# Corvallis Reuse and Repair Directory
# Software Design Document

**Version <1.0>**

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**CS419-400-W16**

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|---|---|
| Corvallis Reuse and Repair Directory | Version: <1.0> |
| Software Design Document | Date: 2016-01-17 |
| SDD-CRRD | |

# Table of Contents

# Section 1 - Overview

## 1.1 Purpose

To provide the Corvallis and outlying community a way to easily locate businesses that will:

- Take reusable items that can be sold to the public as used items, and;
- Take and repair items

The Reuse and Repair Project will allow the public to view a list of categories and then click and go to a list of businesses that take those items. The Reuse and Repair Project will provide a map showing where the businesses are located and their web page if there is one, phone number, address, and hours of operation. It will also, for the sake of convenience, provide a link to the local company (Republic Services) responsible for collecting recyclables so the public knows what items can be recycled in case their items are unusable and unrepairable.

## 1.2 Scope

The Project will consist of 3 modules. The database is to be an SQL database. The database will adhere to requirements for integration with the Client's web host. The database will be maintained via a web portal that is accessible globally. The portal will be written in HTML5 and connect to the SQL database via PHP. The user's interface to the data will be the Android application. the application will be developed via Xamarin and written in C#. It will display and navigate the data as stated in section 2.1.

# Section 2 - Project Description

## 2.1 Project

Corvallis Reuse and Repair Directory

## 2.2 Description

The Project has 3 modules: SQL Database, Web Portal, Mobile App (Android) for the purpose described in Section 1.2.

### 2.2.1 SQL Database

This module will use an SQL Relational database to house the Business and Category data for the project. The SQL database was chosen for its seamless integration into the Client's web host of choice, GoDaddy.com.

### 2.2.2 Web Portal

The Web Portal is a global access conduit to the SQL database stated in section 1.2.1. The web portal provides a means to maintain the database. It will have 3 major functions:

- Add - Adding a new entry into the database
- Edit - Edit an existing database entry
- Delete - Delete an existing database entry

The Web Portal will be run on the Devopera Linux Apache MySQL PHP virtual machine during creation. This will duplicate the CentOS 6 Linux server, as well as PHP version 5.3 and MySQL 5.5.

### 2.2.3 Mobile Application (Android)

This module will be the user's access to the database in section 2.2.1. This access will be read only for use by the Android application. This module enables the user to filter and navigate through the data provided from the SQL database in order to fulfill the purpose described in Section 1.1.

In Short, this application module will filter businesses based on categorical selection. The filtered list will enable the user to select a business and view its address, contact information, and web address if available. The user will then use this information to deliver accepted goods for reuse and/or repair per the purpose described in section 1.1.

## 2.3 Revision History

| Date | Comment | Author |
| --- | --- | --- |
| Jan/17/2016 | Initial Version of Document | Group 4 |
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| | | |
| | | |
| | | |

## 2.4 Requirements

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
  - Will display categories of items for reuse or repair
  - [Category selected] Will provide a list of businesses that accept that category of item.
    - This information will be delivered from a SQL database.
  - [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.

### 2.4.1 Time Estimates / Milestone Dates Matrix

| # | Description | Hrs. Est. | Date Due | Complete |
|---|---|---|---|---|
| 1 | **SQL Database** | 13 | | |
| 1.1 | SQL Schema | 3 | Jan-24 | X |
| 1.2 | SQL Database Built, Operational | 5 | Feb-7 | |
| 1.3 | Serialize DB in XML format for App API | 5 | Feb-14 | |
| 2 | **Web Portal** | 14 | | |
| 2.1 | PHP connection to DB | 5 | Feb-14 | |
| 2.2 | UI | | | |
| 2.2.1 | Authentication Page / Connectivity to DB | 3 | Feb-21 | |
| 2.2.2 | DB Maintenance Page / Connectivity | 6 | Feb-28 | |
| 3 | **Android Application** | 16 | | |
| 3.1 | Recycle links | 1 | Jan-24 | X |
| 3.2 | Display URL / URL files | 3 | Jan-31 | X |
| 3.3 | GET DB serialized XML / Parse for Use | 1 | Feb-21 | |
| 3.4 | Custom List View Android Activities | | | |
| 3.4.1 | Category Custom List View Activity | 3 | Feb-21 | |
| 3.4.2 | Business Custom List View Activity | 3 | Feb-21 | |
| 3.5 | Google Maps API - Display Business Points | 5 | Feb-28 | |
| | **TOTAL:** | 43 | | |

### 2.4.2 Traceability Matrix

Populate this table with our requirements and the following: In Queue, Assigned to [Name], or Completed.

