PromoPass

October 1, 2015

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Contents of Requirements

Change History

Date	Name	Summary
9/7/2015	Fenda Truong	Initial writeup
9/11/2015	Jessica Covington	Four Activity Diagrams added
9/13/2015	Lindsey Sexton	Four Activity Diagrams added
9/15/2015	Fenda Truong	Three Activity Diagrams added
9/21/2015	Fenda Truong	Non-Functional Requirements added
9/21/2015	Fenda Truong	Functional Requirements added
9/21/2015	Anna Marthinsen	Use case diagram updated
9/21/2015	Anna Marthinsen	Three Activity Diagrams and Class Diagram added
9/21/2015	Anna Marthinsen	Functional Requirements added
9/21/2015	Lindsey Sexton	Introduction added
9/21/2015	Jessica Covington	Add to the Project Description
9/21/2015	Jessica Covington	Activity Diagram description added
9/21/2015	Jessica Covington	Key Definitions added
9/29/2015	Lindsey Sexton	Formatting, Goals updated
9/30/2015	Anna Marthinsen	Functional Requirements Rewritten
10/1/2015	Anna Marthinsen	Formatting/Grammar
10/1/2015	Fenda Truong	Nonfunctional Requirements updated
10/1/2015	Anna Marthinsen	Expand on Activity Diagrams

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1. Introduction

1.1 Motivation/Purpose

The motivation for doing this project is to learn how to use the Android Studio environment and new APIs in order to develop a practical application. By using this software, the Promo*Pass* team hopes to gain as much experience as possible, which will be advantageous in other areas of computer science. The team also hopes to improve collaboration and cooperation in order to develop a functioning, viable product.

The purpose of the PromoPass project is to develop software that will allow small businesses to pass information onto interested Consumers. Businesses need an efficient way to share information with their customers. Currently, businesses use flyers, billboards, and sandwich boards on sidewalks outside of their stores to advertise to passersby. This form of advertising limits stores to one design that is a hassle to update and redesign, and would also be viewed for a limited amount of time. With PromoPass, businesses will get dynamic advertising for a one time fee as well as the ability to reach their customers directly through their mobile devices. PromoPass offers a convenient way for Consumers to receive and store promotional information all in one place.

The purpose of this document is to provide details and information to aid the developers of the Promo*Pass* project. It contains UML diagrams, functional and nonfunctional requirements, and program features that will provide a more complete vision of the future of the project.

1.2 Scope

Promo*Pass* will be focusing on small businesses, such as those on the Strip on University Boulevard. This project will use the Gimbal Device's Bluetooth capabilities to send Notifications (Ads) to various Consumers that pass by registered Providers. The main purpose of the Promo*Pass* app is to allow Providers to create Ads and to display those Ads to Consumers who are nearby. These are attainable goals for the project this semester, as well as allowing Consumers to manage preferences and allowing Providers to manage their Ads.

1.3 Goals

Team Goals:
1. To work as a team to develop a functioning, viable product
2. To have a proof of concept for the users

App Functionality Goals:

Stages	Features
Stage 1	Providers create Ads. Consumers view Ads.
Stage 2	Consumers manage preferences. Providers manage Ads.
Stage 3	List of Providers regardless of location. Ad history for Providers.
Stage 4	Profit tracking for Providers. Multiple Gimbal Devices per Provider account. Portability for Consumers.

The primary goal for the semester is to work together to complete stages 1 and 2 and attempt stage 3 if time permits.

In order to have a functioning, viable product, the Providers must be able to create and manage Ads, and the Consumers must be able to view Ads and manage their preferences. Also the project will hopefully allow Consumers to view Providers' Ads regardless of their location and allow Providers to view their Ad histories. The app produced through the completion of these stages will serve as proof of concept for Promo*Pass* users.

Stage 4 does not seem to be in the scope of the time frame for this semester. The future goals include allowing Providers to track how certain Ads correspond to profit variations and allowing Providers to register multiple Gimbal Devices for one account (e.g., if a Provider owns multiple businesses). The current plan is to store Consumer information locally on the Consumer's device without requiring them to log in to the app. Another future feature would be to provide portability for customers through the use of login accounts, but this is also outside the scope of the semester project, and the implementation and planning for these future goals are not mentioned in this document.

1.4 Potential Risks

1. The biggest risk to this project is being unable to understand and manipulate the Gimbal API. In response, the project requires plenty of time to test the Gimbal Device.
2. Similarly the Android environment may present technical problems, and it also has a learning curve. Education on Android also requires invested time.
3. The integration and utilization of different programs, languages, and databases may prove difficult and take a considerable amount of time.
4. Other classes and work pose a risk of running out of time, so time management is key to completing the project.
5. A low risk is that one of the team members decides to drop out of college. Since this is the senior year for all team members, no risk management besides creating a good team environment is necessary.

1.5 Key Definitions

1. **Gimbal Device:** A low-cost, low-energy Bluetooth beacon that can send secure transmissions up to a 50-meter radius
2. **Providers:** Small businesses on the Strip on University Boulevard
3. **Consumers:** Visitors and locals looking for new, fun activities
4. **Notifications:** An Android notification sent to the Consumer
5. **Ads:** Promotional pages of information created and sent by Providers and viewed by Consumers
6. **Ad Template:** A variety of pre-formatted templates, which the Provider will populate with their own promotional information. The format of the templates will be created by the developers of Promo*Pass*
7. **Web-Based Interface:** A web-based interface from which Providers will populate their Ads
8. **Mobile Application:** The application from which the Consumer receives the Ads and views them
9. **Bluetooth Low Energy:** an innovation in Bluetooth communication. This type of signal transmits at 300 pulses a second rather than constantly, significantly reducing the consumed battery power of a mobile device.

2. Project Description

The Promo*Pass* system is split into two component parts: the Mobile Application, which displays the advertisements and events to the Consumers via a Notification to the user's smart device, and the web-based interface that allows the Providers to populate an Ad Template with their promotional information. These components act in tandem to create an environment where Providers can achieve a low cost method of sending out information about their business and Consumers are able to stay up-to-date about events and deals going on in their surrounding area.

