic grading based on semantics and code logic

- Student views the reasoning of the grade
- Students can object to their grade
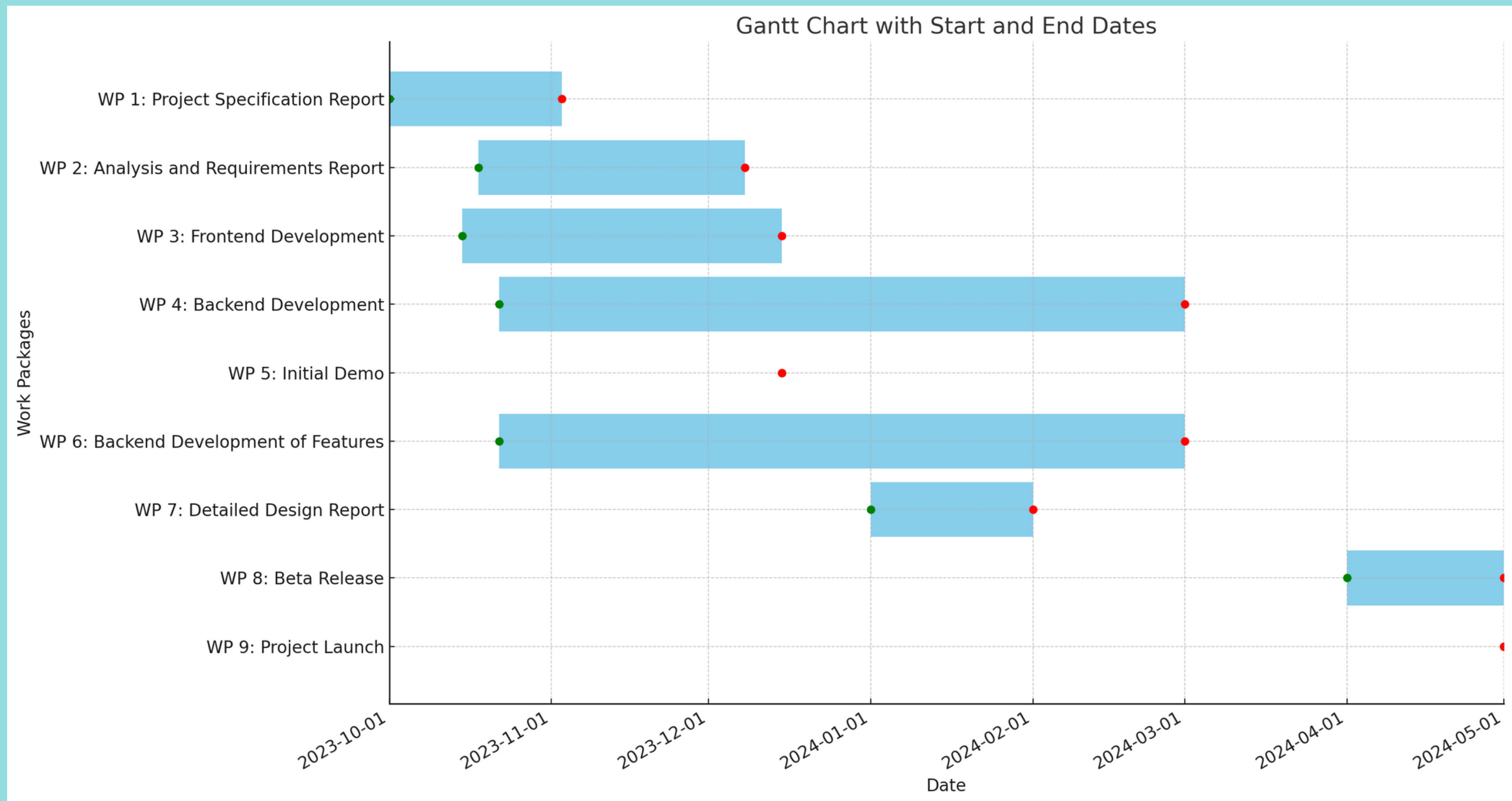- Instructor/TA/grader may change the grade

