



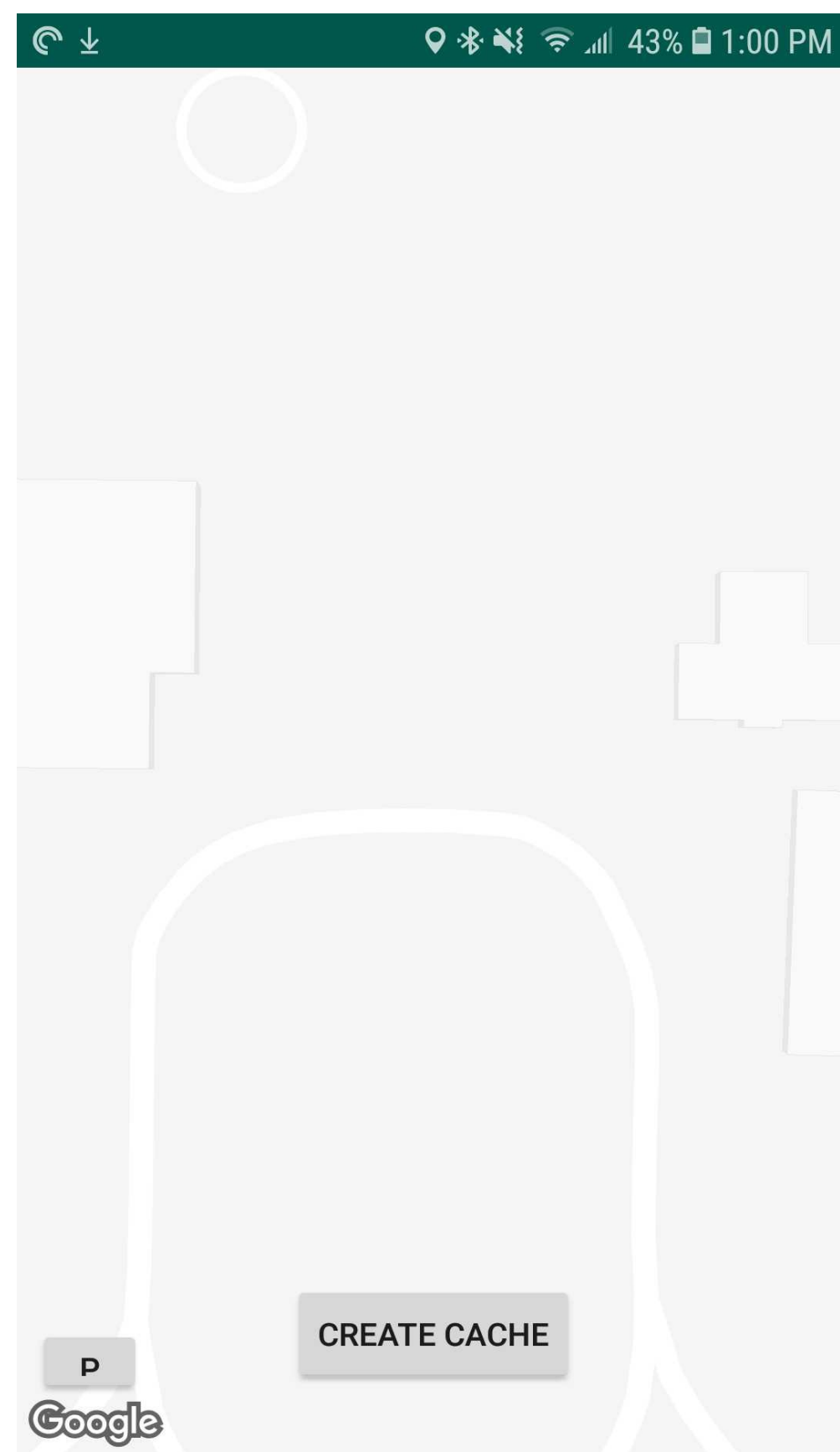
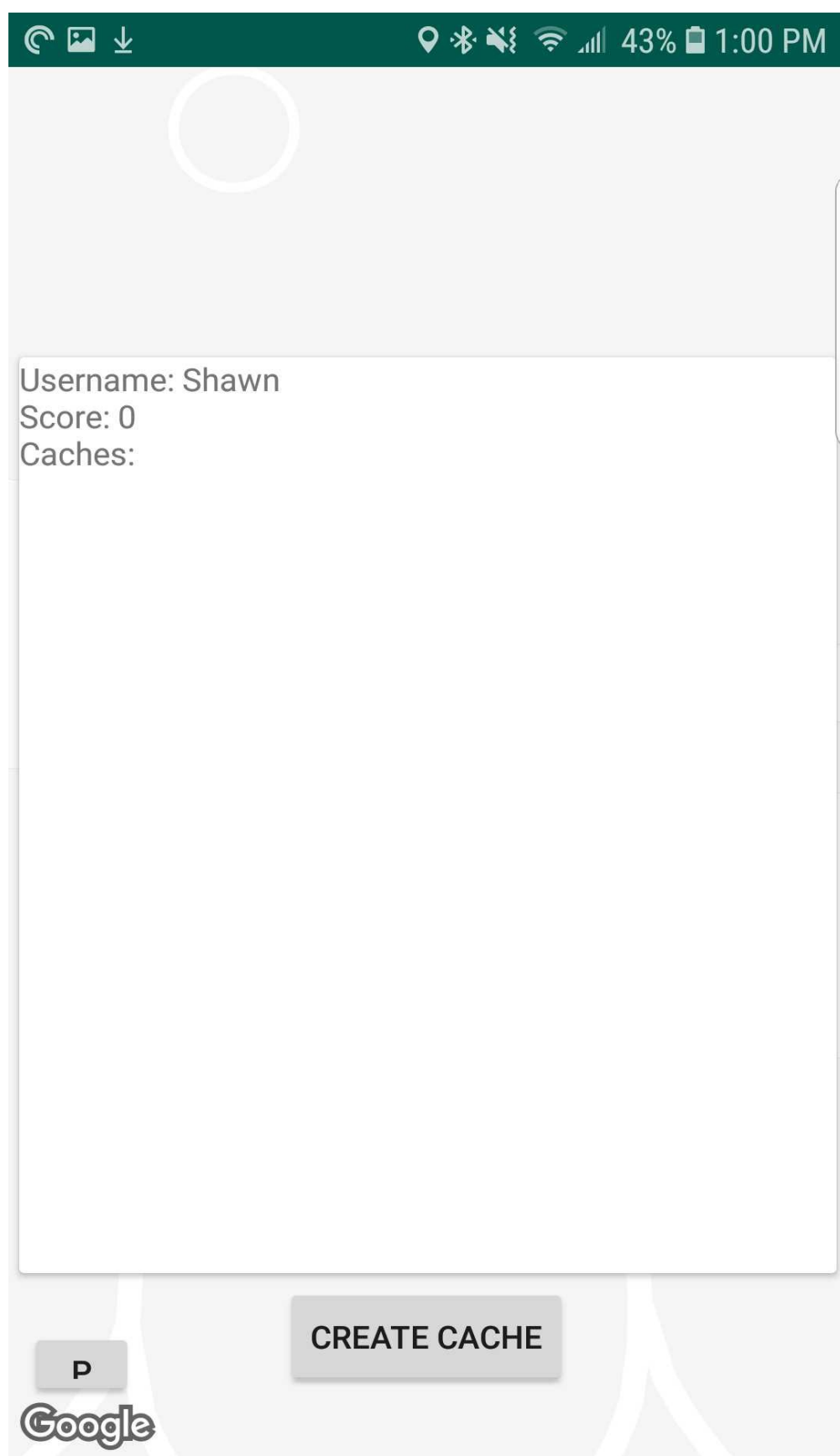
Capture the Cache