2.1 Web-based Interface

The purpose of the Web-Based Interface is to give the Providers and easy and clear way of creating their Ads. Providers would navigate to this web page and either sign up or login. If they are new to Promo*Pass*, they will need to create an account and register their Gimbal Device; otherwise, they will just login. Once they have logged in, Providers can then create a new Ad, modify an Ad, or view their Ad history.

2.1.1 Create Ad

Once Providers have logged into their account, they will have the option to select an Ad Template and then populate that template with their data.

2.1.2 Modify Ad

After Providers have logged in, they will have the option to modify their current Ad. During this process, Providers can choose to change the Ad Template or Ad information.

2.1.3 View Ad History

Providers can see all the Ads they have ever created. The Ad history consists of archived Ads. Archived Ads are created whenever the Provider creates a new Ad, archiving the old one in the process.

2.2 Mobile Application

The main purpose of the Mobile Application will be to notify Consumers that they are near a gimbal-infused business by sending them a Notification. The Consumers can click on the Notification if they wish to see the particular Ad, or they can swipe and clear the Notification from their screen if they do not wish to view it at that moment in time. If the Consumers choose to view the Notification, they will be taken to a list of all nearby

Providers. Once they have selected the Ad for which they want to see, they will have the option to dismiss the Ad, Save Ad, Favorite Provider, Block Provider, or exit.

2.2.1 Nearby Providers

Nearby Providers is a listing of all Providers of whom the user is in range. This is the basis of how the app works: if Consumers are within range, then the app will send them an Ad.

2.2.2 Save Ad

Save Ad is the ability to store an Ad to view later. It enables Consumers to view the Ad even after the Provider creates a new one.

Once in the Ad, Consumers have the option to save an Ad for later viewing, such as when they are no longer near that particular Provider.

2.2.3 Favorite/Block Providers

This function gives the ability to organize how the Providers show up within the Notifications. This enables the Consumers to view Providers they like the most first and completely ignore those they dislike.

Once in the Ad, the Consumers will have the option to Favorite or Block that Provider. Favoriting a Provider ensures that that particular Provider will appear higher up in the nearby Provider listing. Blocking a Provider will keep that particular Provider from appearing in the Nearby List until such a time as the Consumers unblock the Provider.

2.3 Gimbal Integration

When Providers register on the Promo*Pass* website, the website will request that they buy a Gimbal beacon and register its Gimbal ID with the Promo*Pass* account. The Gimbal ID is required to use the Promo*Pass* system. Once they turn on the beacon, the beacon will emit the Gimbal ID through a Bluetooth Low Energy signal. The Promo*Pass* app on the Consumers' mobile device will interpret this signal and notify Consumers of the Provider in their area via a single Notification. The app will use the Gimbal ID from the signal to get and display Provider information from the Promo*Pass* database. How the app receives a signal can be programmed using the Gimbal API.

3. Functional Requirements

3.1 Android App

The following tables display the functional requirements for the Consumer side of the Promo*Pass* system. The View Ad section has a high priority because without the requirement the app would lack usability. The Manage Preferences section has a medium priority because without the requirement the app would lack ease of use. The List All Providers section has a low priority because it is not a part of the basic functions, but it would improve the Consumer experience.

3.1.1 View Ad

Requirement	Description
View Notification	The Consumer can view Provider information in a single Notification.
List Nearby Providers	The Consumer can view a list of the nearby Providers.
View Ad	The Consumer can view a Provider's current Ad.
Clear Ad	The Consumer can dismiss an Ad.

3.1.2 Manage Preferences

Requirement	Description
Filter Provider/Ad	The Consumer can search by Provider name or business type.
Favorite Provider	The Consumer can choose to prioritize certain Providers, sorting the list of Providers by priority and then alphabetically.
Block Provider	The Consumer can choose to never see a Provider again.
Save Ad	The Consumer can save an Ad to view at any time, even if the Ad is no longer current.
List Saved Ads	The Consumer can view and filter a list of the saved Ads.
List Favorite Providers	The Consumer can view and filter a list of the prioritized Providers.
List Blocked Providers	The Consumer can view and filter a list of the blocked Providers.

Unfavorite	The Consumer can remove a Provider from the prioritized list.
Unblock	The Consumer can remove a Provider from the blocked list.
Report a Problem	The Consumer can report a problem to the Promo*Pass* team.

3.1.3 List All Providers

Requirement	Description
List All Providers	The Consumer can view and filter a list of all Providers within a certain radius, not necessarily nearby.

3.2 Web Application

The following tables display the functional requirements for the Provider side of the Promo*Pass* system. The Create Ad section has a high priority because without the requirement the app would lack usability. The Modify Ad section has a medium priority because without the requirement the app would lack ease of use. The View Ad History section has a low priority because it is not a part of the basic functions, but it would improve the Provider experience.

3.2.1 Create Ad

Requirement	Description
Register	The Provider sets up an account with an associated Gimbal ID.
Login	The Provider can login to registered account.
Create Ad	The Provider can create a tailored advertisement.

3.2.2 Modify Ad

Requirement	Description
Modify Ad	The Provider can make changes to the current Ad.
Choose Template	The Provider can choose Ad Templates for creating and modifying Ads.
Edit Profile	The Provider can modify the account information and preferences.

3.2.3 View Ad History

Requirement	Description
View Ad History	The Provider can view previously created Ads.

4. Nonfunctional Requirements

4.1 Android App

4.1.1 Software Requirements

Requirement	Description	Priority
Bluetooth API	The system needs to use the Bluetooth API for Notifications.	High
Gimbal API	The system must use the Gimbal API to update the app depending on the current proximity to the Gimbal Device. This relies on the Bluetooth API.	High
Storing and Retrieving Data	The system must be able to take the Consumer's preferences and save them to a local SQLite database on the phone.	Medium
	The Android app must be able to receive information from the database of the server/web application.	High

4.1.2 General Requirements

Requirement	Description	Priority
Availability	The system needs to be able to work on Android SDK 4.4 (Jelly Bean) at the minimum to target the maximum amount of users while using recent API features	Medium
Response Time	The system needs to send new Notifications to Consumers once they have reached a Provider location quickly--in under 15 seconds.	Low
Extensibility	The system must be able to be built with extensible features in mind, to make way for further changes in the future.	High
Performance	The system should not cause a noticeable drain on battery life.	Low

