Computer Science, University of Nevada Reno

Vendi

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TBD

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**1 Abstract/Summary** (between 100 and 150 words)

**Brief summary of your project**

The proposed project would be an app for mobile devices. The base functionality for the app would be a nice user interface with utilities that allow the user to find nearby vending machines and figure out what kind of vending machine it is (snacks, drinks, school supplies, etc). In order to gather the data for the functionality, as shown above, the idea was to implement crowdsourcing to keep information up-to-date. This crowdsourcing could be incentivized with a points program for people who give accurate recent information on vending machines.

Beyond the base functionality, another idea would be to add price and availability checking for specific snacks, snack filtering, and machine filtering so the map can be simplified and users can find what they are looking for easier.

**2 Project Description** (**<T4>** 800 to 1200 words) Indicate the following:

**Main goals and objectives**

Our overall goal for this project is to develop a user-friendly application that will display the location of all the vending machines within a given area as well as the items each individual vending machine consists of and its prices. We also want to implement a crowd-sourcing system in which the users will enter in data for new machines or updated items in pre-existing machines. From a design perspective, our goal is to successfully implement a database management system to keep track of the items and a user interface for the consumer to interact with. This project is significant because it is an efficient way for users to find snacks, beverages, and school supplies on campus. This will also reduce costs because it will allow users to compare prices of duplicate items within different vending machines.

**Main functionality and characteristics**

For this project, the high-level requirements are both from a software and functionality aspect. Software requirements for this project would be developing the app with the user interface and the database management system. The app would be developed within Swift. We will also implement a login system where users can create accounts where their data would be stored. There would also be encryption and security procedures in place to ensure the security of those accounts and the user’s data. The database management system would be completed in SQLite, a database engine that is compatible with Swift. Within that, we would want to include data on the items available within a given vending machine, price, and availability. Functionality-wise, from the user perspective, we want to allow the user to be able to create an account, search within the database for a specific snack, and enter data for new vending machines and items for pre-existing. We also want to implement ways to upload photos and leave reviews on the quality of the vending machine and the accuracy of the items available.

**Intended audience**

As previously mentioned, the intended audience for this project is UNR students and UNR faculty. This scope may be subject to change in the future if we decide to expand, but starting out we want to focus on the UNR community. We chose UNR students because we feel this project is useful and beneficial, especially to students in need and we can relate being students ourselves.

**Key usability goals**  
There are two types of users that will benefit from our app: vending machine owners and the general public. Our goal is for anyone to be able to use our app to locate vending machines with the option to sort for what goods they are looking for. For instance, they might be looking for a broad category such as something to eat, or they might be specific in their search to find a bag of Cheetos. On the UNR campus, this will benefit busy college students who might be spending too much time trying to find the nearest spot to purchase a quick snack, beverage, or even school supplies. Vending machine owners will be able to use a separate sign-on where they are able to review their machine(s) and receive notifications when stock is running low or when a machine is in need of maintenance.

**Potential for further development/product enhancements**

In the future, we would love to expand our app to be nationwide or even global. For the purpose of our senior project, we will be focusing on vending machines of the UNR campus, but it would be a great application for anyone to have next time they are in an airport, hospital, hotel, shopping mall, or other public location looking for a drink or snack. It would also be very beneficial if we could partner with popular pre-packaged food or beverage brands to expand our user base and provide incentives to use and interact with our program. Because we will be a crowdsourcing-based app, we would take pleasure in giving back to our users by means of giveaways.

**Challenges and obstacles**

We are lucky in that we have a team of people who all excel in different ways. That being said, we are bound to have trouble throughout our development. This project will demand us to learn and work with technologies we have never implemented before. Other than technology, a challenge we are currently discussing is how we will incentivize users to interact with our app, specifically by leaving reviews and photos of the vending machines. A large part of our app is its future ability to recognize specific brands/packaging within the machines, which can only be achieved with help from users.

