Table 1: Revision History

Date	Developer(s)	Change
04/05/2023	Anton Kanugalawattage Dipendra Subedi Youssef Rizkalla Tamas Leung Zhiming Zhao	Revised Project Scheduling
11/20/2022	Anton Kanugalawattage Dipendra Subedi Youssef Rizkalla Tamas Leung Zhiming Zhao	Revised PoC Demo Plan
09/20/2022	Anton Kanugalawattage Dipendra Subedi Youssef Rizkalla Tamas Leung Zhiming Zhao	Initial Document

Development Plan
CodeChamp

Team #12, Team 12.0
Kanugalawattage, Anton
Subedi, Dipendra
Rizkalla, Youssef
Leung, Tamas
Zhao, Zhiming

1 Team Meeting Plan

- Weekly meetings on Tuesday 6:30pm
- Adhoc calls when necessary
- Every member will add items to the meeting agenda

2 Team Communication Plan

- Discord
- Github Issues
- Github Project Board

3 Team Member Roles

- Scrum Master: Tamas Leung
  - Will focus on making sure people are doing their tasks
  - Focus on re-prioritizing features and bugs
- Front-end Lead: Anton Kanugalawattage
  - Designs architecture for front-end of the system
  - Oversees and reviews frontend pull requests
  - Works on Web Socket connections
- Back-end Lead: Youssef Rizkalla

    - Designs architecture for back-end of the system
    - Oversees and reviews back-end pull requests

- Design Lead: Dipendra Subedi
    - Designing backend APIs
    - Designing database schemas
    - Ensures HCI requirements are met

- Testing Lead: Zhiming Zhao
    - Create test plans during different development phases
    - Run tests on various components and features in order to identify and fix issues
    - Analyzing results and identifying the cause of problems

All team members will participate in creating features all around the tech stack. The roles are intended for each member to have a focus-area, which can later change depending on the team's needs.

4 Workflow Plan

- Git:
    - All features are developed onto separate branches
    - Each feature branch can only be merged into the master branch via a pull request
    - Each pull request must be at least approved by at least two members
    - Github Actions CI to auto test new pull requests

- Issues:
    - Tasks will be placed into issues board based on priority, type and technology
    - Issue Types:
        - Feature
        - Bug
        - DevOps
    - Technology:
        - Front End
        - Back End
        - Database
    - Priority:

    - * P0: Needs to be addressed this week
      * P1: Needs to be addressed this month
      * P2: Will be addressed whenever there is no higher priority items available
  - Issues will be prioritized on a bi-weekly basis during scrum meetings
  - Use Github Project board, to rearrange issues and assign task

5 Proof of Concept Demonstration Plan

Our main risk is not knowing if our back-end server can execute given code and evaluate it for correction for a set problem.

We will demonstrate that a front-end can communicate with a back-end server to compile code, compute and return results based on evaluation against set test cases. The front-end will show a code editor with syntax highlighting, a basic homepage, as well as problem descriptions. The front-end will also call the back end for a list of problems against a problems API to demonstrate that we can effectively store and retrieve problems.

The demonstration will also show a documentation page to show diligence in knowledge transfer.

6 Technology

- Languages: JavaScript/TypeScript
- Frontend Framework: Angular
- Backend Framework: Node.js / Express
- Testing:
  - Backend: Jest
  - Frontend: Jasmine
  - End-to-End: TestCafe
- Code Coverage: Included with test frameworks
- Github Actions CI
  - Auto build and test new pull requests
  - Auto Linting
  - Auto Formatting
- Performance Testing:
  - Backend: Postman Performance Testing

  - Frontend: Chrome Dev Tools Performance Tester

- Database: NoSQL Database (MongoDB)

- Deployment: Amazon Web Services (AWS)

- Libraries / Tools
  - Web Sockets: for real time connections
  - Auth0: for authentication & identity management
  - HTTP: Endpoints for CRUD operations

7 Coding Standard

- Linter: ESlint

- Code formatter: Prettier

- The Airbnb style guide will be enforced during code review for all back-end code

- The official style guide will be enforced during code review for all front-end code

8 Project Scheduling

Major milestones will be placed onto deadlines. Each task will be assigned bi-weekly at the scrum meetings.

- CI/CD Setup: October 10st

- Backend Architecture: October 16th

- Frontend Development for PoC: October 21th

- Basic Code Compilation: October 26th

- PoC Demo Completion: November 7th

- Game Lobbies & WebSocket Connection: December 1st

- Game User Interface: January 15th

- Minimum Viable Product Completion: February 5th

- User Acceptance Testing: February 28th

- Final Version: March 19th