

# QuizApp: The General Knowledge Quizbank

Screen sizes to test: 1248px (13" Macbook Air) and 1440px (15" Macbook Pro)

## Part I: Project Overview

QuizApp is a general knowledge quiz site that gamifies the learning experience on a range of foundational topics ranging from geography, history, politics, economics, finance, philosophy and culture. The purpose of the website is to allow users the opportunity to learn accurate information about some key societal concepts to improve access to education. The QuizApp site does this by allowing users to take a variety of rapid five question quizzes where they will be able to see their results and retake quizzes to master the subjects.

The information I've conveyed on my site are accurate facts about a range of topics including geography, history, politics, economics, finance, and culture.

The site is interesting and engaging because it gamifies the educational experience by offering a variety of rapid quizzes which are scored after the submission of each quiz. The topics of the quizzes are also interesting and diverse.

The target audience of the quiz site is any member of the general public that wants to learn about the topics on the site and become a more informed member of society. However, the questions are appropriate for children, so the site is open to people of all ages.

## Part II: Interactions

### Step 1: Open the Website

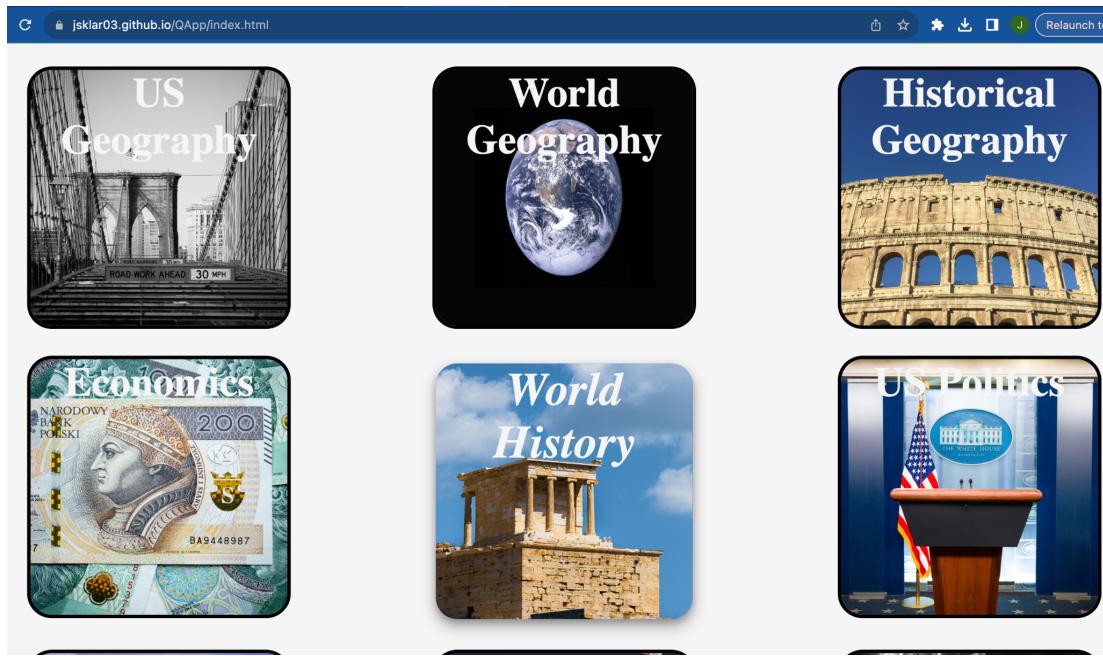
Open the website: <https://jsklar03.github.io/QApp/>

The screenshot shows a web browser window with the URL 'jsklar03.github.io/QApp/index.html' in the address bar. The page title is 'QuizApp'. Below the title, there is a 'Scoreboard:' section with columns for 'Right', 'Wrong', and 'Grade', all showing '0'. A large '0%' grade is also displayed. Below the scoreboard are three cards representing quiz topics: 'US Geography' (with an image of the Brooklyn Bridge), 'World Geography' (with an image of the Earth), and 'Historical Geography' (with an image of the Colosseum). The 'World Geography' card is currently selected, as indicated by a drop shadow and enlarged text.

