

# Russ Clicker Overview

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An online clicker game where you can compete against other players for leaderboard rankings. You will be able to create an account which will be associated with the progress of your character. Click on your character to level up your score. Certain point thresholds will yield cosmetic upgrades for your character. You will also be able to buy gameplay upgrades to increase the amount of points you earn, and even earn when offline/not on the page. However, in order to buy these gameplay upgrades you will need to spend some of your already earned points, which will lead to interesting strategies for maximizing points over time and staying on the global leaderboard (you might fall off the leaderboard if you make an expensive purchase). If you log out and then come back to the site later and log in, your progress will be maintained. You will also be able to see your standing against other players on a dynamically updated real-time global leaderboard.

## Frontend

We will be using HTML, CSS, JavaScript, and XMLHttpRequest for the frontend. The first thing the user will be greeted with is the login page (which will be index.html). This page will have a login section and a register section. After the user has registered with a username that does not already exist in the database, they will be instructed to log in. After the user has logged in with a valid username, they will be taken to the game page (game.html), where they can click on their character to increase points and level up, as well as buy upgrades and equip cosmetics.

Their score will be shown here below their character, along with a button that will take them to the leaderboard page. On the top left of the view, there will be a “logout” button to bring the user back to the login page if they so desire. To the left of the character, there will be buttons that allow the user to equip cosmetic item unlocks, and to the right of the character, there will be buttons that allow the user to purchase gameplay upgrades. The leaderboard page (leaderboard.html) will display the top 10 players' high scores along with their names and ranks in the center of the page utilizing a table. Right under that table, the currently logged in user will be able to see their high score along with their name and rank compared to the other players. At the top left of the view, there will be buttons to go back to playing the game as the currently logged in user, or to log out and get brought back to the login page.

## Backend

We will be using NodeJS along with Express, MongoDB, and Mongoose for the backend. Some of the routes we anticipate using will be as follows: A route for getting the player’s current score, a route for incrementing the player’s score, a route for checking if a user exists in the database, a route for creating a new user in the database, a route for logging into an account, a route for getting the information of all players. The database will be organized as follows: there will be a document for users. It will contain a username field, score field, multiplier for incrementing the score field, selected cosmetic field, gameplay upgrades field (which will be another document), and cosmetic upgrades field (which will be another document). The gameplay upgrades document will contain an offline point generator field to unlock by spending 500 points, a 10 points per click field to unlock by spending 5000 points, and a 100 points per click field to unlock by spending 50000 points. The Cosmetic upgrades document will include a

bronze beard upgrade field to unlock when you have reached 1000 points, a silver beard upgrade field for when you have reached 10000 points, and a golden beard upgrade field for when you have reached 100000 points.

## Reflection

This project went very well. We were able to achieve everything we set out to do from the beginning, and we planned out our tasks in such a way that we finished perfectly in time for turning it in. A great deal of our success indeed has to be attributed to time management and delegating tasks, for without rigorous planning we would not have been able to achieve even half of what we did. Although we were able to achieve success overall, there were definitely parts of this project that were more difficult than others. Integrating the database was most certainly one of the more difficult pieces, for with simple tasks it was not too difficult to work with (such as implementing basic user login functionality), however when we had to nest documents inside of each other (for the upgrades and unlocks documents inside the user documents), we were forced to apply ourselves to a greater degree. One thing you might notice is that we decided to change the global leaderboard from displaying the top ten players to instead displaying the top five. The reason for doing this was merely to reduce visual clutter and to get rid of the user needing to scroll down in order to view their own stats. Overall, we feel very good about what we have created and we have learned a great deal from working on this project. Specifically, we all agree it was exciting and insightful to work with an actual database as well as utilize http requests to connect everything together. We are grateful to have had the opportunity to work together, and we hope you enjoy playing our game.