4.2 Web Application

4.2.1 Software Requirements

Requirement	Description	Priority
Server	There will be a Linux server that will host all web application services.	High
Storing Data	The system must have a MySQL database hosted on the web application's server to store information such as Ads and Provider information that can be made available to the Android app.	High
	Database information must be able to be retrieved from the Android App on request.	High
Security	The system must make use of a secure login system using OpenID Connect that will be associated with Provider logins.	Medium

4.2.2 General Requirements

Requirement	Description	Priority
Security	The system must be secure to protect Provider profile and Ad information.	Medium
User Friendliness	It must be easy for the Providers to update their profile and Ad information.	Medium
User Friendliness	The web application must be responsive (viewable on a mobile device)	Low

5. UML Diagrams

5.1 Use Case Diagrams
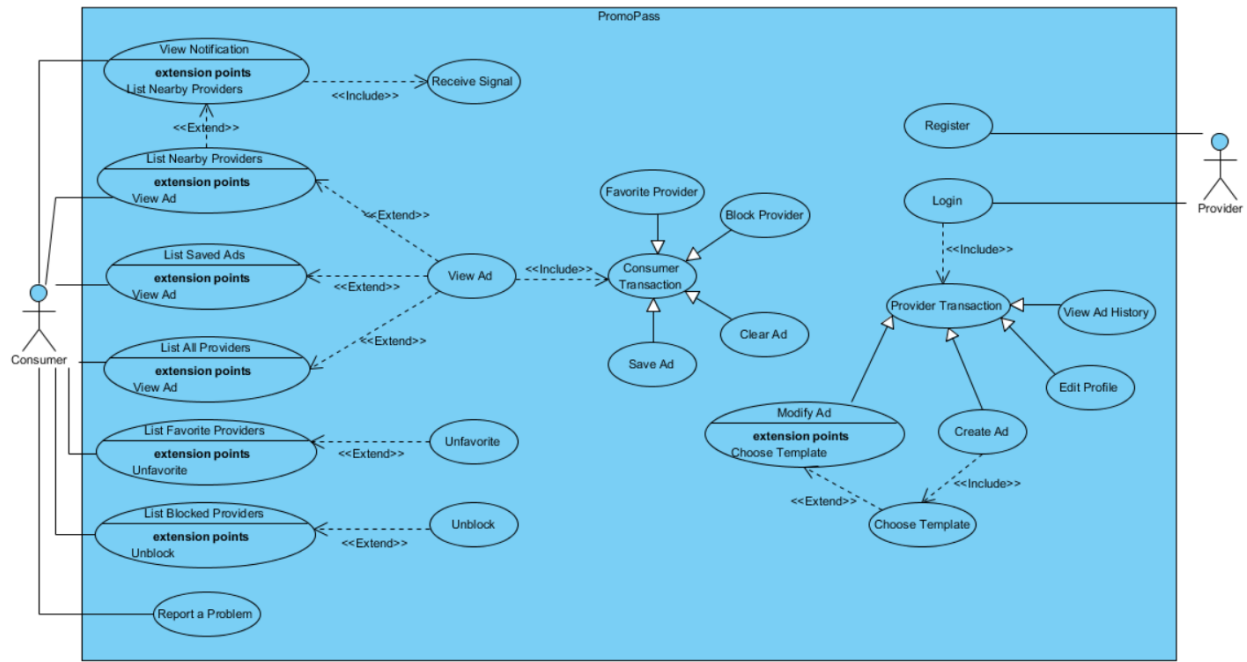
The diagram displays the use cases for the Provider and Consumer. The Consumer can transition between use cases through a main menu.

5.2 High Class Diagram
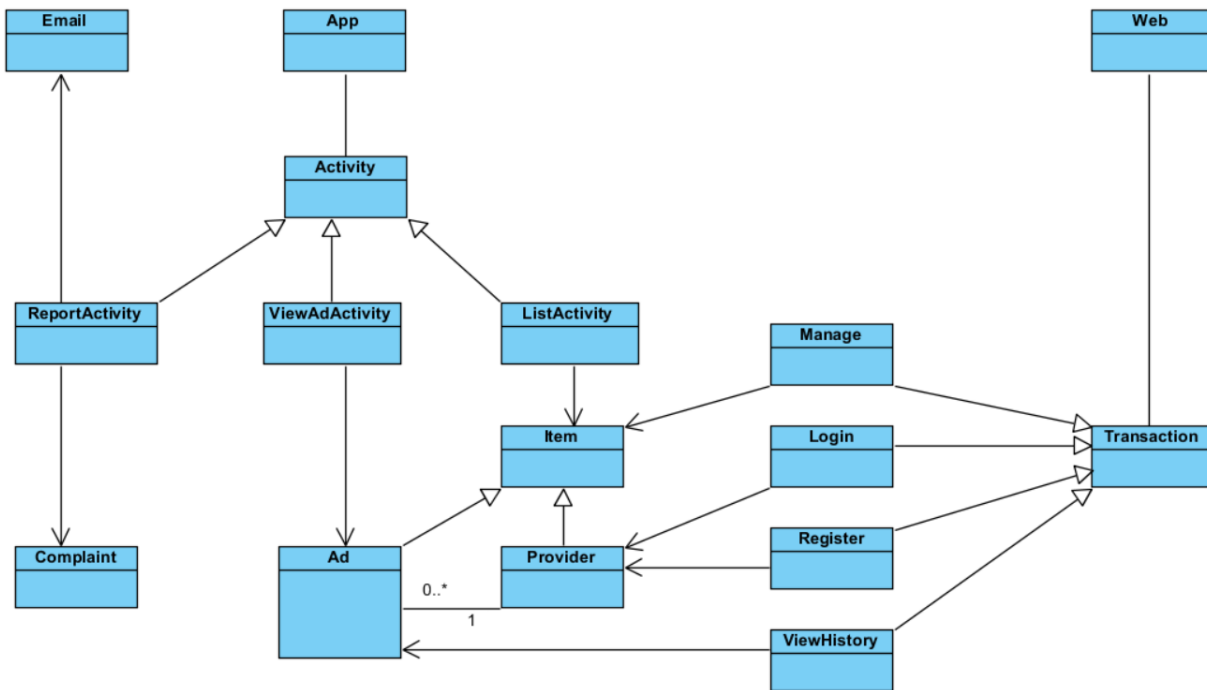
The class diagrams displays two main interfaces: the web and the app.

