CatWalk

By

Conor Kirley and Kelvin Davis

A Proposal Submitted to
The Faculty of the School of Information Technology
In Partial Fulfillment of the Requirements for
The Degree of Bachelor of Science
In Information Technology

Conor Kirley — Date

Kelvin Davis — Date

Faculty Advisor — Date

University of Cincinnati
Department of Information Technology
College of Education, Criminal Justice, and Human Services

April 2016

Table of Contents

List of Figures

Abstract

CatWalk is our Android application that gives UC students an easy path to any classroom on campus. Using Google Maps technology, our app takes your location at UC and shows you the way to all of your classes throughout your semester. Aimed at students just starting out at UC, CatWalk takes away the stress of finding your classroom. The application takes your classroom, and shows you a path through campus to get to that building. Then, it shows you the exact steps you need to take within the building to get to your destination. Beginning at a new university can be pretty tough, so we have taken something stressful and made it easy.

Introduction

For generations, freshmen at UC have wanted a better resource for finding their classes. Buildings can be confusing, some entrances are blocked, and not all pathways are obvious. This problem can be solved with clever use of Google Maps API along with the floor plans of every building on campus.

Project Description

CatWalk is an application for Android devices that shows UC students – in a way similar to Google Maps – how to find ANY classroom on campus. This application will be a hit among all incoming freshman to UC, as anyone who has gone through this campus can tell you that it can be huge and intimidating. Students should be focusing on doing their best in class, CatWalk will get you there. This solution was completed in Android Studio, using mostly the Java programming language.

Problem

CatWalk is our Android application that gives UC students an easy path to any classroom on campus. Using Google Maps technology, our application will take your location at UC and show you the way to all of your classes throughout your semester. Aimed at students just starting out at UC, CatWalk will take away the stress of finding your classroom. The application will take your classroom, and show you a path through campus to get to that building. Then, it will show you

the exact steps you need to take within the building to get to your destination. Beginning at a new university can be pretty tough, so we have taken something stressful and made it easy.

Solution

Our goal with this project is to deliver to students something I've always wanted – a way to never be lost on campus. It will gather your GPS location, you tell it what classroom are searching for, and it will give you a specific route to that room.

Before you get to your desired building, the application will be in "outside" view. This will use Google Maps to show you the map and have a blue trail to show you where to go.

The physical trail will be accompanied with a step-by-step guide listing each turn. The step that the user is on at the time will be shown, with an arrow that lets the user see the next step.

When the user goes inside the building, it will go to "indoor" view, and GPS will likely be unusable. Thus, the navigation will have to be done by pressing the arrow each time the user continues the direction.

User Profile

User Profile Form
Application: CatWalk
Potential Users: 1. Students 2. Guest 3. Career Fair Employers

4. UC Faculty and Staff

Software and Interface Experience:

The application will be developed initially in Android. Most people who have smart phones will be able to use this app with their basic knowledge of Android applications and the Google Play store. The functionality will be relatively straightforward such as navigating Google Maps.

Experience with Similar Applications:

No experience is required but it will function as a Google Maps on a smaller scale just for UC's campus.

Task Experience:

The task experience will be similar to Google Maps. The user will be brought to a map displaying UC's campus. From there the user can either browse the map by scrolling and zooming, find their current location, or search for a location on campus. The user will also have the option to enter the location for the start and end destination. In that case the user will be navigated to their desired location.

Frequency of Use:

The users will be able to use this application whenever they need directions to a location on campus.

Key Interface Design Requirements that the Profile Suggests:

Easy to use and quick to respond. There will often be a start time associated with events, activities, and classes on campus. Therefore, the user will need directions or the location of a particular location in a timely manner.

1. The user should be able to browse the map to find their location with zooming and scrolling capabilities.
2. The user should be able to get their current location.
3. The user should be able to see markers for the different buildings on campus.
4. The user should be able to navigate from a starting point to a desired destination.