SQL – SQL Database Module
WP – Web Portal Module
APP – Android Application Module
In Queue – The requirement is in queue awaiting a developer to work the task
Assigned [Name] – requirement is assigned to the developer
Complete – The requirement has been completed and tested

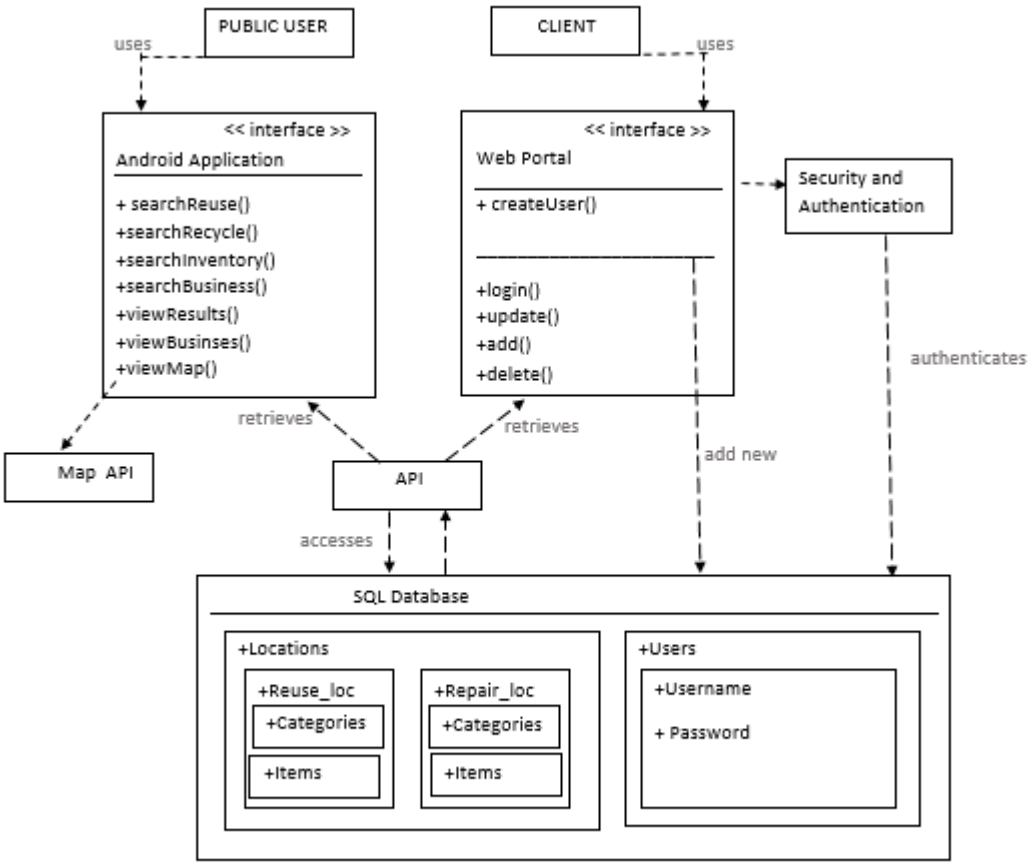
| # | Description | Date Due | Status |
|---|---|---|---|
| 1 | **SQL Database** | | |
| 1.1 | SQL Schema | Jan-24 | Complete |
| 1.2 | SQL Database Built, Operational | Feb-7 | Assigned to Josh |
| 1.3 | Serialize DB in XML format for App API | Feb-14 | In Queue |
| 2 | **Web Portal** | | |
| 2.1 | PHP connection to DB | Feb-14 | Assigned to Tara |
| 2.2 | UI | | |
| 2.2.1 | Authentication Page / Connectivity to DB | Feb-21 | In Queue |
| 2.2.2 | DB Maintenance Page / Connectivity | Feb-28 | In Queue |
| 3 | **Android Application** | | |
| 3.1 | Recycle links | Jan-24 | Complete |
| 3.2 | Display URL / URL files | Jan-31 | Complete |
| 3.3 | GET DB serialized XML / Parse for Use | Feb-21 | In Queue |
| 3.4 | Custom List View Android Activities | | |
| 3.4.1 | Category Custom List View Activity | Feb-21 | Assigned to Steve |
| 3.4.2 | Business Custom List View Activity | Feb-21 | In Queue |
| 3.5 | Google Maps API - Display Business Points | Feb-28 | In Queue |