### Step 2: Select a Quiz Topic on the Home Page

Choose one of the 12 quiz topics that are displayed on the home page. When a user hovers on a given topic, there is a drop-shadow effect, the border on the image disappears and the text on the image enlarges and becomes italicized. Once clicked, this opens a new HTML page for the Difficulty Level that you want your quiz to be. In this case, I was hovering over the "World

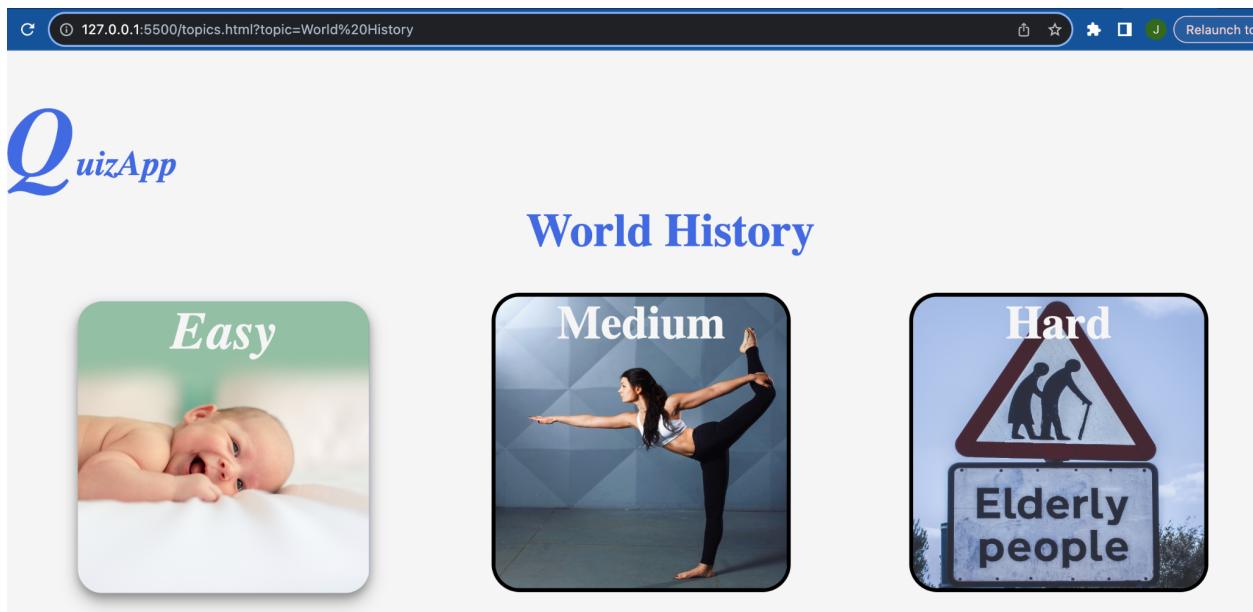
History" topic.



### Step 3: Select a Difficulty Level in the Newly Opened Page

Once you've clicked on a topic, a new HTML page will open. Choose one of the 3 levels that are displayed on the newly opened HTML page: **Easy, Medium or Hard**. Hover on the boxes, and the same effects as on the home page are present. There will be a drop-shadow, the border will disappear on the image and the text will slightly enlarge and italicize which signifies that the topic can be clicked. Click on the difficulty level of your choice. This will open a new HTML page.

In the screenshot below, I am hovering over the "Easy" level.



## Step 4: Answer the Quiz Questions

Each quiz is five questions long, all multiple choice questions. Click on the answer option that you believe to be correct. When an answer choice is chosen, the color will change to light blue. Here I have answered “1918” in the example below.

The screenshot shows a quiz card from the QuizApp. At the top left is the QuizApp logo. The title of the quiz is "World History - Easy". On the right side of the card, the number "1" indicates it is the first question. The question itself is "What year did WWII end?". Below the question are two answer options: "1918" and "1944". The option "1918" is highlighted in light blue, while "1944" is in a standard dark blue color, indicating it has not yet been selected.

You can change your answer by double clicking on a new answer (this is only if you want to change your answer)

Once you have chosen your answer and the color has changed, navigate to the next question in the quiz by clicking the arrow pointing to the right at the bottom of each quiz card. If you would like to navigate back to the previous question, click the arrow at the bottom left of the quiz card. Both icons and states are shown in the screenshots below.

NOTE: On question 1 the back button is hidden, on question 5 the forward button is hidden. This is to provide an anti-affordance to signal to the user what is or is not possible.