**Technology description:**

The intended technology that we are going to use is based on the Apple IOS app-making programming language. The specific developer that we are planning to use is Swift. It comes with an excellent standard library that will enable us to develop most things in the app. Additionally, we will have to use virtual machines loaded with MACOS in order to take full advantage of Swift. We have decided to make an IOS app over an android app because all of our group members own an iPhone. This will allow us to have easy access to troubleshoot and debug our app. For the features we plan to have incorporated into the app, we will be using Swift along with google maps SDK for IOS. This will allow us to use google maps in order to let the user view themselves on a map as well as see the vending machines in the area. As for storing our data, we are planning to use SQLite in combination with Swift.

**Team Overview:**

**Catherine:** Computer Science major with an emphasis in the cyber security department. We plan to have a login system for our users and keep their usernames and passwords encrypted and hidden. With Catherine's knowledge of Cyber Security, we will be able to do just that.

**Max:** Computer Science major, He will be designing the backend of our app. He mentioned that he didn't like art or design so we decided that backend development would be suitable.

**Charles:** Computer Science major, He will be in charge of the database that is going to be implemented to store our data. He plans to use SQLite in combination with Swift to store our data efficiently.

**Joey:** Computer Science major, He will be working on the front end and UI of our app. We have decided to give him this position because he is familiar with UI construction from previous classes.

**Advisory Overview:**

As of now, we have not yet found an advisor for our project. However, Max had an internship at Bently Nevada over the summer so we plan to get an advisor from there. This will give us someone who has worked in the field of software engineering to help guide us along our development stages.

**A note on how you expect this project will help your professional growth**

We think that this project will be a massive learning experience for us. Not one of us knows how to code in Swift or has ever made an app before. Additionally, with the usefulness of this app, it may even become popular and impress future employers. Without a doubt, we believe that the knowledge we gain from making this app will aid our professional growth as computer scientists.

**3** **Market potential or Open Source Significance** (all teams, between 250 and 500 words).

**Market analysis**

As for market potential, if popular enough, it has the potential to increase the popularity of vending machines as an alternative to walking to stores for food. This would be especially popular in densely populated areas such as on campuses or in tourist locations as it allows for easy access to a snack disregarding extra walking to stores or the foreign interactions that you may encounter when touring. As for open-source value, the app would have open-source for crowdsourcing data and how to use that data to allow users to sort and filter objects. This would be interesting in the sense that it would be used as a lightweight mobile application versus the more heavyweight or desktop-based applications that you would expect to see that kind of functionality in. The proof of user interest comes from the number of downloads on both of the direct competitors. Both the “Box Locator” and “Vending Bizz” apps have over 10k downloads despite their poor reviews and limited functionality. With more functions and better usability our app could have better reviews and as a consequence, have more downloads and garner more interest from potential users.

**Competitive analysis**

For competing products, the play store has an app named “Box Locator” and the iOS store has an app called “The Vending Bizz.” Both of these apps tackle the base functionality of the app we’ve described above. Both apps collected their original set of vending machines from a database and, in the case of Box Locator, allowed for a very limited amount of filtering. Both of these apps would be considered direct competitors to our app as they attempt to provide the same functionality that we are offering.

**Competitive Advantage**

The innovation of our solution is what makes it better than the competition. It would be the features we add. The crowd-sourcing aspect of our solution versus the competition pulling from a database allows for up-to-date information on nearby vending machines. This allows for more accurate information on locations and what is inside the machines. This increase in information makes filtering far easier and more accurate. This filtering would also be far superior in areas of the world dominated by unique vending machines such as in Asian countries.

**4 Time Worked on Project Concept**

Maxwell Synard: Abstract/Summary & Market potential or Open Source Significance (2 Hours)

Charles Dunn: Main goals and objectives, Main functionality and characteristics, Intended audience (2.5 Hours)

Catherine Wedin: Key usability goals, Potential for further development/product enhancements, Challenges, and obstacles (2.5 Hours)

Joey Paschke: Technology description, Team overview, Advisory overview, A note on how you expect this project will help your professional growth (2 Hours)