# Section 3 - System Architecture

The Web Portal is built with HTML, JavaScript, and PHP with a Bootstrap framework. The client for the Web Portal will have access to the user section of the database for purposes of logging int. Beyond the scope of logging in and receiving error notifications regarding incorrect login selections, all other database operations are protected. At a future point, additional security measures through a third party API may be utilized.

After a successful login, the user will have access to the add, edit, and delete functionality. Each query will be directed to the database. The user interface is made as simple as possible, with visual recognition over memorization emphasized for increased usability. The requests will be made through an API, written to PHP per customer need, which may utilize a framework for ease of routing.

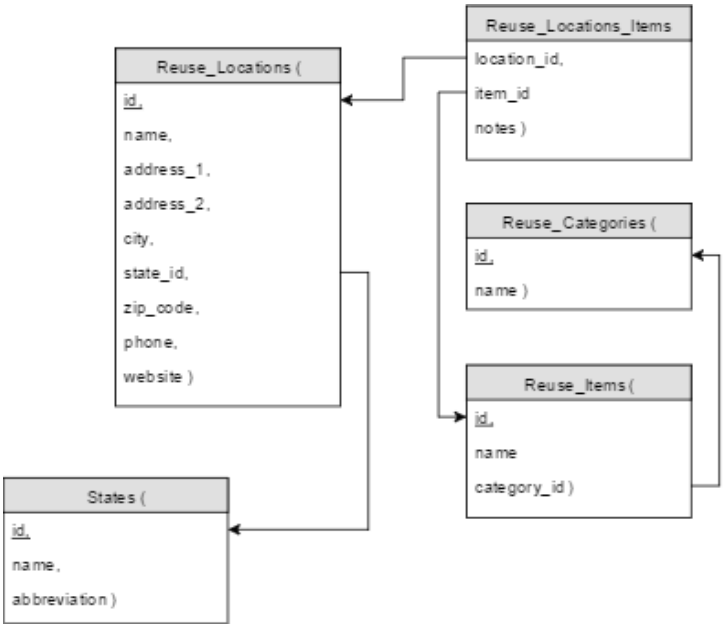
The Android application will also access the database through the API. The android user will only have the ability to view information from the database, in order to protect the integrity of the data. The viewing functionality will further be broken down into search requests for information, and for viewing specific information. Furthermore, the Android application will also have access to a third party Map API in order to provide location assistance.