Current Status and Progress
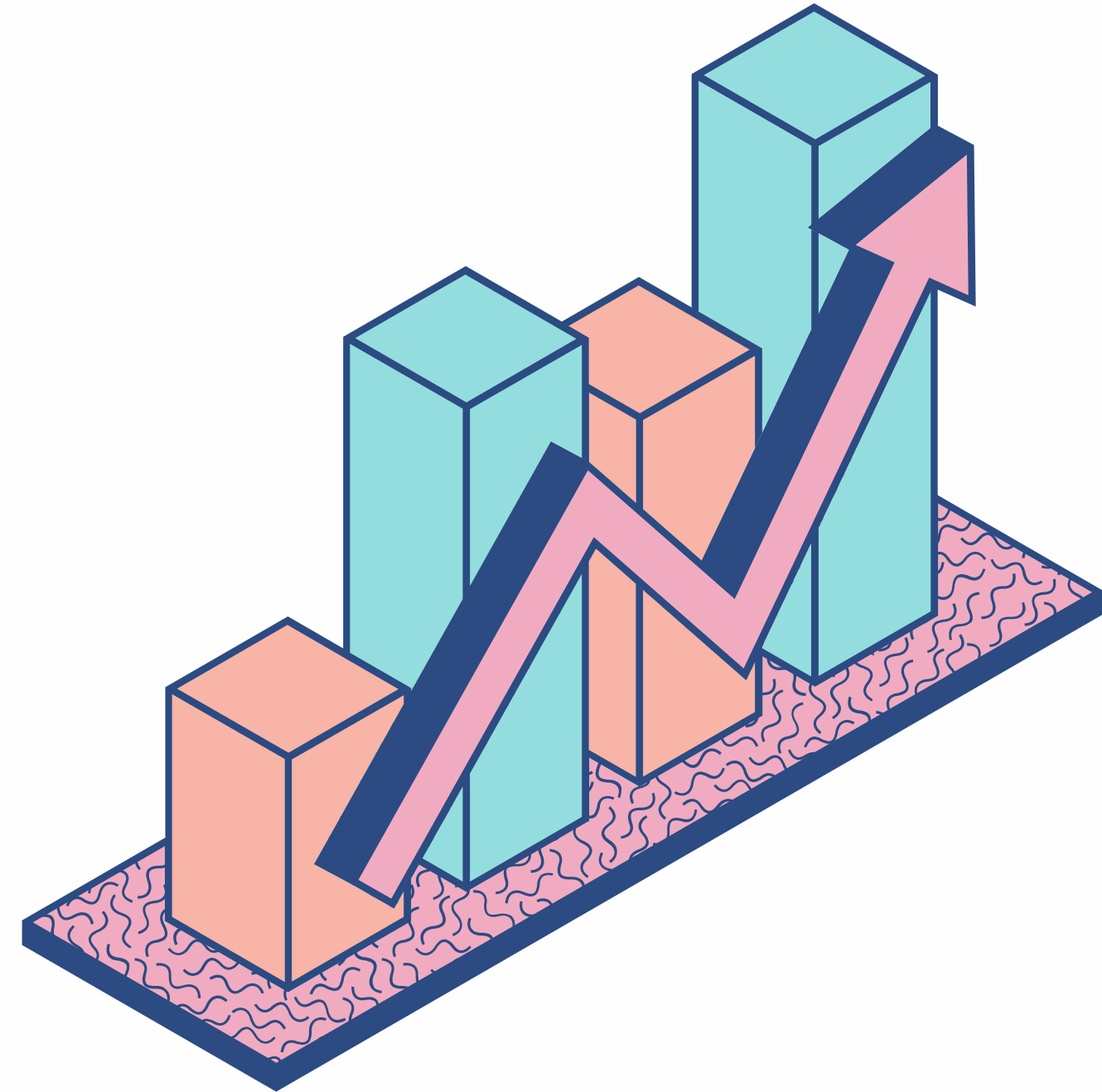
Current Status and Progress

Meeting	With Who	Date	Discussed Points	Outcome
Project Idea Presentation - 1	CS Department Chair Selim Aksoy, Prof. H. Altay Güvenir	13.09.2023	A PowerPoint presentation of the idea, market search, proposed technologies	CS115 and CS125 courses chosen, meeting with İpek Sezer set up
Project Idea Presentation - 2	CTIS Department Chair Erkan Uçar, Serpil Tin, Serkan Genç, Hatice Z. Yılmaz, Leyla Sezer	20.09.2023	A PowerPoint presentation of the idea, market search, proposed technologies	CTIS151 and CTIS152 courses chosen for implementation
Project Idea Presentation - 3	CS115 - CS125 Instructor İpek Sözen	22.09.2023	A PowerPoint presentation of the idea, market search, proposed technologies	Full support from İpek Sözen for the application
Interview about CTIS151 and CTIS152 Labs	2nd year CTIS students	25.09.2023	Questions about the CTIS151 and CTS152 labs, received student feedback on application idea	Successful Q&A session with students
Feedback Meeting	CTIS Department Chair Erkan Uçar, Serpil Tin, Serkan Genç, Hatice Z. Yılmaz, Leyla Sezer, Prof. H. Altay Güvenir	29.11.2023	Presented diagrams, program logic, current UI, received feedback on UI and program logic	Changes made following feedback

