**PUI Final Project Writeup**

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Part 1: Description

My project, GeoQuiz, is an interactive web game aiming to educate anyone who is interested in cultural geography about world cities by exploring their geographic locations. The gameplay simulates the action of pointing on a map – the player goes through a list of cities in a given region/continent (currently focusing Western Europe with the scope of this project) one by one and clicks on the map where they think the city is located. After confirming, they’ll be shown the distance between the correct location of that city and their guess, as well as a score reflecting how accurate their guess was. The closer it was to the actual location, the higher their score will be. To learn more about the city, players can directly click on the external link provided at the end of each round that directs them to each city’s Wikipedia page. Scores from all rounds will accumulate and reflect the player’s overall accuracy. The game is currently offering two levels in terms of difficulty to challenge players with different prior knowledge. In addition, players can also save their guesses to a collection, where they can check all the cities they save from previous games on a map, see their best guesses, and track their learning progress.

This project is responsive and can be tested on the following two screen sizes:

1600 x 900 (Windows PC)

1024 x 768 (iPad)

The project passes the evaluation by WAVE plugin as shown by the screenshots in Appendix I.

Part 2: List of Interactions

1. **Entering the game**: click on the “Start: West Europe” button to enter the game. The game starts with Easy mode by default.
2. **Pan**: use mouse dragging to navigate around in the Google Maps viewport (view limited within West Europe).
3. **Zoom in & out**: either use mouse scrolling or tap the zoom control on the bottom right.
4. **Adding markers**: click on any location in the map to take a guess and create a marker for the current city (indicated on the info panel on the right).
5. **Removing & confirming choice**: after adding a marker, click “Yes” to see result or hit “No” to find another location.
6. **Check result & learn more**: See the distance between your guess and the actual location. Click on the Wikipedia button to learn more about the city you just guessed.
7. **Proceed**: click on “Next city!” to continue down the list of cities.
8. Check historical scores
9. **Start over**: when you reach the end of the list, click “restart” to play the same list again.
10. **Change difficulty**: click on the switch button on the top right to switch between easy/hard modes, which will start a new game with a different list of cities.

Part 3: External Tool

Google Maps API

I chose to use Google Maps API because it

Part 4: Iterations

I initially planned to implement multiple maps and level difficulties but eventually had to scope down and focus on making the same level usable.

Another major change in design is the mode of control. I initially made the newly added markers draggable but later found that dragging may not be friendly to tablet users or for better accessibility.

Another major problem in data processing is calculating the distance between target and player answer. While the Google Maps API provides the latitude and longitude information for each marker, to transform longitudinal distances to kilometers was tough as the earth is a curved surface. For the first few iterations I took the

Part 5: Challenges

The primary challenge was how to effectively use the Google Maps API. While I benefited from the in-class instructions for installing the API, I had to conduct extensive research on how to implement functionalities such as setting the map style or adding markers. Another challenge was to make such an interactive game accessible – with the help of WAVE tool I was able to identify.