

Requirements Documentation:

Corvallis Reuse and Repair Directory

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1. Introduction

1.1 Purpose

The purpose of this report is to specify and define the functional and non-functional requirements for creating the Corvallis Reuse and Rebuild Directory Android application. This document will explain the overall purpose of the application, as well as each required feature, how well each feature must perform, and how the application will respond to the outside input of a user.

1.2 Product Scope

The product will display participating businesses in Corvallis and the surrounding areas that take reusable items that can be sold to the public as used items, or take and repair items. The product will allow the public to view a list of categories and, upon selection, connect the user with the information of businesses that will take the item for the above purpose. The product will display this information in the form of a map with points to the user. These points will provide further business details to include the business address, web page, and contact information where applicable. Additionally, a link to Republic Services will be clearly provided by the application in the event that the item is beyond repair or reuse but may qualify for recycling.

The goal of the application is to connect individuals in Corvallis and Corvallis' outlying areas to businesses that will reuse, repair, or recycle the item selected by the user.

The application is being developed for the Android operating system.

1.3 References

For more information about the Corvallis Sustainability Coalition visit:

<http://sustainablecorvallis.org/>

<http://www.republicservices.com/>

2. Overall Description

2.1 Product Purpose

The Corvallis Reuse and Rebuild Directory application will replace the current paper directory used by individuals in the community. Further, a web portal is provided to the Corvallis Sustainability Coalition to maintain the list of participating businesses and their contact information.

2.2 Product Functions

A high level summary of functional requirements for the Corvallis Reuse and Rebuild Directory application are as follows:

- Application - Provide a link to the Republic Recycling Depot to provide information about:
 - Acceptable recyclable items
 - Acceptable curbside recyclable items
- Application - Will display categories of items for reuse or repair
- Application - [Category selected] Will provide a list of businesses that accept that category of item.
 - This information will be delivered from a SQL database.
- Application - [Category selected] Toggle between list and map view.
 - Map view displays a map with points of all business locations and data for the selected category.
- Web Portal - Will provide a global web-based interface to manipulate the business database and associated information.
 - Must integrate with the Corvallis Sustainability Coalition's web hosting environment.
- SQL Database - Will house all business and associated data for use in the Application.

2.3 Operating Environment

The mobile application will run on the Android platform running KitKat Android 4.4.2 - API 19 and above. All phones and tablets that support this Android version or greater will be able to run the application. The phone itself will need internet capabilities to run the application to its full potential.

The mobile application is to be developed via the Xamarin tool on Microsoft Visual Studio. the testing environment will use a local emulator of the Nexus 4 phone and Nexus 10 Tablet running the above minimum Android API.

The database of businesses and their associated data (e.g. location, contact, and accepted item categories) will be globally accessible for upkeep via a web portal. The web portal will be hosted by the client's hosting environment from GoDaddy. The team is in contact with the client to determine available languages the Dev team may use to ensure seamless integration of the web portal code to the GoDaddy environment.

The final general facet to the product will be the database housing the business data for use by the application. The team is subject to what is available by GoDaddy and therefore, the team will be utilizing a SQL relational database for this product. While a NoSQL would be preferred to allow for a more agile evolution of the database. However, using a SQL database for development will afford a more seamless integration of the code to the client.

3. Functional Requirements

3.1 Mobile Android Application

3.1.1 Installation

A user may download the Android Application from the distribution store for that platform.

3.1.2 Availability

The application will require an initial download of Item Category and Business Data. This download will require a phone to have internet capabilities and be within network service.

This will be a single, local file to serve a twofold purpose. The ability to have limited data while in offline mode, and speed of operation. If the user does not have network, the application will still have limited functionality of displaying Item Categories and displaying selected Business associated data (address, contact, web page). The local file enables the app to have local use of the data and limit the number of server calls for file data.

The application will do an initial check of database versions to ensure its internal records are up to date. If the network is not available, the application will continue to run on the last loaded Business and Category data.

3.1.3 Accessibility

The application will not require user login data as no personal information will be necessary to access the Business and Categories databases.

3.1.4 Navigation (Main Activity)

The user will be presented with 2 options on the main activity which will then direct the user to sub-options regarding the actions they require for their item.

- Recycle My Item (Directed to an activity containing the following links)
 - Recycling Facility Address and Contact Information
 - Recycling Facility Accepted Items List [External Link]
 - Link to Republic Recycling Depot indicating acceptable items: directed to external website for Republic Recycling Depot
 - Curbside Containers Accepted Items List [External Link]
 - Link to Republic Recycling Depot indicating acceptable items: directed to external website for Republic Recycling Depot
- Donate My Item
 - Directed to the List of Item Categories accepted by various participating businesses.
 - Activity List View populated with all accepted Item Categories (See Section 3.1.5).