Current Status and Progress - Gantt Chart
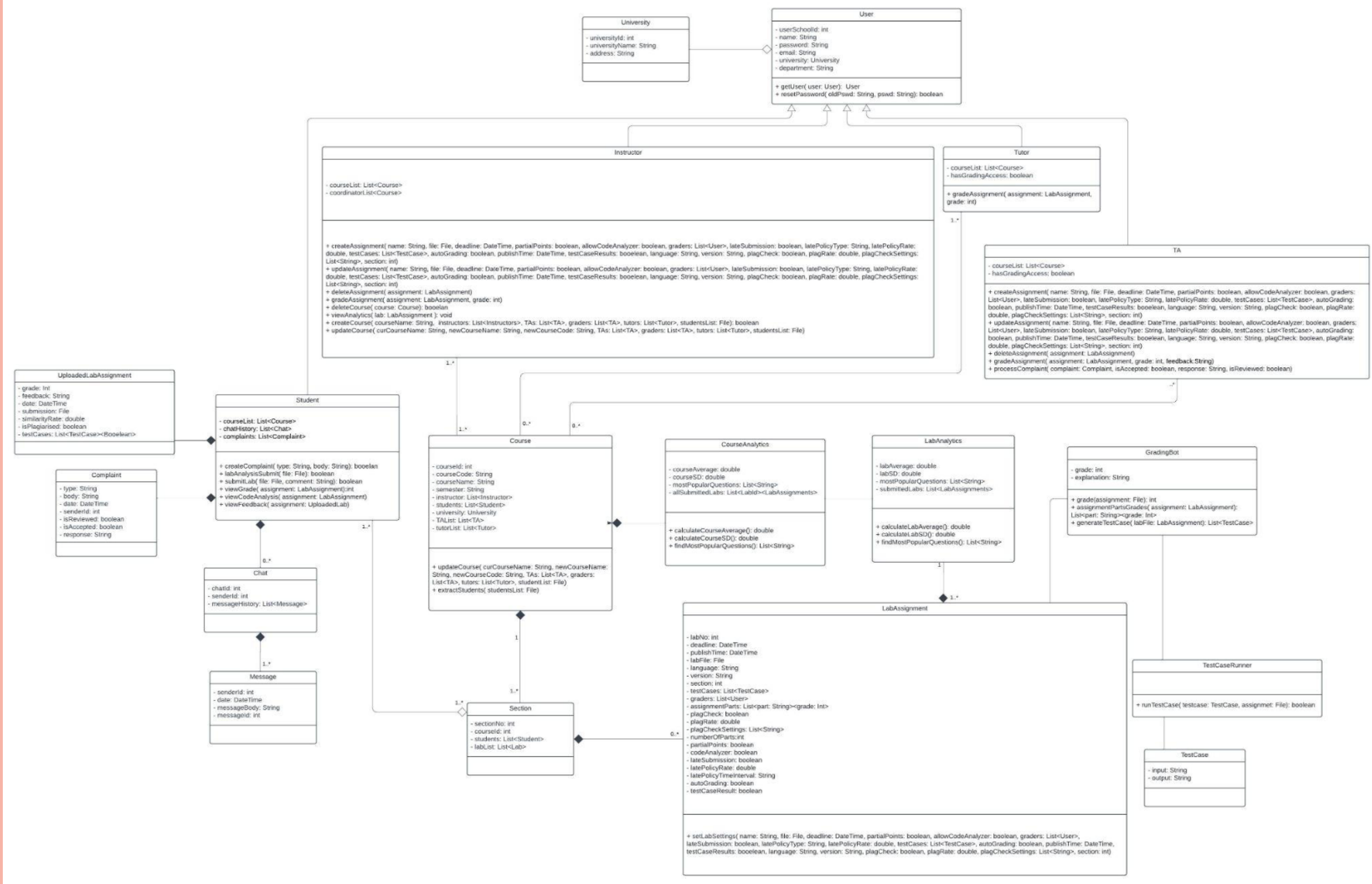