The Providers will use the web interface to make any transactions such as managing Ads or their profile, registering, logging in, or viewing the history of previously created Ads.

The Consumers will use the app interface to list both Ads and Providers, view Ads, and report a complaint. They will also be able to send complaints that will be emailed to the PromoPass team about any bugs or errors they encounter.

5.3 Activity Diagrams

1. List Nearby Providers
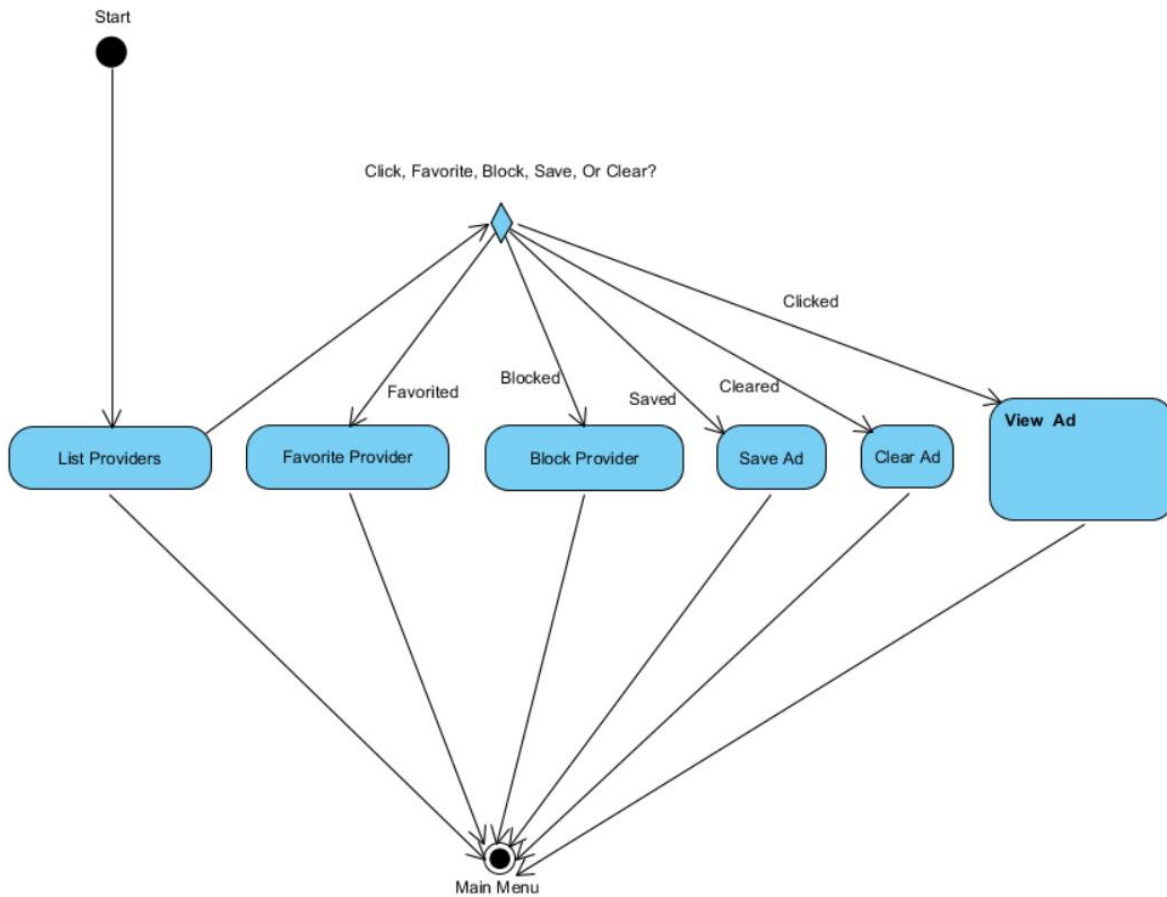
      This diagram gets the Provider information such as the name and type of business and displays that information in a listed format. From this screen, the Consumer has the choice to favorite or block the Provider, save or clear the Ad, view the Ad, or simply exit the app. In order to give the most convenience to the Consumer, these functions have been provided both when Providers are listed and when an Ad is viewed.

2. View Notifications
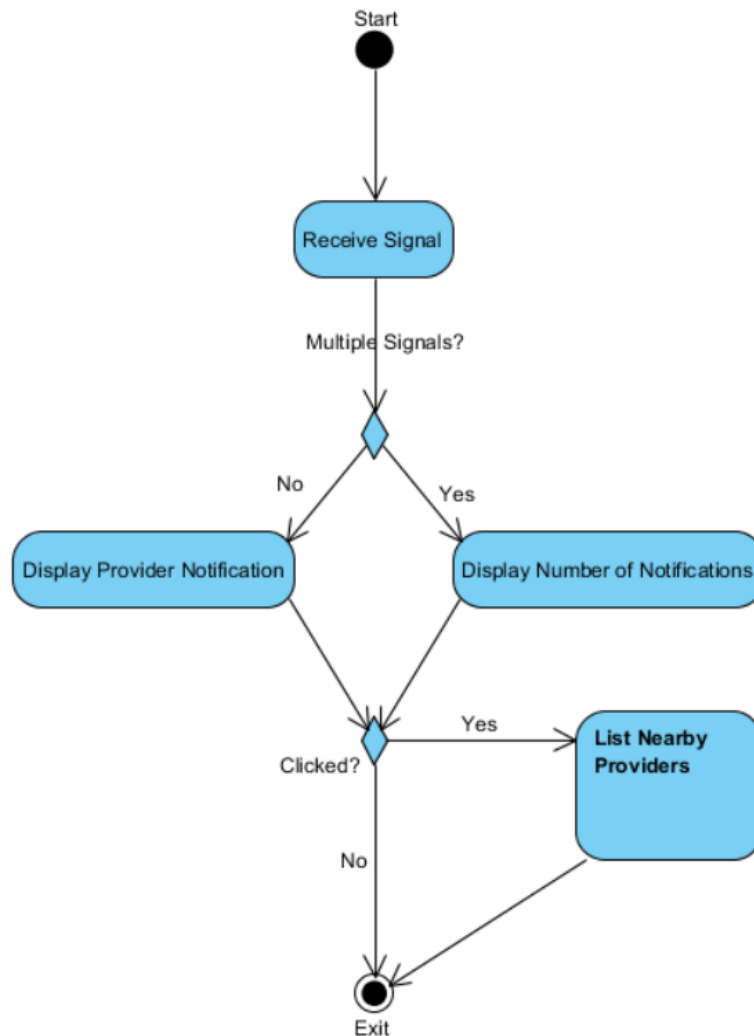
The View Notifications activity receives the Gimbal Bluetooth signal and interprets the Gimbal ID which is registered with a Provider. If the Consumer has not already received any signals, the Provider information associated with the current signal will be displayed in a Notification on the Consumer's phone. If the Consumer has received one or more signals, the Notification will display the number of Providers. The Consumer may choose to open the app to the List Nearby Providers activity or dismiss the Notification and handle the Ads later. If the current Ad for a Provider has already been viewed, saved, or dismissed, it will not appear again.

