Project Plan Version 2

Challenge Expeditions
May15-15

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Problem Statement

We as a society aren't as active as we use to be. The amount of time we spend indoors and on our cell phones is alarming. We want to encourage exploration and activity with a new application. We'd like to combine the technology we use everyday to inspire activity, challenges and natural exploration. We also want to create a way to share these experiences with others to promote friendly competition and others to participate.

Deliverables

First Semester

The goal of the first semester is to create a prototype of the application. To get there we need to create a solid plan and a design that will allow us to build a solid and scalable prototype. We want to get basic functionality done so we can build upon that in the second semester.

- Strong project plan
- Feasible design for the application and server
- Android application prototype
  - User profiles creatable on app and web
  - 2 sensors functional
  - 2 challenges can be ran and verified
  - Can view completed challenges on app and web
  - Web API support all conditions above

Second Semester

The goal for the second is to polish and build upon the prototype. We will do that while concurrently building an equivalent iOS app. Much of the extras features and use cases will be accomplished in this semester.

- Challenge creation system implemented
- Equivalent iOS, Android and Windows Phone applications

- Push notification system
- Completed and extendable web API

Functional Requirements

- Create/login/logout of profile
- View completed challenges/points/badges (etc)
- View new challenges to complete
- Share challenge with another user
- Run and verify challenge to completion
- Use all available sensors on device
- Upload photo/videos to challenges
- Offline mode for when service can't be found

Non-Functional Requirements

- 85% server uptime
- 95% Sensor accuracy
- Uploaded challenges viewable in less than 3 mins
- Always responsive application

Specifications

- Cross-Platform: should be available and fully functional across all web browsers and current Android/iPhone devices
- Database: Store data related to all state parks, all users, and all challenges
- Challenge Framework: Easy to understand, create, and share challenges.
- Server: Accurate and fast completed challenge verification. Handle all database operations and push-notifications in a timely manner.

Concept Sketch/Mockup

Mobile application sketches
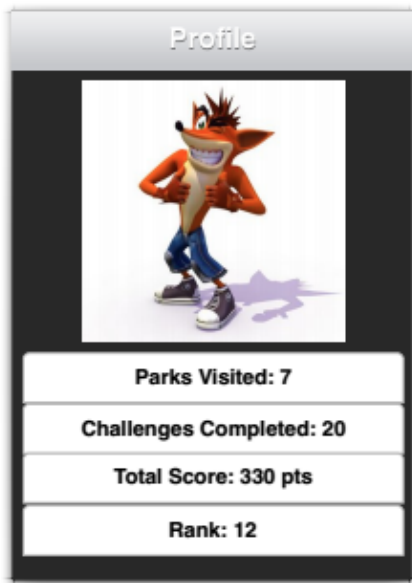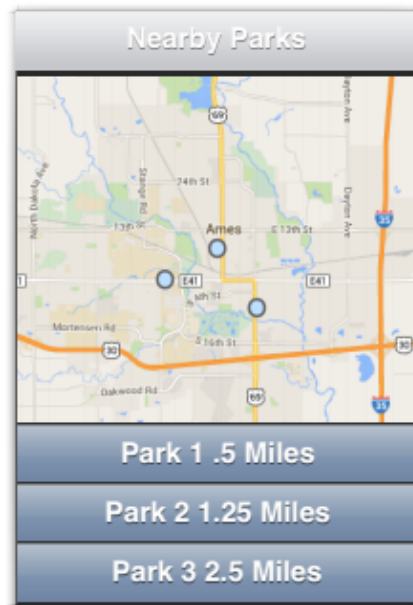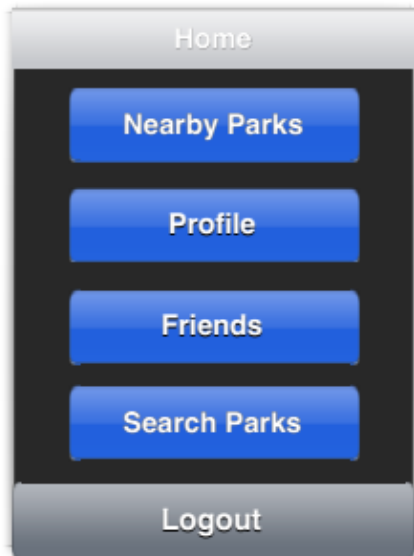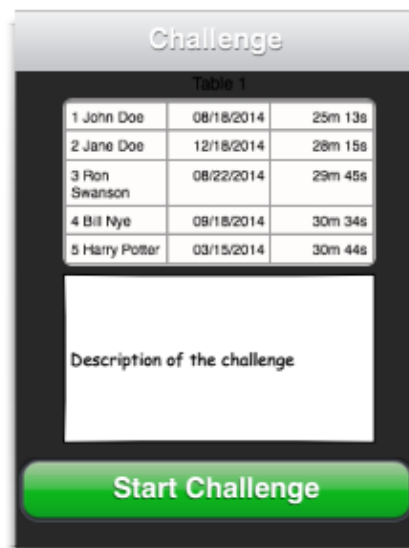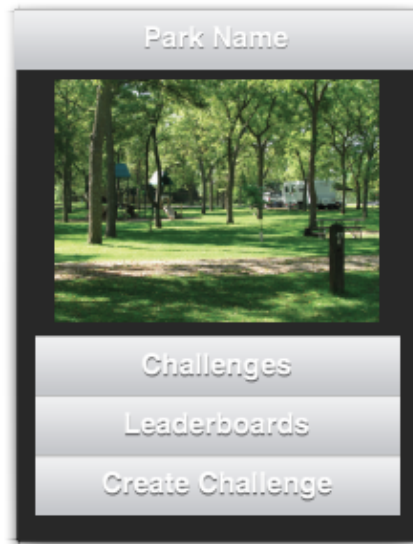
User Interface Description