3.1.5 Navigation (Item Category Selection)

The user selects Donate My Item from the Main activity and is directed to the List View populated by all accepted Item Categories from various participating businesses. From the selected Item Category, the user is directed to a List View of businesses that accept the selected Item Category. A toggle option is available to switch from List View to Map View. From the selected business, the user is given the business name, associated data (address, contact, web page). A link to the Map View populated by this business is also provided on this activity.

Optional Feature: Supply the phone's map application (Google Maps) with the current location and the destination for step-by-step directions to the business selected

Breakdown:

- Category Activity: Populated by all accepted Item Categories
- List view row contains: Name, [icon] optional, [examples] optional
- Business Activity: Populated by only businesses that accept the selected Item Category
 - List view row contains: Business Name, City, Hours of Operation
 - Activity contains: A toggle to switch from List View to Map View
- Selected Business: From either the List or Map Views, selection of a business provides the following:
 - Business Name
 - Business Data (Address, Contact Data, Web Page)
 - Optional Feature: Link to Google Maps App for Directions

3.2 Map Display Functionality

3.2.1 Source:

When Map View is toggled, the application will make a request to the Google Map API

3.2.2 Display:

The application will show a map of points for all business locations populated based on user's selected Item Category. These points will display the Business name, Contact information, and web site where applicable.

The location of the map will be centered on the phone's current GPS location.

Optional Feature: Each business point will also have a "Directions" link that will supply the phone's current location and the selected business address for the Google maps application. This will provide 1 click step-by-step directions to the selected business.

3.3 Database

3.3.1 Database Type:

The product will utilize an SQL database for housing the Business list and associated business data. A scheme will be made available to the Client for the purpose of duplicating the database structure if desired.

3.3.2 Manipulation/Maintenance:

Upkeep and maintenance of the database will be made available via the Web Database Management Web Portal discussed in the later Section 3.5.2.

3.4 API

3.4.1 API Accessibility:

The API will be available for consumption only. The ability to retrieve data from the Business database for use by the user. No manipulation of data within the database will be made available via the API.

3.5 Web Database Management (Web Portal)

3.5.1 Login/Authentication:

Authorized personnel login to the web portal. This is accomplished via a defined username and password. Per the client, this is sufficient for the product.

3.5.2 Database Management:

UI options (buttons/links) for adding, deleting, editing business entries to the database.

Adding an Entity: A UI for data entry of a new business and associated data to be added to the database.

Deleting an Entity: A UI to select a business and delete it and all associated data from the database. A confirmation of deletion must be accepted prior to full removal of an entity from the database.

Editing an Entity: A UI where the user will select a business already in the database for editing. The editing fields will be populated with the existing data. The user will edit any data required. Prior to submitting the changes to the database, the page will check the data is indeed changed, else it will not send a request.

4. Nonfunctional Requirements

4.1 Performance Requirements

4.1.1 Web Portal:

The management website will allow for at least two concurrent users in separate sessions.

4.1.2 Mobile:

The application should be accessible by the population of Corvallis at the same time.

4.2 Security Requirements

4.2.1 Web Portal:

Each login will require a username and be password protected, with a minimum password of an alpha-numeric mix. The user will be blocked until the correct password is entered, with no maximum allowances.

4.2.2 Database:

The API will be utilized to access the database to ensure the integrity of the data.

Prepared statements will be used to aid in the prevention of injection attacks.

4.3 Other Software Quality Attributes

4.3.1 Availability:

The web portal should be accessible at all times when the internet service provider's services are available. The mobile application should be available at all times when a connection to the internet is established. The database should be accessible at all times the database provider is accessible, however accurate and updated information will only be available to users upon submission of the updated fields.

4.3.1 Maintainability:

The database should be easy to update with current information without a complete rewrite of the software. Preferably this would allow out-of-date client software to access and display correct data.

4.3.1 Portability:

The software may only need to be portable enough to run on both phone and tablet variations of Android OS.

4.3.1 Reliability:

The software should display accurate and up-to-date information. The map should also be reliable in providing the closest number of locations. Access to the database should be available over 99% of the time.

4.3.1 Usability:

The UI should be intuitive and quick to understand without training and minimal tutorials. A new user should be able to search for businesses within five minutes. A new user should be able to update the database from the web portal within five minutes.