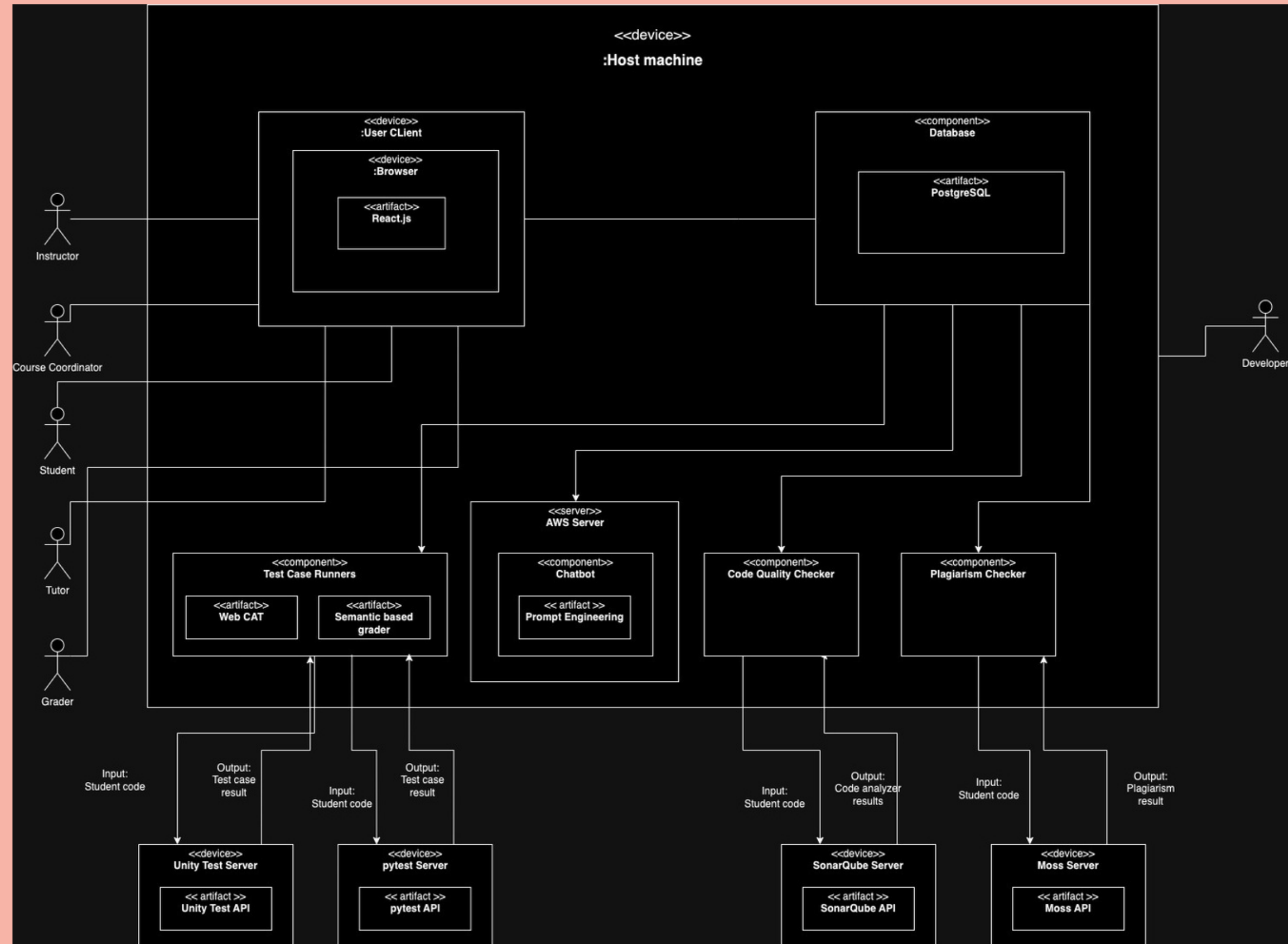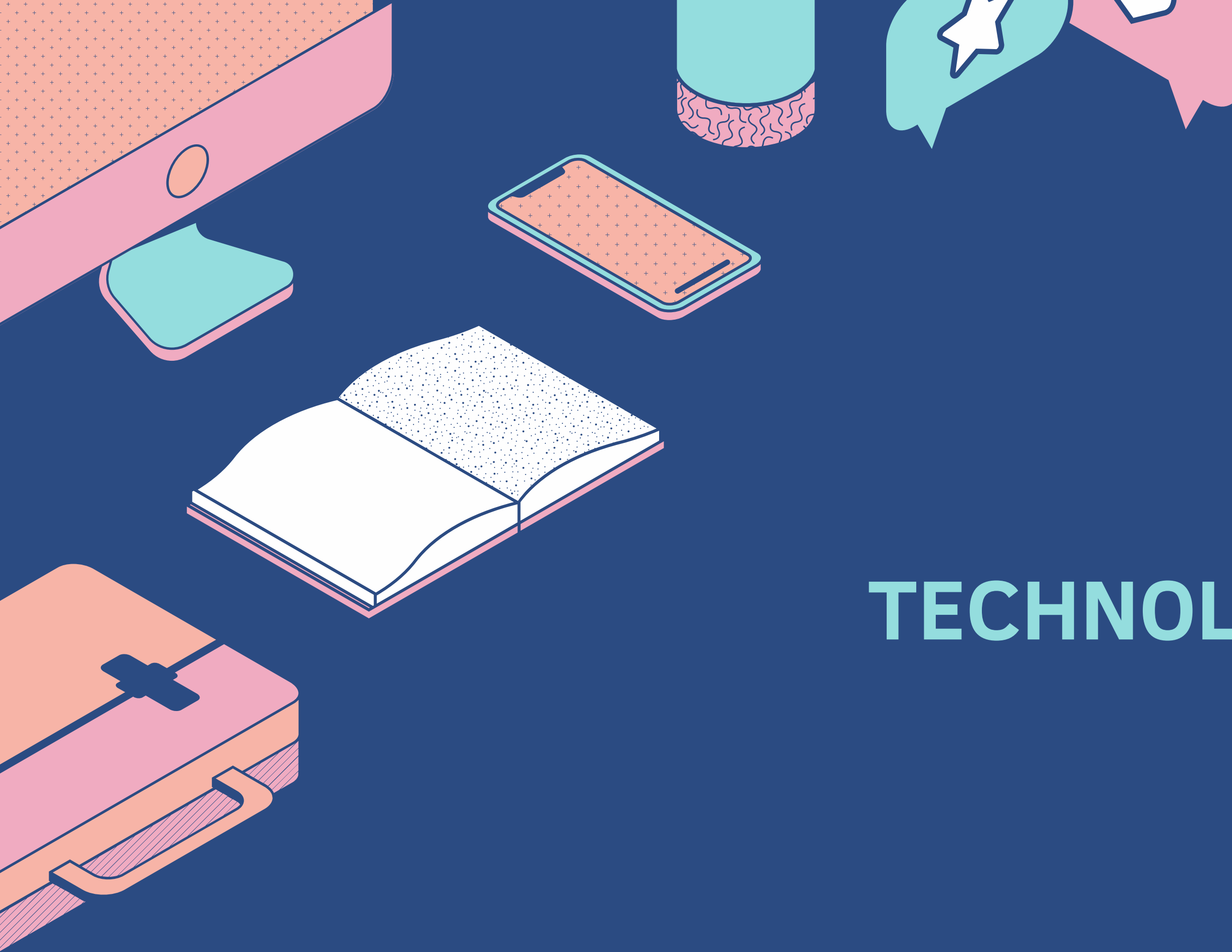

