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Kakuro Game White Paper

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Summary

Introduction

Kakuro is a game of logic, combining the challenge of math puzzles with the strategy of Sudoku. This project aims to bring the joy of Kakuro to users through a thoughtfully designed application that prioritizes accessibility, functionality, and user engagement through competitive and leader board driven gameplay.

Problem Statement

While Kakuro is widely enjoyed, digital implementations often lack user-friendly interfaces or dynamic puzzle generation, making them less engaging for users. Furthermore they very rarely allow users to save their progress, gameplay or data and even less often offer competitive feature that keep users engaged such as "days played tracker" or leaderboards.

Proposed Solution

This Kakuro game will offer an intuitive user experience, robust puzzle generation, account creation feature to store progress, a leader board, player history, a daily game (inspired by wordle) and a "days played count" (inspired by githubs green squares).

Overview

Architecture and Tech

This project will be a complete full stack Web project. The Database will consist of multiple ***MongoDB*** clusters to store users information and game play. The users themselves will be playing the games on an ***ASP DOTNET CORE Web MVC*** hosted on ***AZURE*** through continuous integration / continuous deployment. For security reasons and in order to implement backed processing, the web app wont communicate directly with the DB. We will rather implement an ***ASP DOTNET CORE API*** also hosted on Azure.

System Requirements

We decided to make a web application in order to mitigate any issues as to system requirements. However the user must be using a ***DESKTOP*** since we wont go through the extra hardships to make the front end app reactive it will look wonky on mobile.

Key Benefits and Features

I   Authorization and authentication (Login, logout, create account, reset password, etc).

II   User history, statistiques and previous gameplay.

III   Leaderboards and ranks based on performance (time per game + amount of games played).

IV   Daily Kakuro (inspired by wordle where every player gets the same game once a day to see how fast they can solve it).

V   Counter of days played and how much played each day (inspired by Github's green squares).

Roadmap

Phase I

Create the DB, API template and web app template. Build out and document the authorization and authentication features as well as the 3x3 kakuro game feature.

Phase II

Create and document the user history and statistics features as well as the leaderboards and ranks features.

Phase III

Create and document the daily Kakuro challenge feature as well as the counter of days played feature. If there is time and energy left, create more possible kakuro setups (9x9, etc).