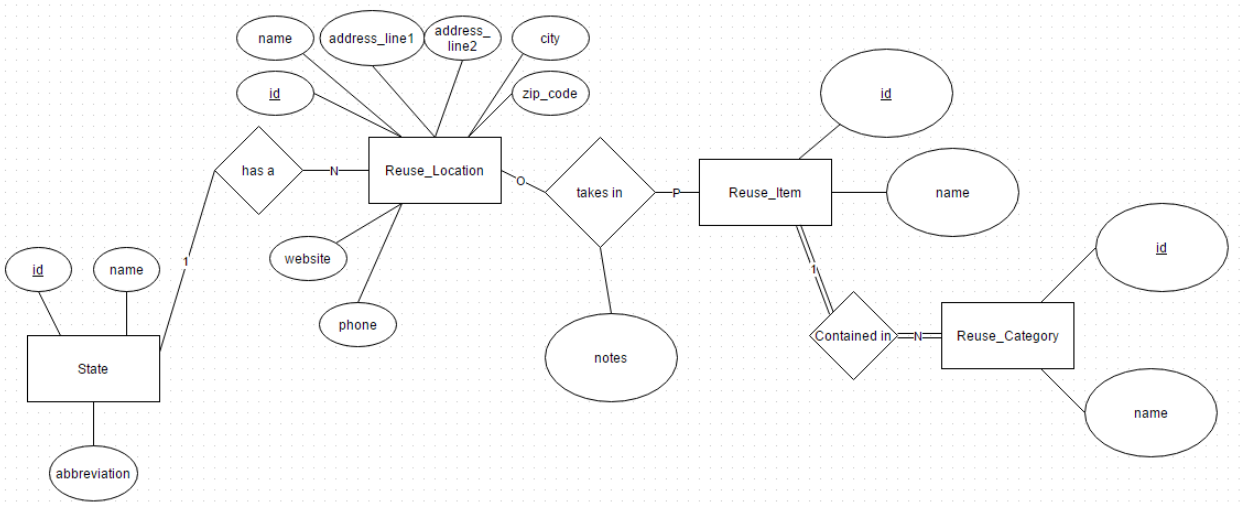
# Section 4 - Data Design

The SQL Relational Database will contain two separate sections. The first, and most basic section, will contain the user information for an authenticated login for web portal access. Each user will have a name and password, string input type, that are stored. The name and the password must match in order to gain access to the web portal features.

The next section contains the actual tables used for querying data about the local businesses. Below is a schema that indicates the table structure for queries:




The relationships between the entities can further be illustrated by relationship:



# Section 5 - User Interface Design

## 5.1 User Interface Design Overview

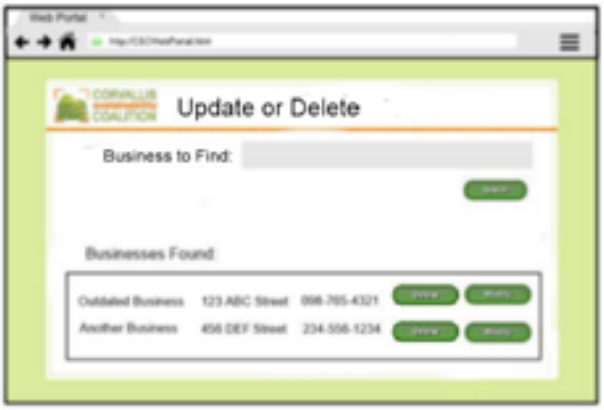
### 5.1.1 Web Portal Prototype:


User Login Screen

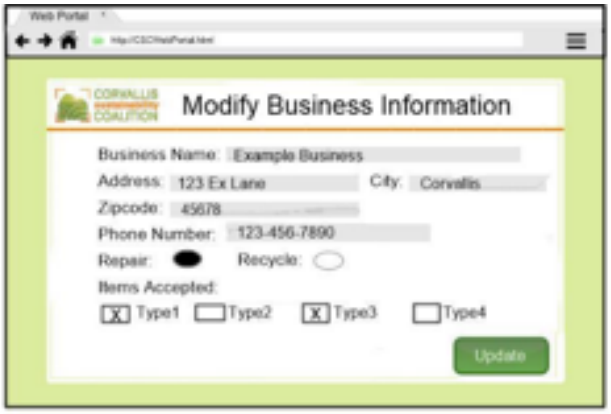

Error Notification on Screen


Add to or Change Database


Add Business Info



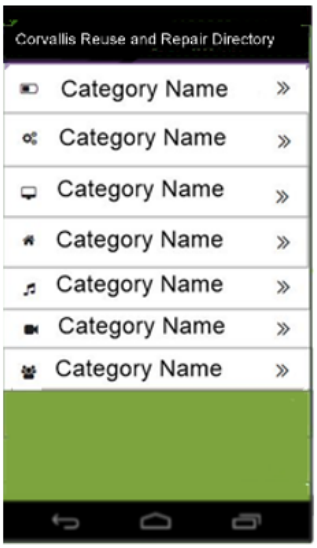

Search for Business to Modify and Select "Edit" or "Delete"