## Step 5: Submit the Quiz

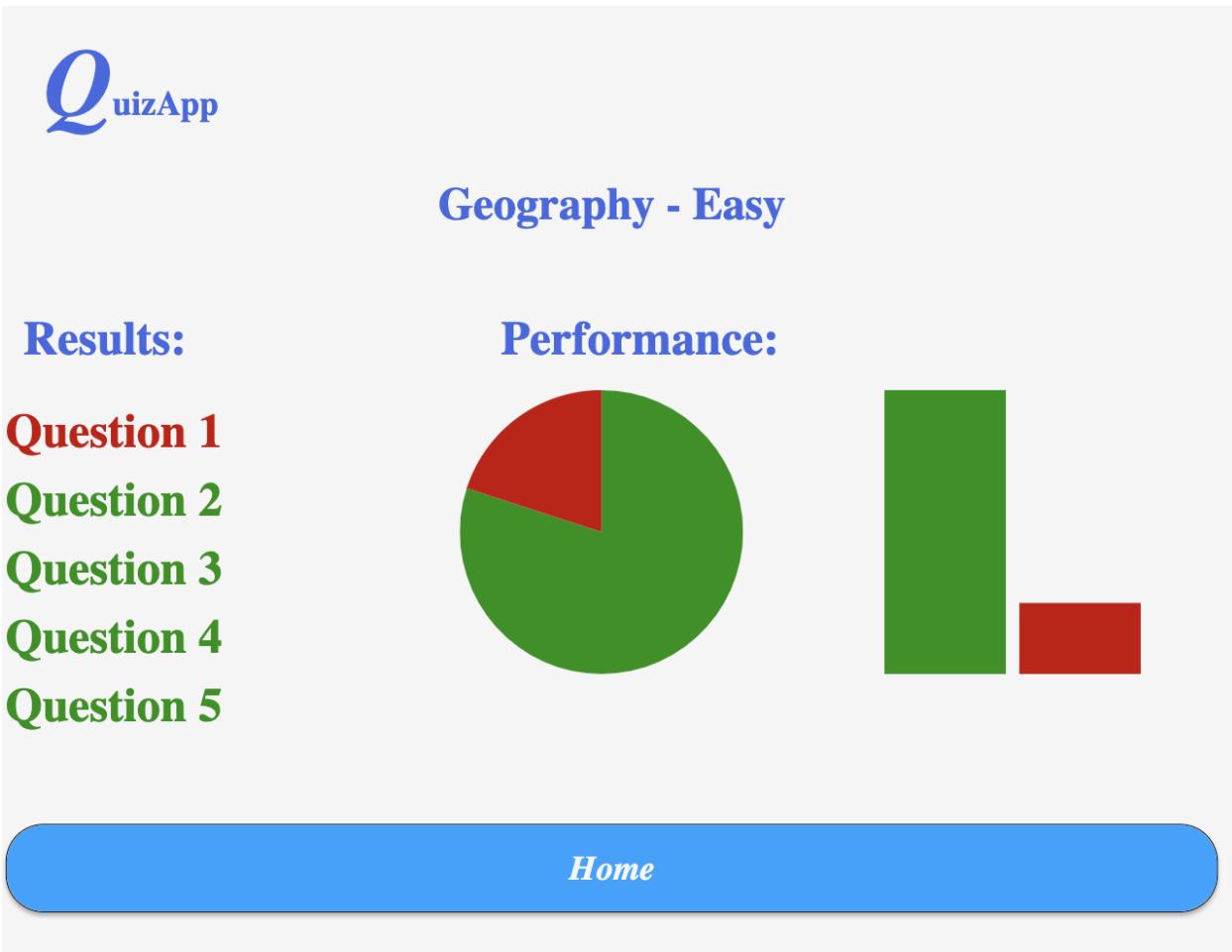
Once you have answered all of the questions that you want to, click the “Submit Quiz” button at the bottom of the quiz page. This will open a new HTML page. When the “Submit Quiz” button is hovered on, the drop-shadow increases slightly. Once the button is clicked, the quiz answers are submitted and checked.



## Step 6: View the Results

Once you have submitted the quiz by clicking the “Submit Quiz” button, the Results HTML page will open. Here you can see your results on the last quiz. Five elements (“Question 1”, “Question 2”, “Question 3”, “Question 4”, “Question 5”) on the left-hand side of the page will be colored either dark green or red. Green indicates that the question was correctly answered. Red indicates that this question was incorrectly answered.

On the right-hand side of the page, a Bar Chart and a Pie Chart will display showing you a visualization of your results.



### Step 7: Navigate Back to the Home Page

Once you have interpreted your results, you can click on either the QuizApp logo at the top of the Results page OR the home button on the bottom of the Results page to navigate back to the home page.