3. View Ad
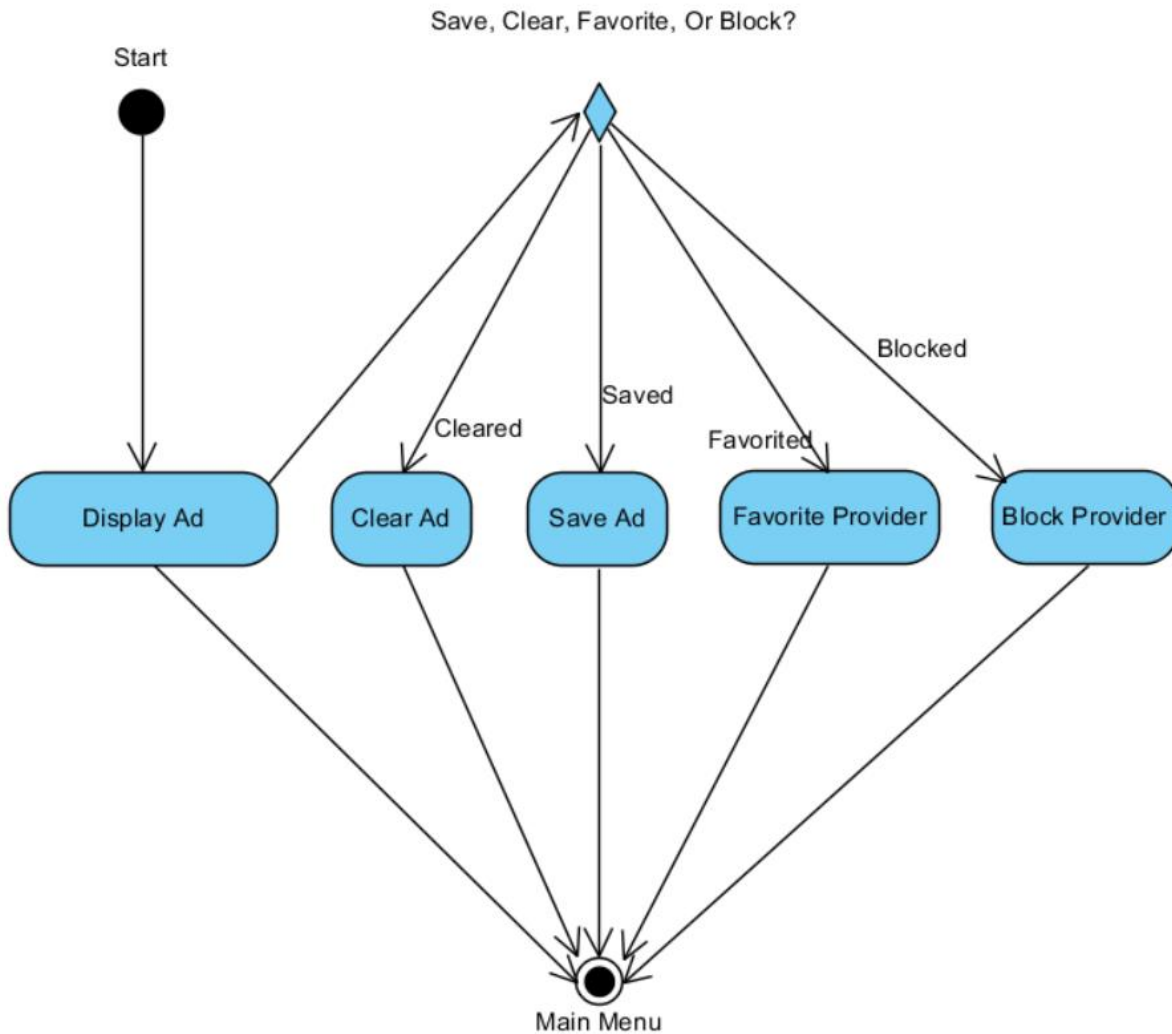
The View Ad activity gets the Ad information associated with the Provider previously chosen and displays it on the screen. The Consumer can favorite or block the Provider, clear or save the Ad, or simply exit to the main menu. In order to give the most convenience to the Consumer, these functions have been provided both when Providers are listed and when an Ad is viewed.
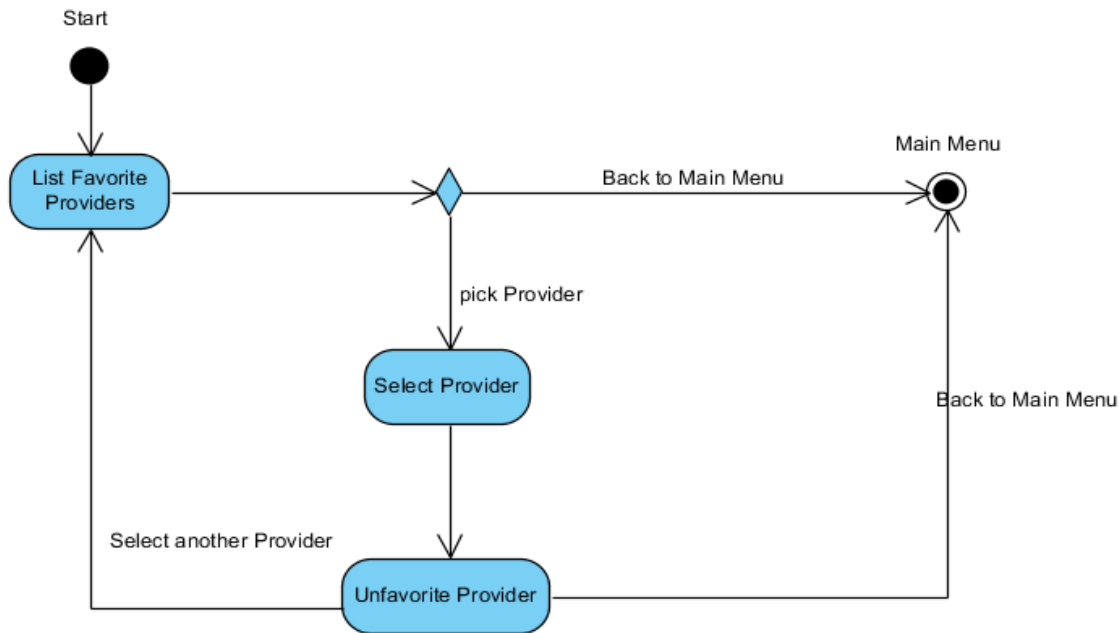
4. List Saved Ads
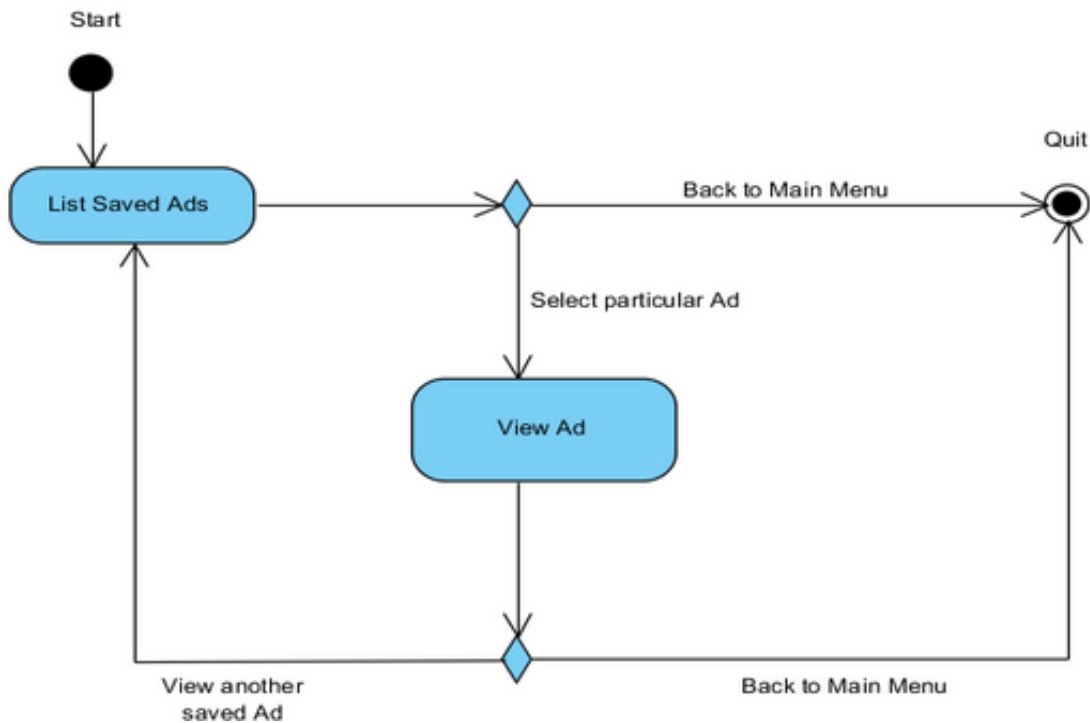
In this diagram one can see how Consumers will be able to list their saved Ads; at this point they have the option to filter/sort the saved Ads by Provider name or business type. From the start menu, they will select List Saved Ads. From there, they have the choice to view a particular Ad or exit back to the main menu. If they decide to view an Ad, they will be taken to that Ad. For a detailed description of what happens when they view the Ad, go to the View Ad activity diagram. After they are done viewing the Ad, they have the choice to view another Ad or exit back to main menu.