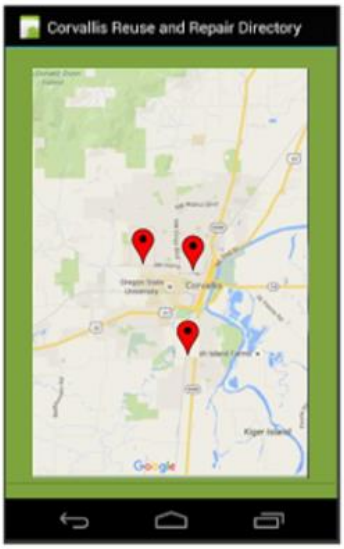



Add Updated Business Information

## 5.1.2 Android Application Prototype:



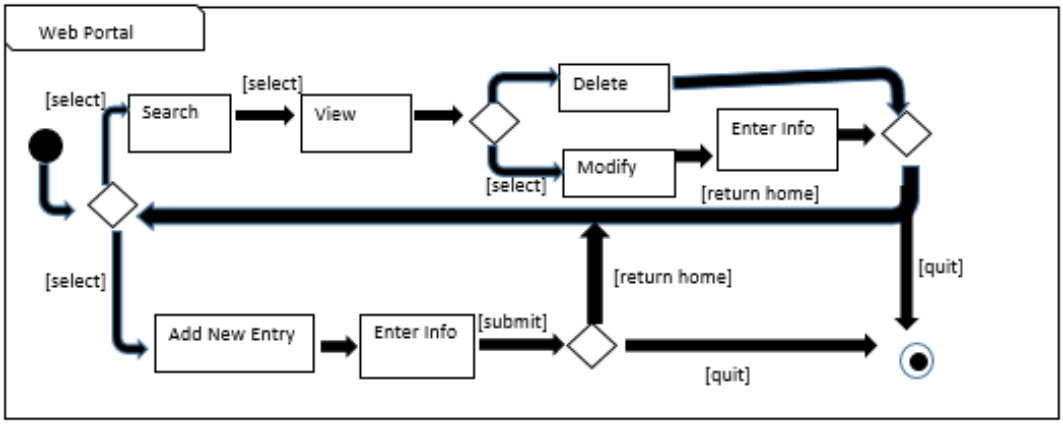


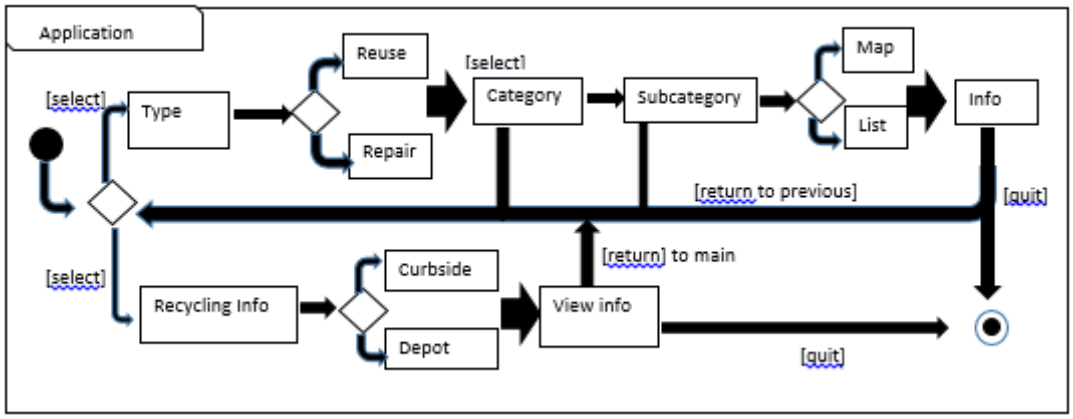


## 5.2 User Interface Navigation Flow

Diagram the flow from one screen to the next:



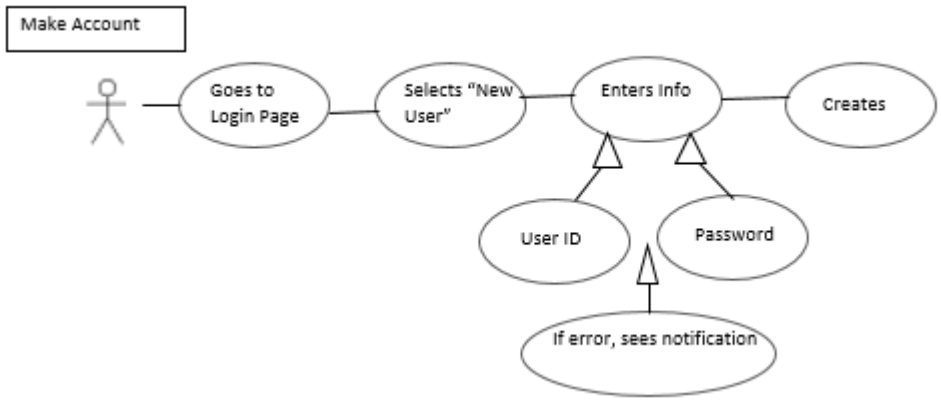

After successful login the user will be directed to the main page. At this point, the user will be able to elect to add a new business or search for a business to modify or delete. Upon adding a business, the user will be able to enter all relevant fields and elect to quit or return to the main page. Upon selecting modification or deletion, the user will be able to search for a business and view possible matches. The user will select to edit or delete. If editing, the user will enter new information and then quit or return to home. If deleting, the user will return to home or quit.




The user will begin on the main screen, where they can elect to view recycling information or to search for a business. If recycling information is selected, they can choose to select curbside or depot recycling and view the relevant information for each. If searching for a business is selected, the user will indicate if they wish to reuse or recycle, and then proceed through a category search until business information is available. At this point, the user will be able to possible businesses in text and, if possible, on a map. Once a business is selected, business information will be available in written and map form. The user may quit or, at any time, return to the previous page.

## 5.3 Use Cases / User Function Description

### 5.3.1 Web Portal Use Cases



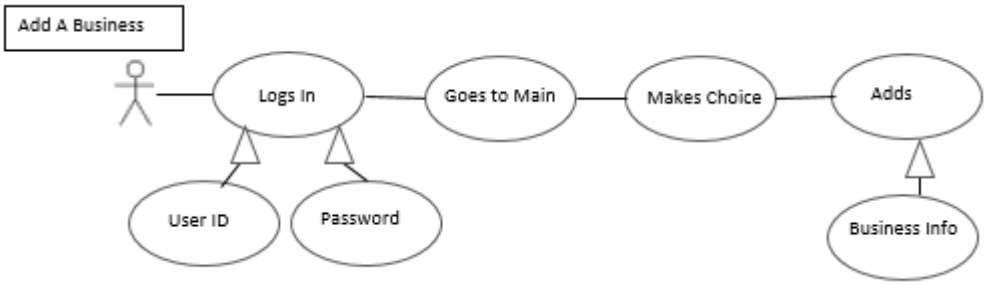

**Use Case Name**: Make an Account

**Actors:** Corvallis Sustainability Coalition User

**Preconditions:** User has no previous account information

**Post-conditions:** User will have a name and password stored in the database. The user will be allowed access to the web portal pages.

**Normal Flow:** The user will go to the login page. The user will select the “New User” creation link. The user will enter username and password. If the username or password is already taken or incorrect, the user will be notified. The user will be redirected to login page and the account will be successfully created.



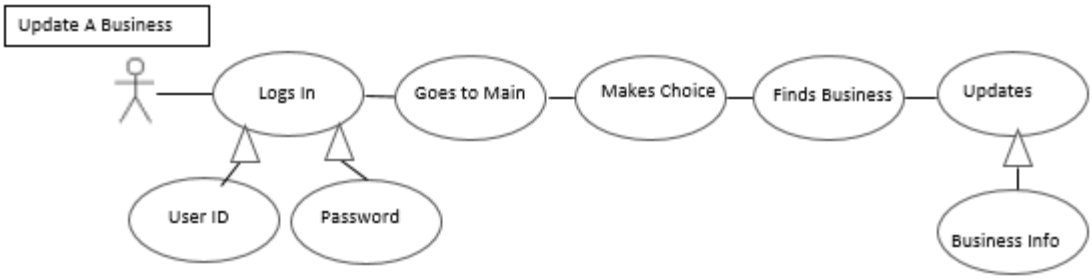

**Use Case Name**: Add a Business

**Actors:** Corvallis Sustainability Coalition User

**Preconditions:** User has a valid account for access

**Post-conditions:** New business information will be stored in the database.

**Normal Flow:** The user will go to the login page. The user will be directed to the main page. The user will select to add a business. The user will enter all business info requested. The user will submit the information to the database.