Figure 1. User Profile

Objective/Deliverables

1. Fall Deliverables
   i. Landing page
   ii. Google Map Service
   iii. Database table to store location information
   iv. Location markers visible on map
   v. Search functionality
   vi. Auto complete search functionality
   vii. Filter map based on search results

2. Spring Deliverables
   i. Visible route from one point to a building
   ii. Navigate user to a building
   iii. Database to store room specific location information
   iv. Room location markers visible
   v. Visible route from one point to a specific room
   vi. Navigate user to a specific room

Use Case Diagram

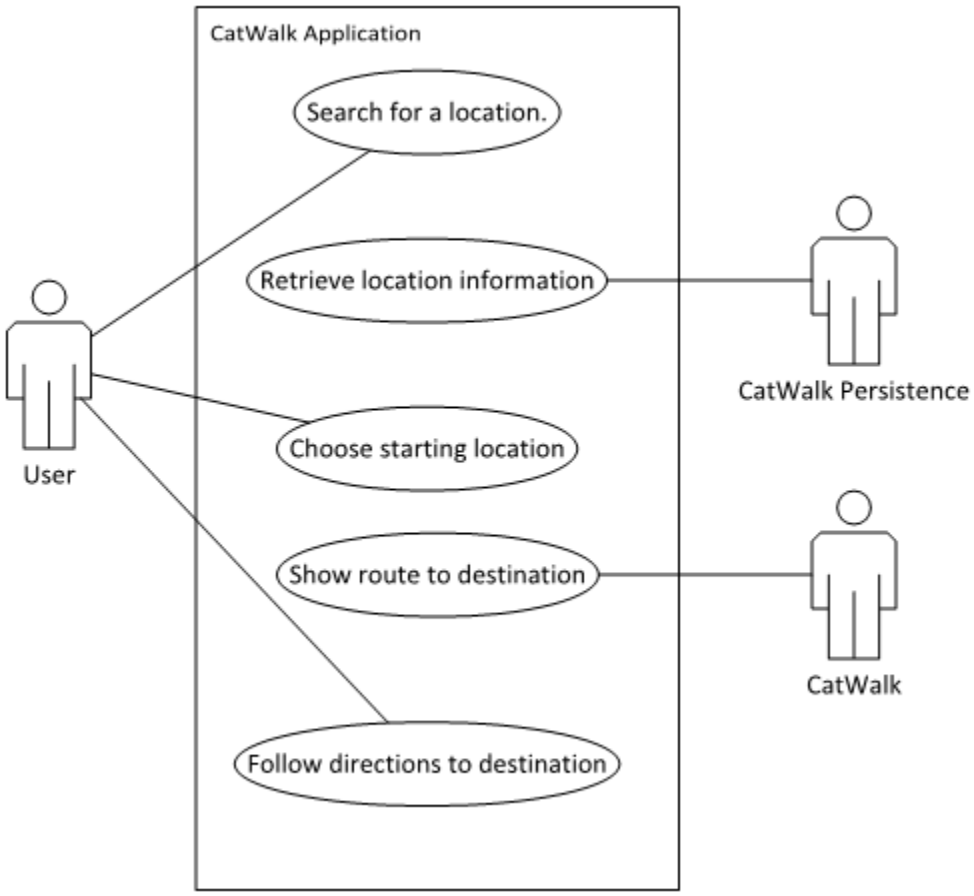


Figure 2. Use Case Diagram

Project Timeline

CatWalk Gantt Chart

Group Members:
Kelvin Davis and Conor Kirley

		Hours (per week)	Start Date	Duration (days)	Due Date	Status
Project Task:	Research Location Marker Resources	10	21-Sep-15	11	2-Oct-15	Complete
	Software Research	10	21-Sep-15	11	2-Oct-15	Complete
	Create Landing Page	10	2-Oct-15	7	9-Oct-15	Complete
	Set up Basic Map	10	2-Oct-15	7	9-Oct-15	Complete
	Create Building Location Table	10	2-Oct-15	14	16-Oct-15	Complete
	Show Building Markers on Map	10	16-Oct-15	14	30-Oct-15	Complete
	Implement Search Functionality	10	16-Oct-15	14	30-Oct-15	Complete
	Implement Search Auto Complete	10	30-Oct-15	14	13-Nov-15	Complete
	Filter Map Based On Search	10	30-Oct-15	14	13-Nov-15	Complete
	Research Map Navigation	10	13-Nov-15	17	30-Nov-15	Complete
	Implement Route Mapping To Buildings	15	30-Nov-15	21	21-Dec-15	Complete
	Implement User Navigation To Buildings	15	21-Dec-15	14	4-Jan-16	
	Research Further Location Marker Resources	15	4-Jan-16	14	18-Jan-16	
	Set Up Room Specific Location Markers	20	18-Jan-16	14	30-Jan-16	
	Create Room Location Tables	20	19-Jan-16	14	31-Jan-16	
	Implement Route Mapping To Room	20	30-Jan-16	16	15-Feb-16	
	Research Floor Navigation	21	15-Feb-16	7	22-Feb-16	
	Implement Floor Navigation	20	22-Feb-16	21	14-Mar-16	