5. List All Providers
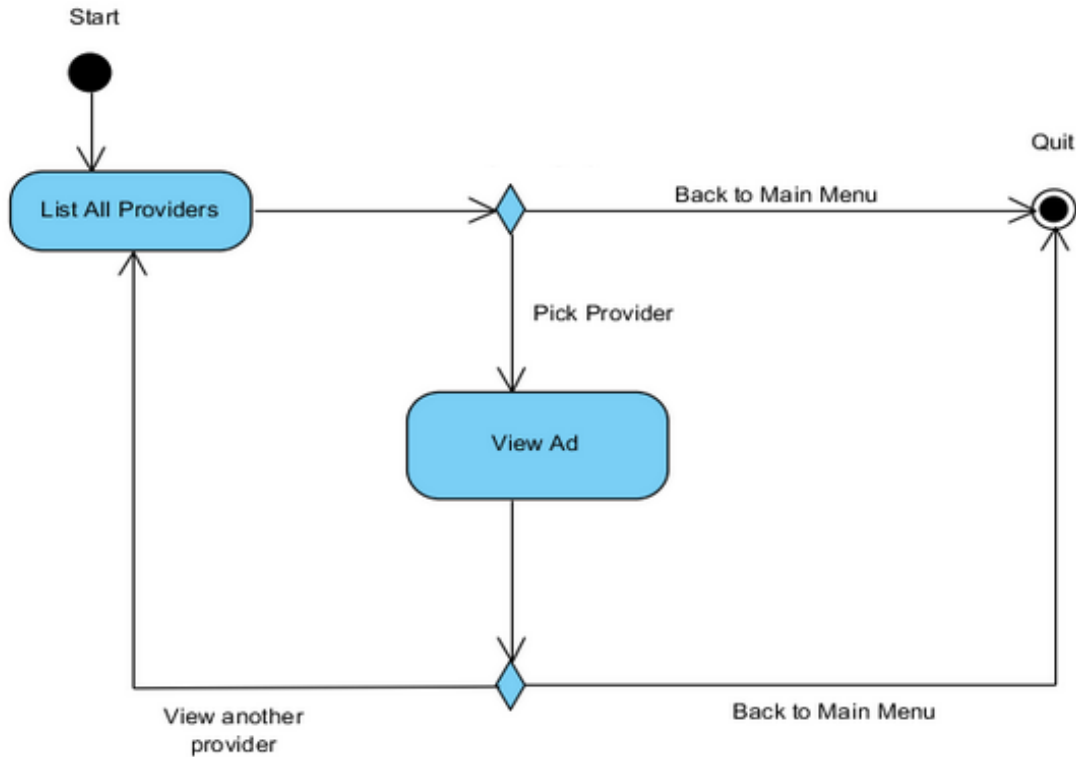
In this diagram one can see how a user of Promo*Pass* will be able to list all Providers; at this point the user has the options to filter/sort the Providers by Provider name or business type. From the start menu the user will select List All Providers. From there they have the choice to view a particular Provider or exit back to the main menu. If they decide to view a Provider, they will be taken to that Provider's Ad. For a detailed description of what happens when they view the Ad, go to the View Ad activity diagram. After they are done viewing the Ad, they have the choice to view another Provider or exit back to main menu.

