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CS 161 Section 01
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3 March 2024

<div align="center">**Week 6: Individual Report**</div>

Your product is effective in delivering the knowledge in computer science to the product users. - Yes, the product effectively delivers the knowledge of computer science, since it improves arithmetic skills, while also boosting cognitive thinking skills.

User friendly/appealing in terms of the following criteria:
- The landing page is attractive. (hints: the homepages of the high-tech giants) - Yes, the landing page is attractive, because it is very easy to use, has a cohesive theme, and is kid-friendly.
- Users are able to understand and play the puzzle game quickly. - Yes, users will be able to understand the puzzle game quickly, since a short list of instructions will be displayed on the game screen.
- Users can just jump in and start playing (trying out) the game immediately without the registration process (Certainly, the performance progress of unregistered users will not be recorded). - Yes, users can jump in and start playing the game immediately without registering by clicking on the Play as Guest button.

Your product should have the following functions:
- ○ Users can register with a username and a password. - Yes, users can register with username and password on the Login Page. On the Sign Up Page, users set up a username and a password when creating a new account.
- ○ The performance of registered users are updated after each trial and can be displayed upon requests - Yes, the performance of registered users are updated after each game if there is an improvement compared to the previous statistics. Users can view the statistics at any time, since it will automatically be displayed at the bottom of the screen.
- ○ Users can ask for hints and/or solutions. - Yes, the users can ask for hints and solutions. If a user requests for a hint, the game will show the values on all the tiles for ten seconds. It helps them find the answer, since it shows the values of different tiles. If a user requests for the solution, the game will flip over the tiles that correctly answer the arithmetic question.
- ○ Administration account - Yes, there is an administrator account. On top of having the functionality of regular registered users, administrators can remove non-administrative accounts.

Do you have a brute-force method as the comparison basis for the puzzle solver. - Yes, there is a brute-force method to solve the puzzle. It has a time complexity of $O(n^2)$, since that method would revisit values to check every single possible pair that solves the arithmetic question.

Do you have a better algorithm than brute-force. - Yes, the algorithm I plan on using is better than brute-force. It has a time complexity of $O(n)$, since it visits each value once and only once. It achieves that by utilizing the hash table data structure to store data of visiting values, creating a more efficient and optimal solution.

Explain if the puzzle is targeted at a single user or multiplayer, competitive or non-competitive. - Firstly, the puzzle is targeted as a single player game. Secondly, the puzzle is targeted as competitive, since it shows the top scores.

Explain how to deploy your product. - To deploy the Flask project, I will be using Heroku. First, I will create a Heroku account. Next, I will install Heroku CLI and complete the login process. Afterwards, I will create a file named Procfile in the project's root directory and update the requirement.txt file. Since I made changes to the project, I will commit the changes to Git. Lastly, I will run a command to create a Heroku app and push the Git repository that was created. After pushing the changes, the building and deployment starts. Altogether, the app will be available online after following the deployment steps.