Gantt Chart with Start and End Dates
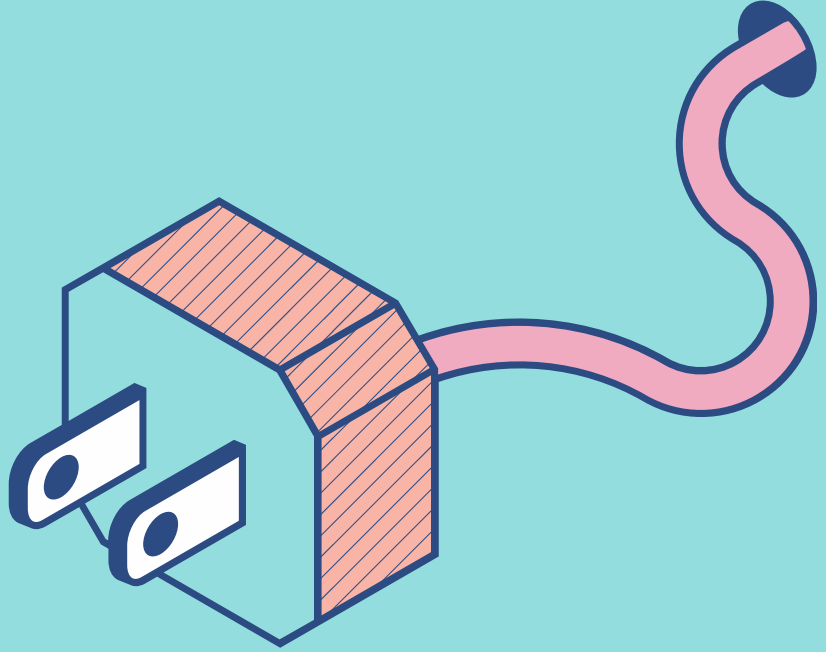
The Architectures