6. List Favorite Providers

In this diagram one can see how Consumers will be able to list their favorite Providers; at this point they have the option to filter/sort the Providers by Provider name or business type. From the start menu, they will select List Favorite Providers. From there, they have the choice to pick a particular favorited Provider or exit back to the main menu. If they decide to pick a Provider, they will unfavorite that Provider. They will then either go back to the list of favorites or exit back to main menu.

7. List Blocked Providers
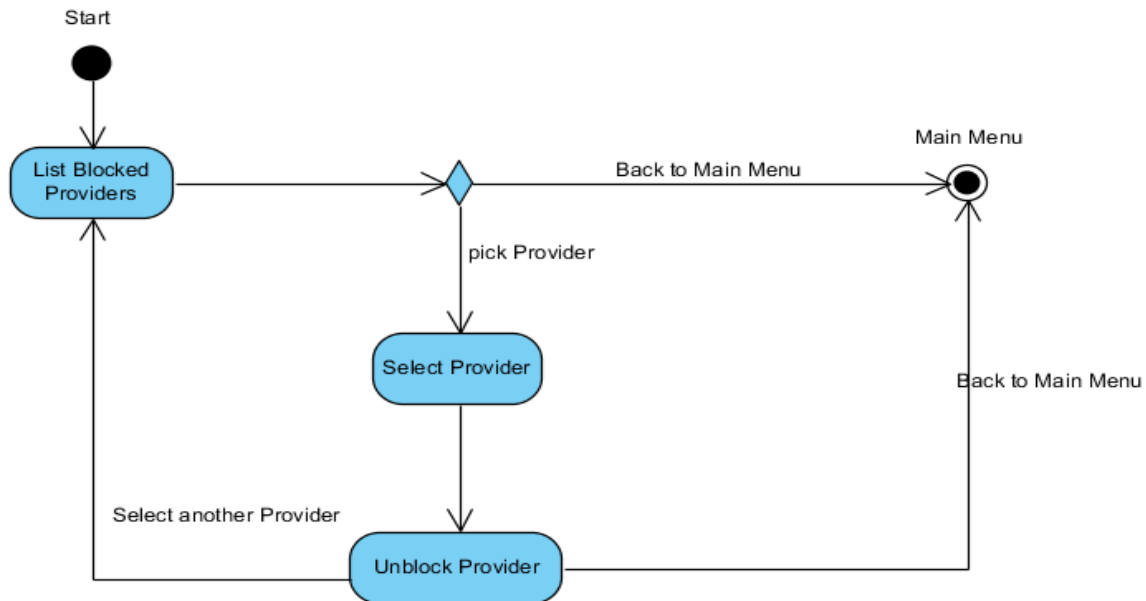
In this diagram one can see how Consumers will be able to list their blocked Providers; at this point they have the option to filter/sort the Providers by Provider name or business type. From the start menu, they will select List Block Providers. From there, they have the choice to pick a particular blocked Provider or exit back to the main menu. If they decide to pick a Provider, they will un-block that Provider. They will then either go back to the blocked list or exit back to main menu.

8. View Ad History
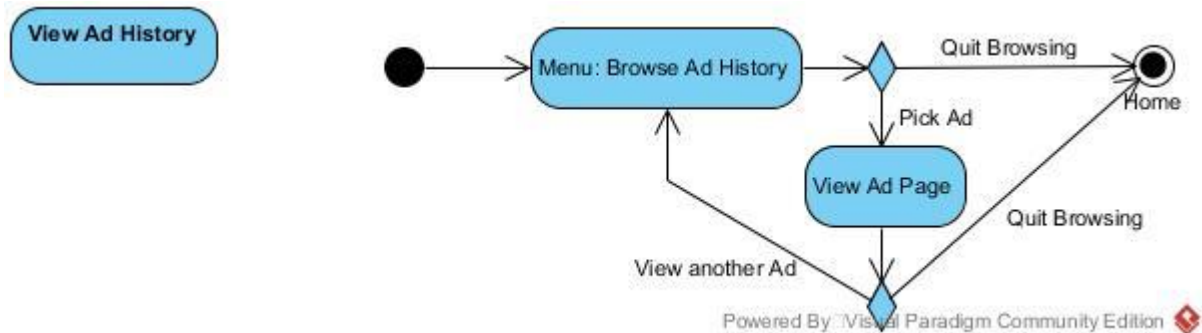
Providers will be able to view their Ad history on the web application by clicking on the "Browse Ad History" item on the menu. Ads will be listed in descending order from latest to earliest Ads.

9. Modify Ad
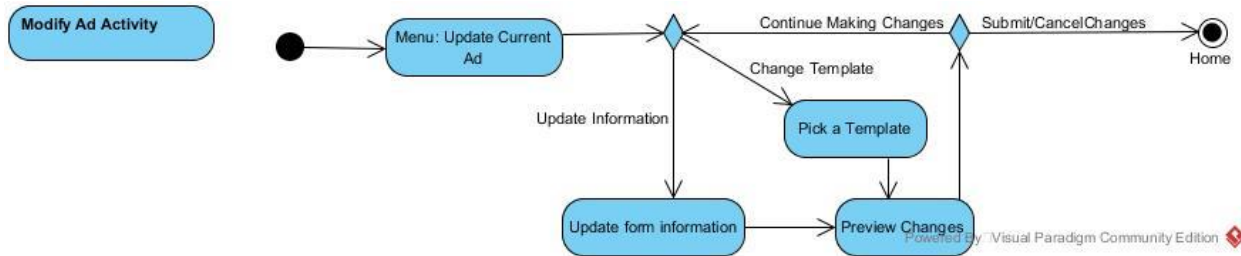
Providers will be able to modify Ads on the web application by clicking on the "Update Current Ad" item on the menu. From there, they can change the template and information on the Ad.