### Step 8: Observe Cumulative Results in Home Page

The home page will now update with the total number of right and wrong answers you've provided. If you take multiple quizzes, these numbers will continue to update. Additionally, the charts on the homepage will update to reflect your cumulative results.



## Part III: Tool Used

### Name of the tool I used:

D3.js <https://d3js.org/d3.v5.min.js>

### Why I chose it:

I chose to use D3.js for a variety of reasons, the first was that I wanted to learn more about basic data visualization using an external library. The second was that it was listed as being one of the supported external tools that the TAs would be able to help on if I was stuck. Lastly, I saw in a few job postings that D3.js was a common skill that was being looked for. Lastly, I found the visualizations to be simple enough to understand for any common user.

### How I used it:

I used the D3.js library to visualize quiz results. Due to the use of this external library, users can see visualizations of their performance on quizzes. This adds to the 'gamification' aspect of the site, as the user has both a numerical and visual representation of their performance to try to improve upon.

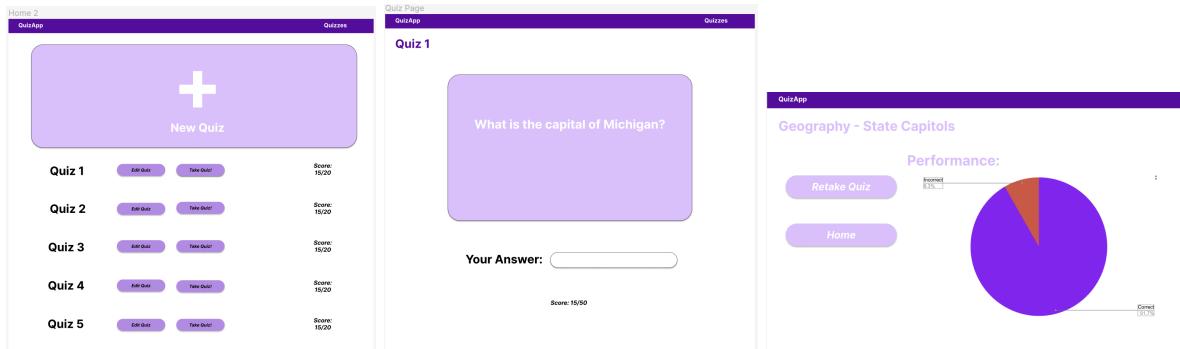
### What it Adds to my Website:

The addition of D3.js to my site adds a visual representation of users' performance. I included it to add incentives to users to do well on quizzes and track their progress. Seeing the full green circles and a '5/5' on the home page and results page will incentivize users to keep improving on their scores and try their best on each quiz.

## Part IV: Iterations and Design Process

### Design Iterations 1 and 2:

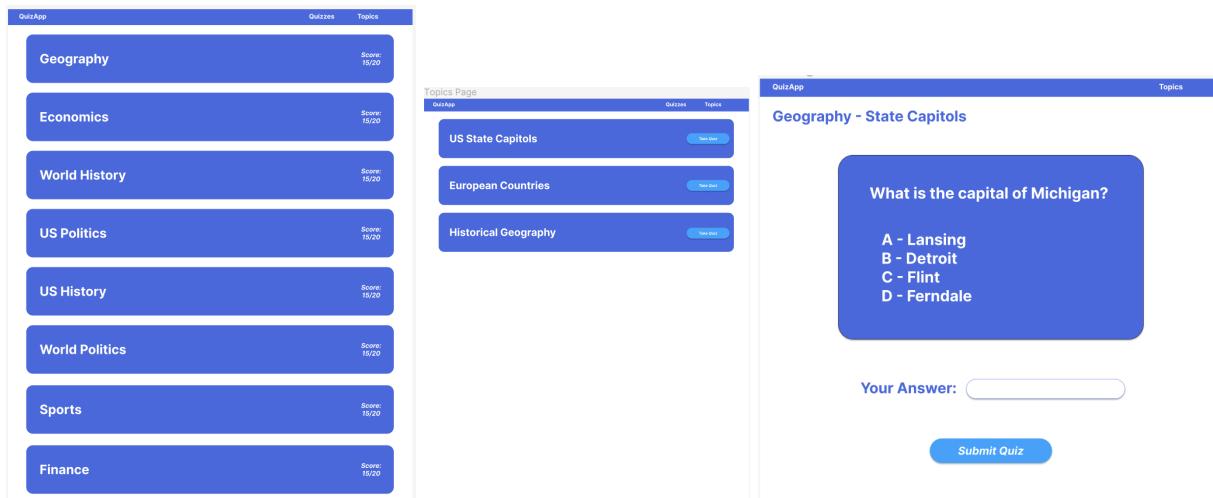
In my first design iteration, the website was oriented around users creating their own quizzes, here is a screenshot below of this iteration:



After receiving some constructive feedback on my design concepts, I decided to change the following components of fidelity in my design:

- Content
- Breadth
- Visual
- Interaction

Which lead to a quiz bank website design that looked like this:

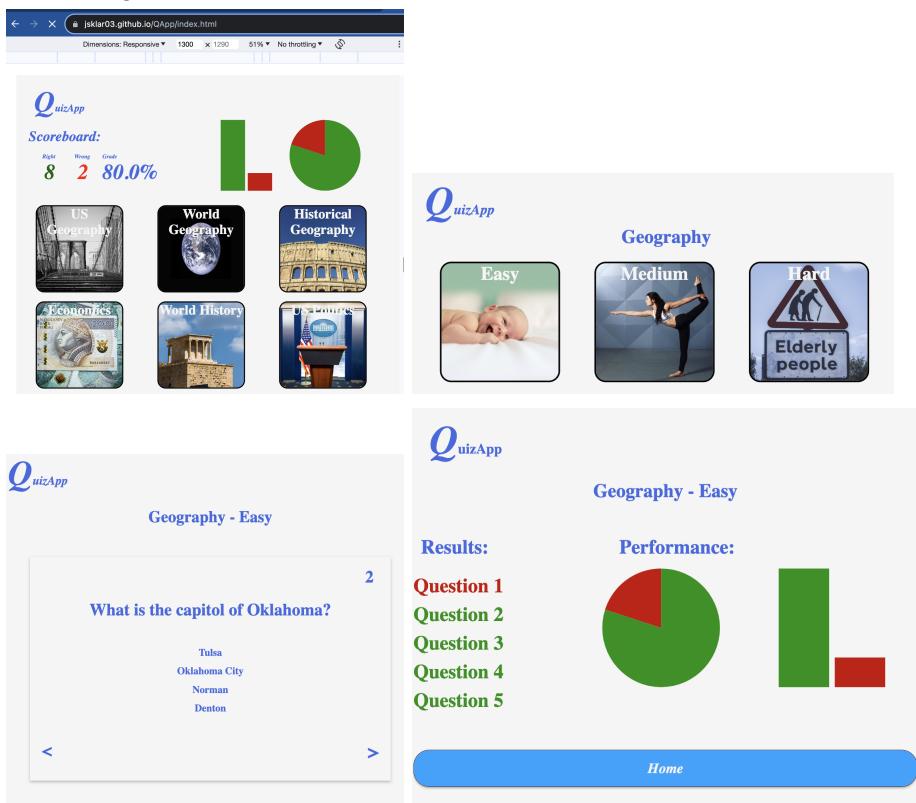


### Final Design Decisions:

After choosing to go with a quiz bank concept, in my final design iterations, I made the following changes:

- Added a scoreboard to the homepage to gamify the site and keep the user engaged by tracking their scores over time

- Changed the layout of the quiz topics so that it looked like a grid and was easier to see all of the topic options
- Added images to all of the topics on the home page and the levels on the subsequent page to improve the visual design aspects of the site
- Changed the format and length of the quizzes to be only 5 questions each
- Changed the visual displays of the results to include both a bar chart and pie chart of results as opposed to just one pie chart
- Added a feedback mechanism (changing text color) on the quiz.html page to give the user feedback for when they have selected an answer
- Added interactions such as hovering on the home page, topics page and quiz pages to provide some perceived affordances to the site
- Added the feature on the quiz page so that the back arrow was hidden on question 1 and that the forward arrow was hidden on question 5 to provide anti-affordances and to signal to the user that the quiz was over



## Part V: Challenges Encountered

I ran into a few challenges during this project.

One of the first ones was navigating local storage, setting the proper items with the right labels and then retrieving them from local storage in order to feed those values into my data visualization tool (D3.js). I ran into a lot of logical errors with this process, and struggled to go

through the D3.js library to create my visualizations and then integrate them within my HTML pages.

Another issue I had that I needed some help from a TA on was properly assigning my URL parameters, again, this was a logic issue in my code.