Class Diagram

High Level System Architecture Diagram

TECHNOLOGIES

BACKEND

SpringBoot Framework
Database
- PostgreSQL

Chatbot
- Code Llama

Plagiarism Check
- Moss

Code Analysis
- SonarQube
  - Java

Test Case Runner
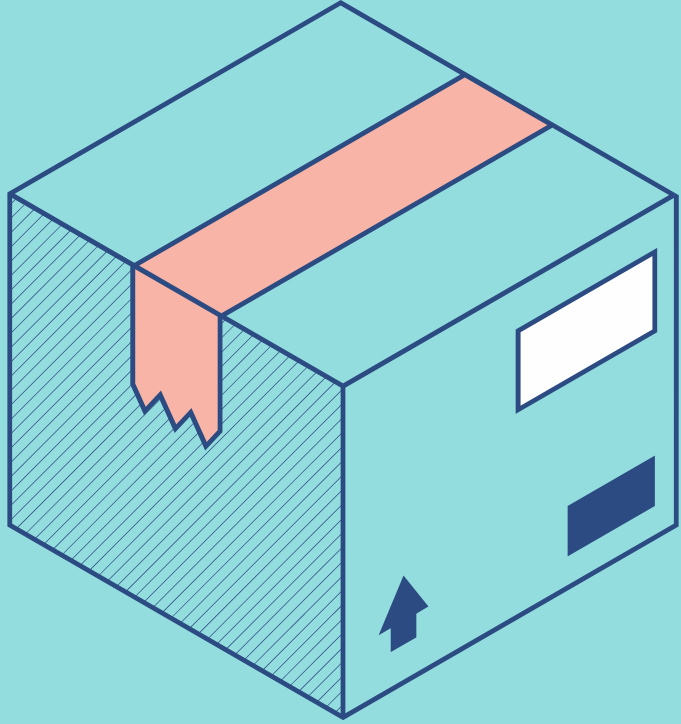- Python
  - Pytest
- C
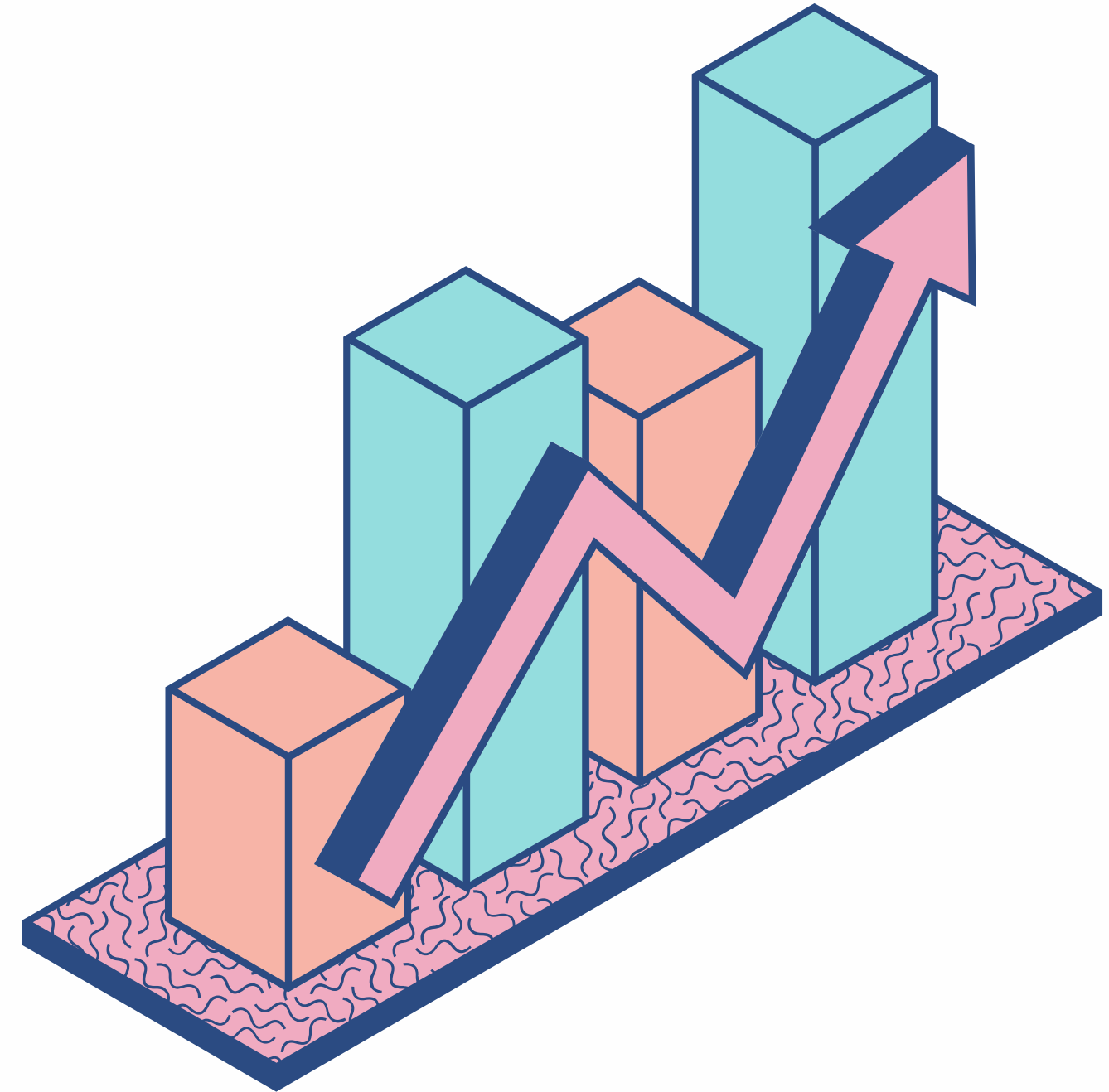 - CUnit