Mobile application description
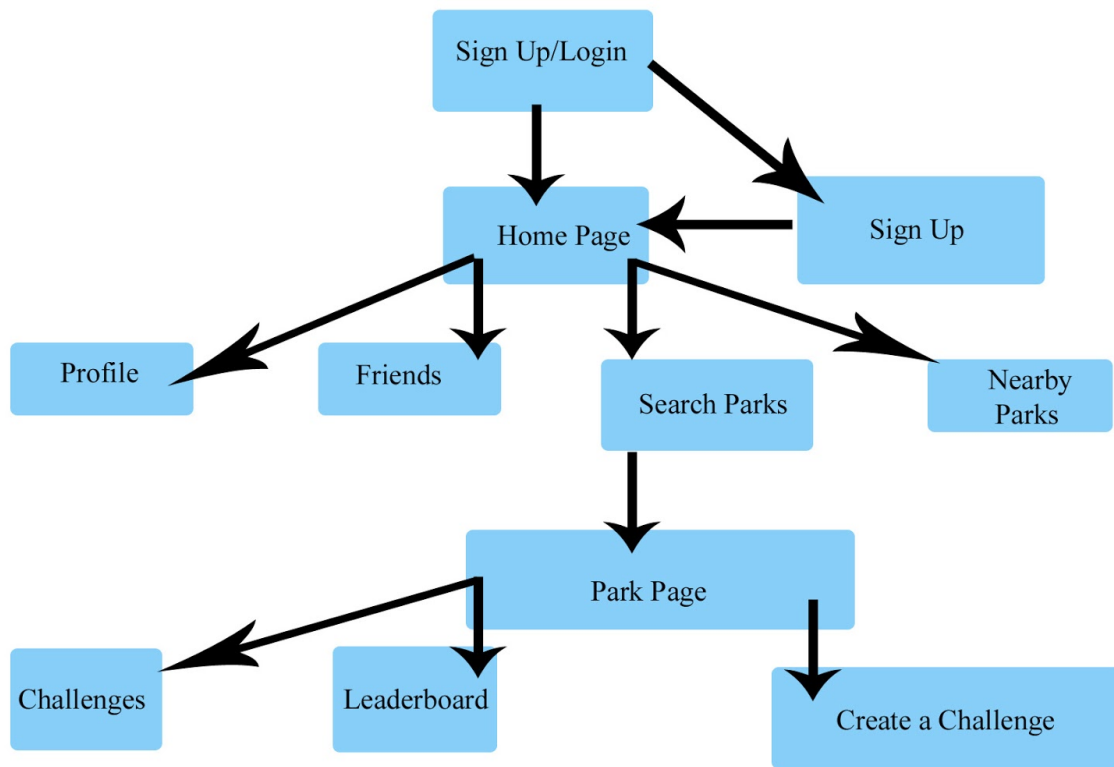
Figure 1. Flow diagram describing user interaction and transition within application.

Work Breakdown Structure

Project Roles

- Andrew Wallace - Project Leader
- Anthony Wilson - Webmaster
- Ian Monroe - Communications
- Matthew Burzinski - Key Concept Holder

Individual Work Roles

- Andrew Wallace - Mobile application screens and framework, device testing, sensor data
- Anthony Wilson - Database management, Server challenge verification/management

- Ian Monroe - User profile system, Challenge stats API, Push notification system
- Matthew Burzinski - Application Design, Front-end, Application-Side technology, dividing work into small stories/tasks

Test Plan

We decided to put a focus on regression testing and unit testing. We believe that our application provides many individual parts which will requires us to ensure components behave as expected. Unit testing throughout the building process will help maintain workable, modular code. The work environments that we plan to use natively allow unit testing along with built in tools and integration. This is a benefit that we believe will help us in the long run which also factored into our decision.