10. Create Ad
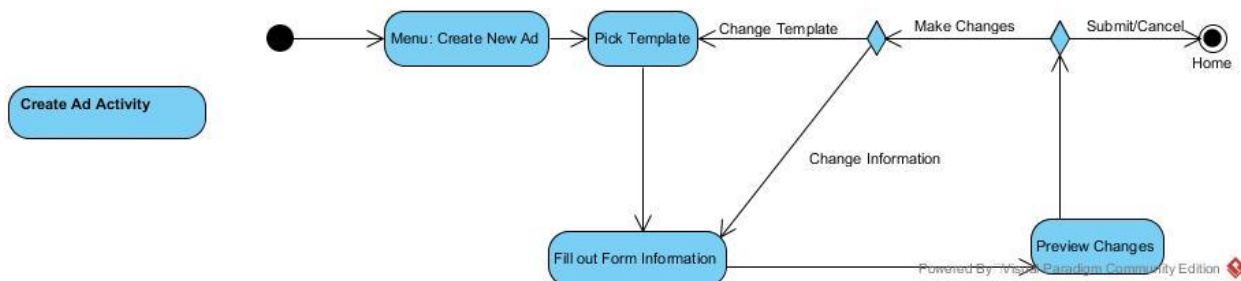
Providers will be able to create new Ads on the web application by clicking on the "Create Ad" item on the menu. From there, they have the option of picking a template and entering Ad information on the web form for submission.

11. Report a Problem
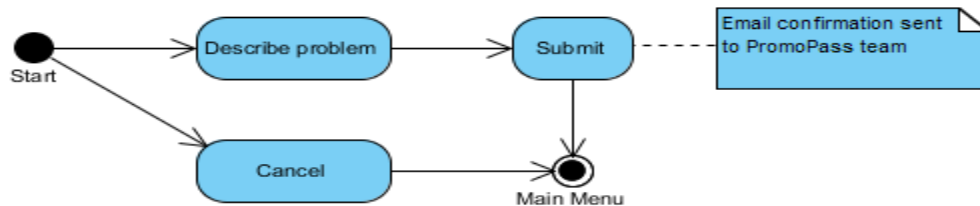
Consumers and Providers will be able to report any issues they may experience. If the user selects "Report a Problem," this will take them to a new screen. The user can describe the problem experienced and click submit, which will send an email confirmation to the Promo*Pass* team about the report and take the user back to the previous menu. The user can also select "Cancel" in order to return to the previous menu.

12.   Login
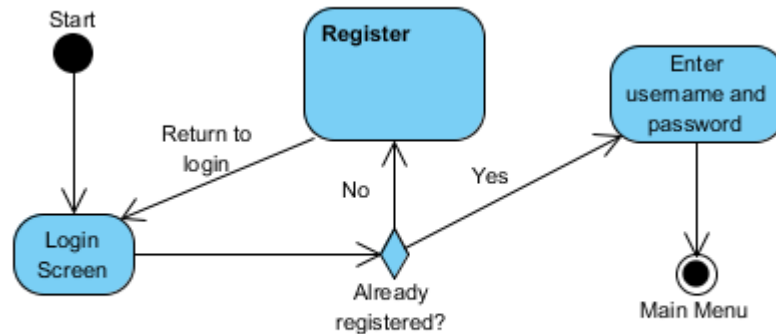
Providers are required to login in order to use the web app. When Providers go to the login screen, they can Register if they have not done so already. If the Providers have already registered, they can enter a username and password, which then takes them to the main menu.
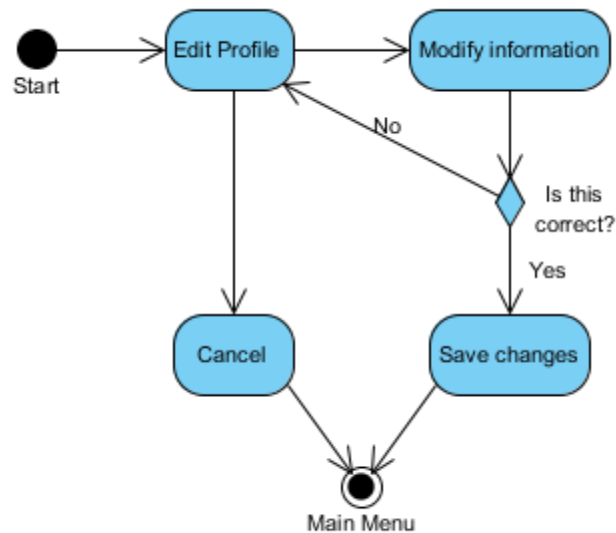
13.   Register
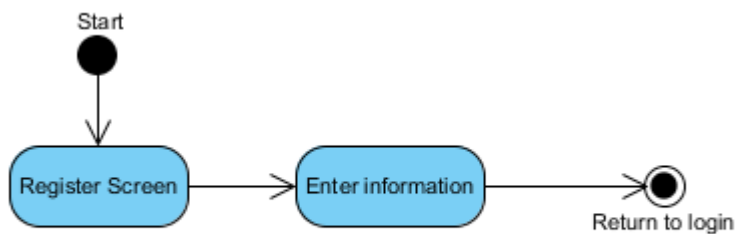
A Provider must Register in order to use the web app. This includes the Gimbal Device ID and other information about the Provider's business. Once the Provider has entered and submitted the information, they will be returned to the login page.

14.   Edit Profile

If Providers wish to change profile information, they can select "Edit Profile," which takes them to a new screen. The Providers can then modify information and, if the information is correct, choose to save changes. This takes them back to the main menu. If the Providers wish to leave the page, they can select "Cancel" and return to the main menu.