Server
- AWS

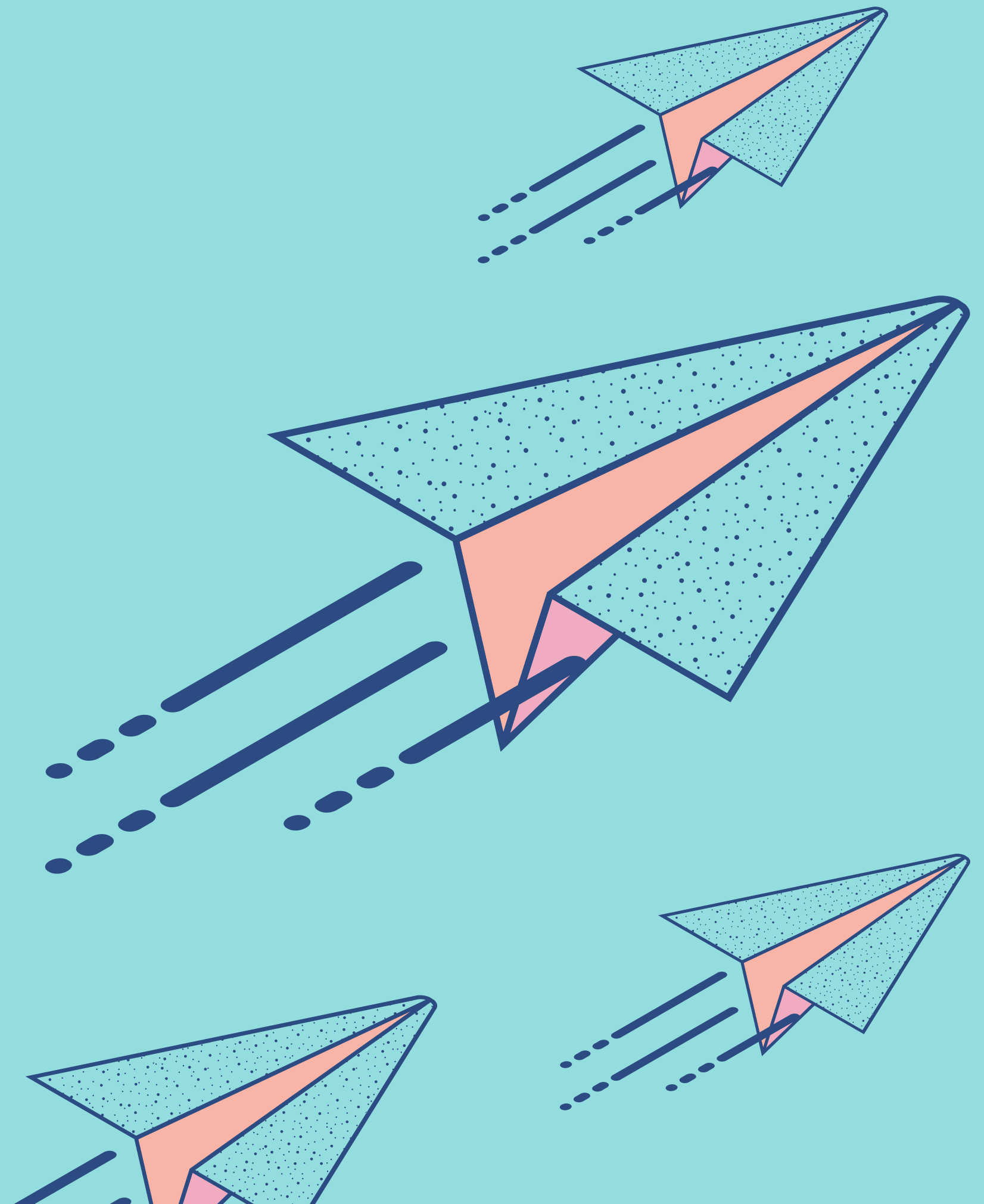**Automatic Grading**
- Web-CAT

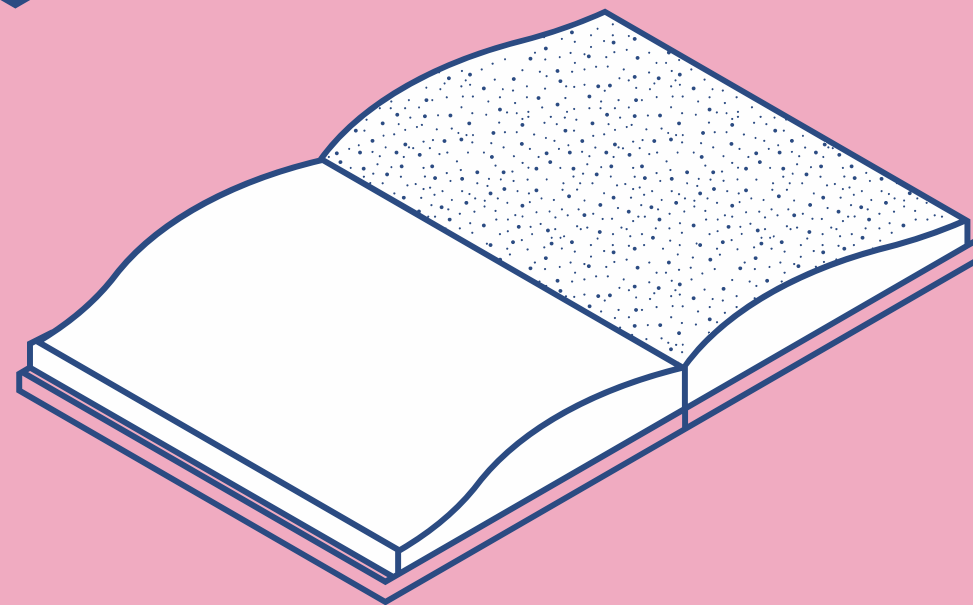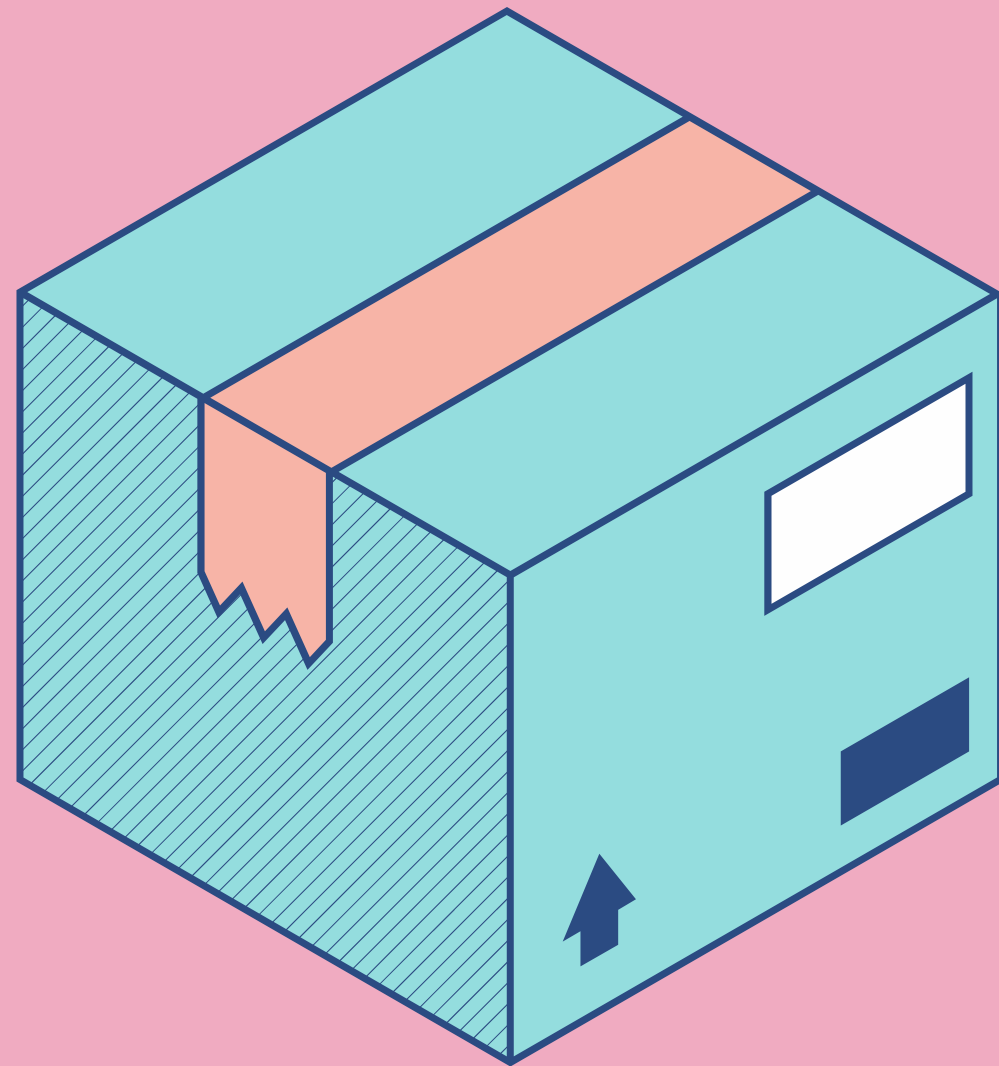# FRONTEND