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Abstract:

A majority of people are physically inactive, and this is becoming a larger problem as time passes. The purpose of this project is to design a mobile AR game that will encourage physical activity by using the phone's GPS to get users moving and working to help combat this problem



Game rules:

- Users can create virtual caches at their location
- Caches can be claimed by being near to them and tapping them
- When a cache is claimed, points are divided based on the age of the cache
- The longer it takes for a cache to be captured, a larger number of points go to the owner
- The quicker a cache is captured, the more points rewarded to the one who captured it
- How far away a player can be from a cache and still capture it increases with time to make far out of the way caches still able to be scored

Design:

- Made in Java, which is what powers Android phones
- Integration with Google Maps API to display local surroundings
- PHP web pages operate as a bridge between the Android application and MySQL server
- Two database tables, one for users and one for caches
- User table contains the username, the score, and the ID number from Google's user play account
- Cache table contains the latitude and longitude as well as the ID of the owner and the time they were made for the purpose of scoring

Background:

- 1.8 million Americans do not get sufficient physical activity
- Hiking and walking are two of the most common forms of physical activity
- Game is based on Geocaching, a game where users hide physical "caches" which hide logbooks, little toys, and numerous other things for others to find
- Privacy and security issues exist with Geocaching due to it being tied to physical locations that anyone has access to
- Augmented reality (AR) means to overlay something onto the shared reality, most implementations today are games
- AR Games encourage physical activity, as most can only be done by moving physically using the phone's GPS to 'gamify' elements of exercise

Conclusion:

This project resulted in an app that recreates some aspects of Geocaching, where users can drop caches that other users can find to claim points. The app encourages physical activity as the user must move to claim each point, and will not be able to do much without physically moving, and the way points are divided encourage getting to out of the way places before placing caches, as more points are gotten the longer it takes to find the cache.