We believe thorough regression testing will allow us to build upon working code and ensuring that we don't break anything as we add features. We expect rapid changes in our application but would like to have the confidence that our code works even after those changes. Regression testing and tools will allow us reach that goal. In addition, setting up proper regression testing is important as this is an application that is expected to grow, even once it goes outside the scope of senior design.

Resource Requirements

Resource	Will we get it?	Estimated cost
Server	We will ask the client for a database and a web application server to handle the web app and API.	$0
Iowa Parks Information	We will ask client first. If unavailable by the client we will contact the Iowa Parks and Recreation Association.	$0

Jira Task Management	If we have enough server space we will purchase Jira from Atlassian.	$10
iOS Developer License	Depending on how much we would like to test on hardware vs emulator, we will need a license	$99

Table 1. Table outlining expected cost for required tools.

Project Schedule

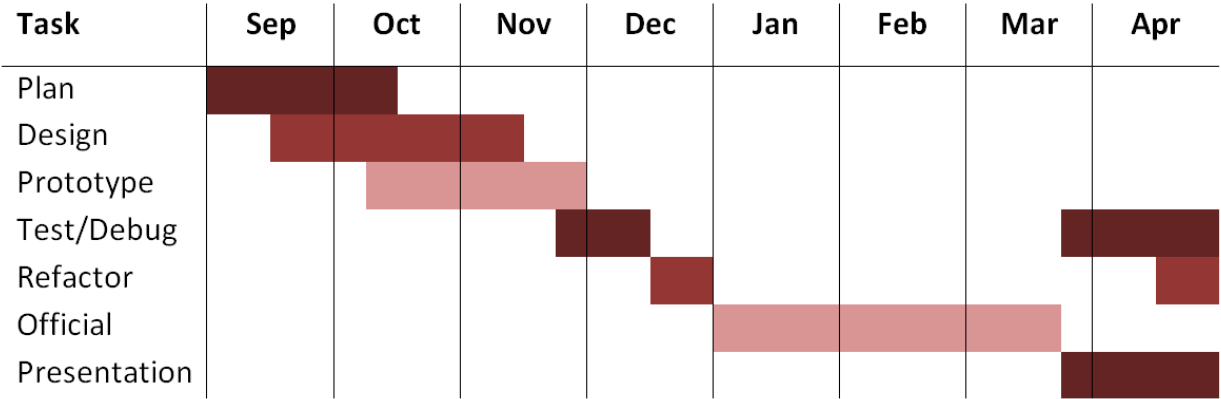| Task	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Plan	███	███						
Design		███	███					
Prototype		███	███					
Test/Debug				███				███
Refactor				███				███
Official					███	███	███	
Presentation								███

Table 2. Expected schedule for school year and project.

Risks

One of the risks we have with this application is cell phone reception and data connection. Our intended use is to be used in parks and places where data connection isn't as available. We will need to learn how to handle those particular situations and provide alternative methods of functionality.

Some challenges we plan on testing can become complicated in how the user my store their phone or use the application. For example, say we want a swimming challenge. How does the user swim with their phone? Is it our responsibility to recommend options or to warn of risks? These are question we have to asks for a variety of different circumstances and challenges.

Along the same lines with complex situations, we also have many other weird problems when it comes to verifications of challenges. How can we ensure a user camped out all night at a local state park? How do we determine if a user really ran those 10 miles? Do we remove stats and competition if we can't ensure fairness?

These questions arise when we talk about validating challenges and will be something we have to figure out.

Market/Literature Survey

Today it is hard to find someone without a smartphone or easy access to the internet. It is much harder to find people engaged in outdoor adventure. We believe it is human nature to be adventurous, and that deep down, people want adventure. With this application we believe we can make modern technology a tool for people to engage in outdoor adventure, and make it a social event.

Everyone is constantly uploading pictures of their "adventures" on social media platforms. The lunch they had today, the shoes they bought, the show they watched. We think that by merging this social aspect of sharing adventure into our application we can reach a broad range of people. We will enable people to engage in adventure socially, and further increase participation by means of our challenge system. By allowing users to challenge others to a new adventure, or even adventures they've already completed, we should spark the natural adventurous fire that is lingering in a wide range of people.

Conclusion

We believe this application is an exciting way to get people outside and having fun. With the proper planning and preparation the project can be accomplished and fulfill all the goals stated above. It's very much feasible and we are excited to create a prototype to further explore the possibilities of this application and show the full potential of the idea. The application has a huge potential growth factor, and it will be interesting to see how popular this app can become.