- React.js
  - HTML, CSS

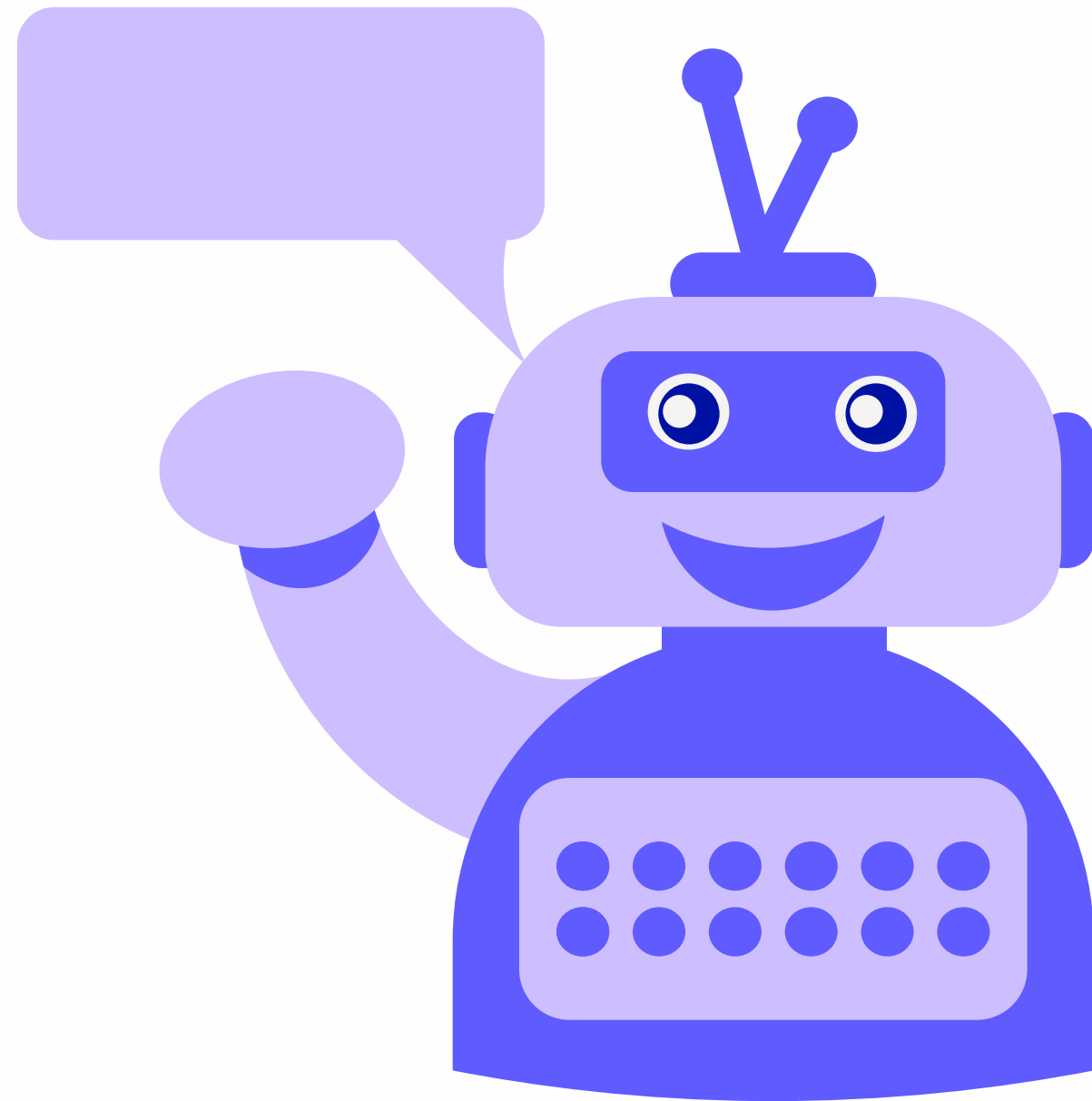# UI DEMO

OBSTACLES WE OVERCAME

OBSTACLES WE OVERCAME

- UI DESIGN CHOICE
- GIVING UP ON IDE EXTENSION
- PRIORITY LIST DECISION
- IMPLEMENTATION DIFFICULTIES
  - CODE LLAMA
  - SONARQUBE
  - MOSS
  - TEST CASE RUNNER
  - PLAGIARISM DETECTION
  - AUTOMATIC GRADING
- SERVER PROBLEM

OUR
CONTRIBUTION

Chatbot - Grading GenAI

DECREASING TUTOR WORKLOAD

- Leading the student in answering their questions

- Grading feedback for grading objections

Work
Distribution

WORKLOAD

WE HAVE AN EQUALITARIAN APPROACH: ALL PARTICIPATED IN REPORTS. ALL DOING UI, ALL DOING BACKEND - FULL-STACK

search

SELİN BAHAR GÜNDOĞAR	EMRE KARATAŞ	ZEYNEP HANİFE AKGÜL	ZEYNEP SELCEN ÖZTUNÇ	BEYZA ÇAĞLAR
Code Analyzer	Chatbot	Test Case Runner	Plagiarism Check	Automatic Grader
UI	UI	UI	UI	UI
Backend	Backend	Backend	Backend	Backend
Beta Release Testing	Academic Research	Specification Report	Analysis Report	Detailed Design Report

Q&A

Thank you for your time!