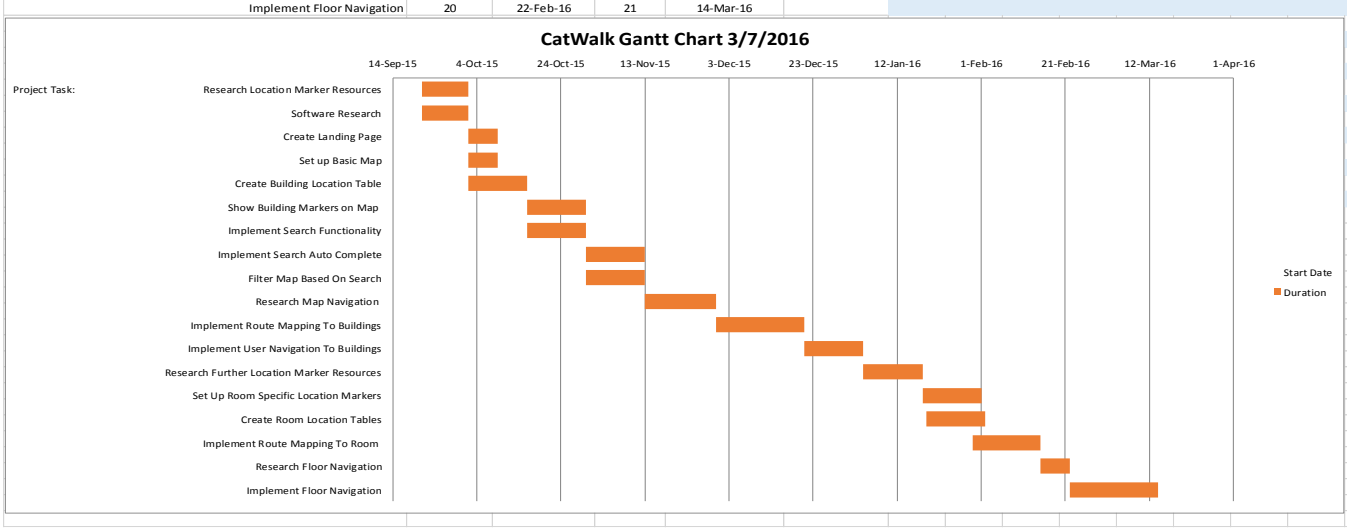


Figure 3. Project Timeline

Test Plan

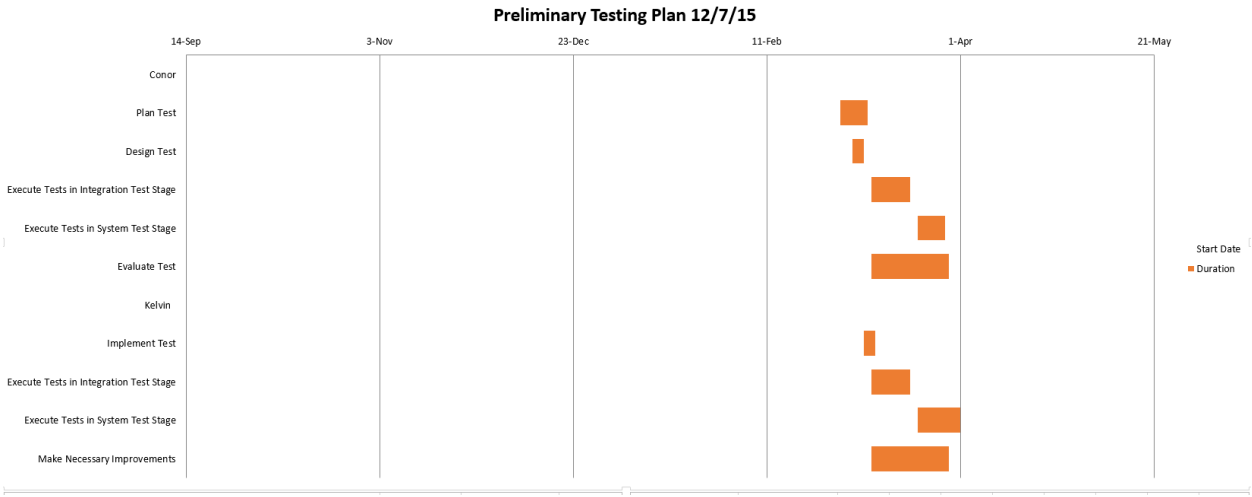


Figure 4. Preliminary Test Plan

In order to be fully prepared for tech expo, we will need to spend the last few weeks leading up to it purely testing. The tests will be as follows:

1. Stability Testing – This test should answer the following questions: does it launch correctly every time? Does it suspend and reload correctly every time?
2. User Interface Testing – We will give our application to a group of students & nonstudents to see if our interface is easily manipulated by everyone. This should answer the following: Is it frustrating to use? Does it fulfill the need that we were intending it to fill? Would people use our application more than once?
3. Functionality Testing – This will be the most in-depth section, and it will answer the following: does every function of the program work as intended? Does every possible path a user can take lead to success? Does it display the information correctly every time?

Testing Results

After each test, either a pass condition will be met or a bug report should be given. We used this table to organize each report:

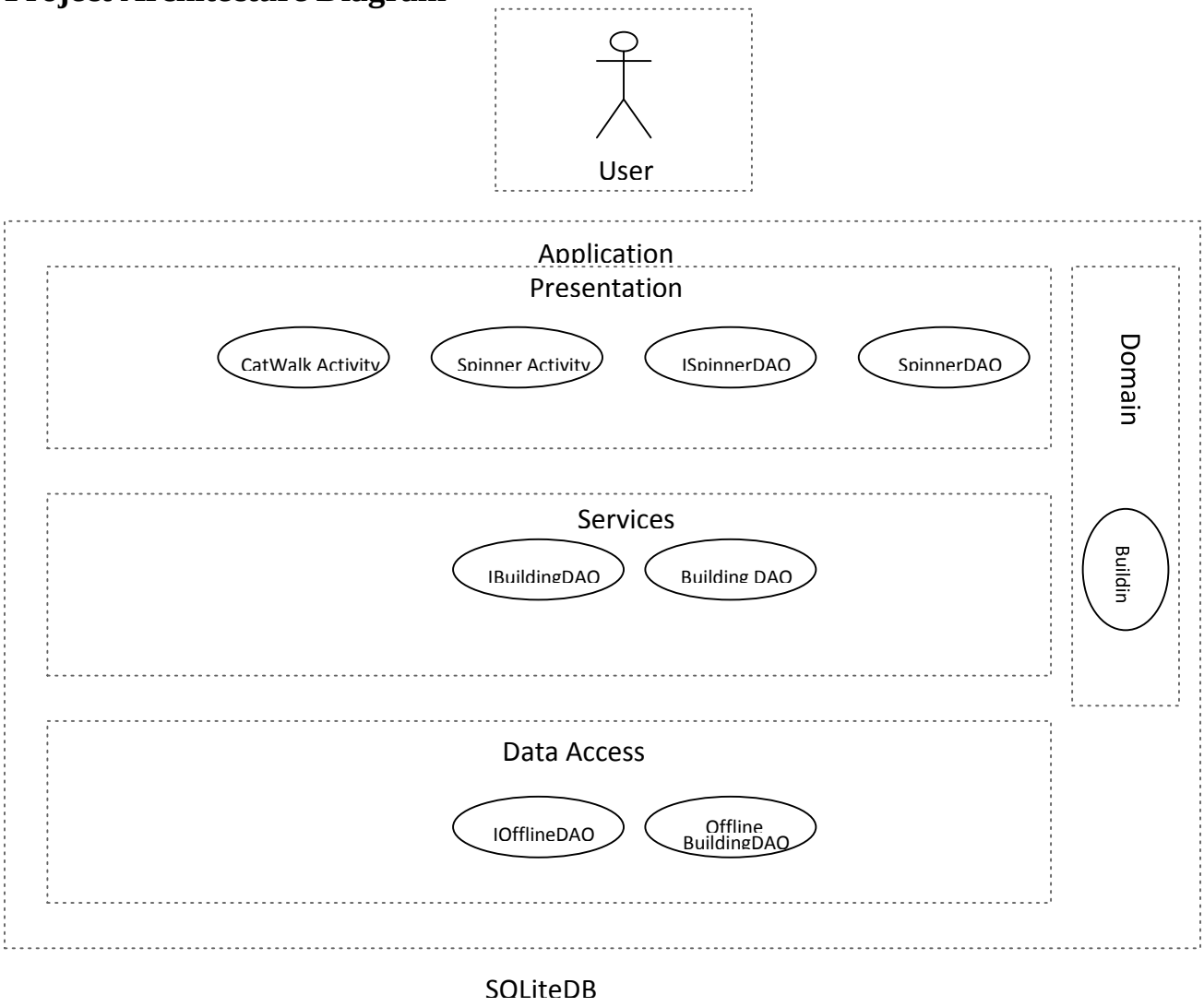
Tester Category	Test Name & Date	Pass Condition	Actual Result	Bug Report	Comments	Status
Student/Non-Student/Developer	Stability/UI/Functionality	i.e.-"Boots correctly on Android"	i.e.-"Failed to boot correctly"	i.e.-"The application failed to boot once"	i.e.-"It failed to boot when I was running many other apps"	Open/Closed/In Progress/As Designed
Developer	Stability	Can perform repeat routes	Repeat routes were successful	Routes were successful, but the to-from buttons did not work on subsequent routes	N/A	Closed
Student	Functionality	Can find bathrooms based on your room level	Bathrooms are highlighted	N/A	It shows teacher-only bathrooms sometimes	Closed

Non-Student	UI	Can find a route without being shown specifically how to	Route was found with some trial and error	N/A	Some of the buttons were hard to understand.	Closed
Student	Functionality	Displays a notification when the selected room has not been mapped	No notification appears.	It shows nothing when you look for a room that hasn't been mapped	N/A	Closed
Developer	Stability	The program will only add a building into the database once	Each building gets added every time they are searched for, causing repeat rows	N/A	N/A	Closed

Budget

Because Android Studio and the Google Maps API are free, this project did not require any extra costs.

Project Architecture Diagram



Conclusion

CatWalk is working to solve a problem that many students have had starting out at UC. Using Android Studio technology, we can develop a fast and easy to use solution to finding your classes that will make anyone's day easier at UC. It will make the entire campus experience more enjoyable.

Works Cited

Gassner, David. “Adding Google Maps to Android Apps with David Gassner.” Online video clip. *Lynda.com.* Lynda.com, 18 Aug. 2015. 18 Oct. 2015.

"Google Maps Android API | Google Developers." *Google Developers*. Web. 4 Oct. 2015.

University of Cincinnati. Web. 25 Oct. 2015. <https://space.uc.edu/archibus/login.axvw.>