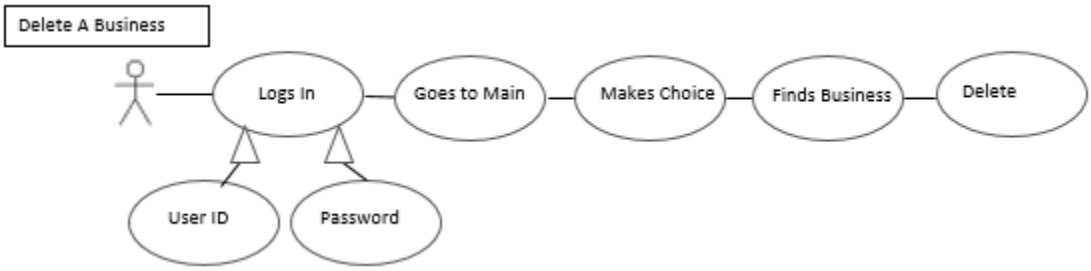

**Use Case Name**: Update a Business

**Actors:** Corvallis Sustainability Coalition User

**Preconditions:** User has a valid account for access

**Post-conditions:** Updated business information will replace old data in the database for that business.

**Normal Flow:** The user will go to the login page. The user will be directed to the main page. The user will select to update a business. The user will select the business. The user will enter all business info requested. The user will submit the information to the database.




**Use Case Name**: Delete a Business

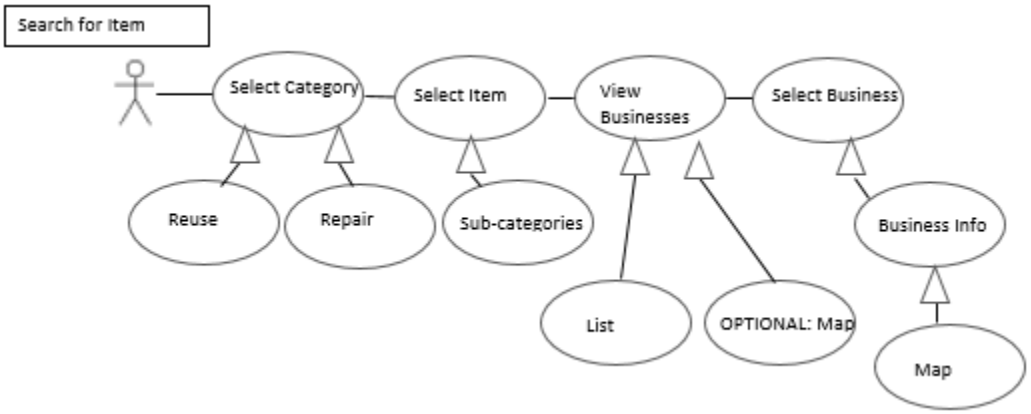
**Actors:** Corvallis Sustainability Coalition User

**Preconditions:** User has a valid account for access

**Post-conditions:** All data for the selected business will no longer be stored in the database and accessible to users.

**Normal Flow:** The user will go to the login page. The user will be directed to the main page. The user will select to delete a business. The user will search and select the business to delete. The user will submit the request to the database.

### 5.3.2 Application use Cases



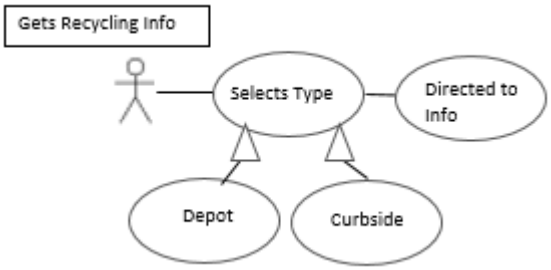

**Use Case Name**: Search for an Item

**Actors:** Public user

**Preconditions:** Application is installed on Android device

**Post-conditions:** Business information that matches the user request is displayed to the user

**Normal Flow:** The user will begin on the main application screen. The user will select to reuse or repair an item, and then select the appropriate category and subcategories that match their item. The user will elect to view businesses in a list or, if possible, a map format. The user will select a business to view contact information and map information.




**Use Case Name**: Obtain Recycling Information

**Actors:** Public user

**Preconditions:** User has the application installed on an Android device

**Post-conditions:** User is directed to curbside or depot recycling information, as appropriate per request

**Normal Flow:** The user will begin on the start application screen. The user will elect to view recycling information. The user will select curbside or depot information. The user will be redirected to the corresponding information.