Problem Statement and Goals

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Table 1: Revision History

Date	Developer(s)	Change
09/20/2022	Anton Kanugalawattage Dipendra Subedi Youssef Rizkalla Tamas Leung Zhiming Zhao	Initial Document
04/05/2023	Anton Kanugalawattage Dipendra Subedi Youssef Rizkalla Tamas Leung Zhiming Zhao	More measurable goals. Grammar fixes.

1 Problem Statement

1.1 Problem

Practicing coding the traditional way can be daunting. The current most popular method to learn is to use a problem database site like LeetCode. This method of learning can often feel tiring and endless. There are over 2000 problems on the website which can be intimidating to many new coders. CodeChamp will introduce a collaborative and fun way to interact with your friends while improving your algorithmic skills.

1.2 Stakeholders

Anyone that is learning and wanting to practise data structures & algorithms with friends and others in real time, as well as any coders looking for a new method of learning data structures and algorithms.

1.3   Environment

Web application supporting every major browser (Chrome, Firefox, Safari).

2   Goals

2.1   Improve user experience in learning data structures and algorithms

CodeChamp aims to make the studying process for DSA (Data Structures & Algorithms) fun and less stressful. This is the main attraction for the platform, as it is what differentiates it from other traditional alternatives. The main way CodeChamp will accomplish this is by selecting problems for the user, rather than the user having to find the appropriate problems by themselves.

2.2   Multiplayer Online Learning

A collaborative and accessible environment is essential to gamifying the learning experience. Thus, CodeChamp will allow users to code against other users over the internet.

2.3   Cross-Platform Compatibility

Players using different devices (Mobile, PC, any device supporting a major web browser) will be able to compete with and against each other, allowing for a universal platform accessible to all.

2.4   Progression History

Players will be able to see a history of their games and track their progress. This helps the players feel a sense of pride and accomplishment.

2.5   Large Database of Problems

Users will be able to attempt a large pool of questions to expand their knowledge on all data structures & algorithms concepts. This should cover multiple programming topics as well as different skill ranges, so that the platform is accessible for a larger breadth of users.

3   Stretch Goals

3.1   Support Multiple Languages

Supporting more languages makes the platform more accessible as it allows users with different backgrounds and interests to have an opportunity to participate.

3.2 Fair Matchmaking

The platform should be able to match players with others who they perceive as equally skilled. This is important so that players feel challenged but also not frustrated, which can happen if they are put against players too far out of their ability range.

3.3 Customizability for the Text Editor

For added convenience and accessibility, the users will be able to customize the text editor with features such as colour schemes and shortcuts.

3.4 Leaderboard

Users will be able to see their skill progression and how they rank against other players. This will give players motivation to rank up and learn more along the way and gauge their skill level.