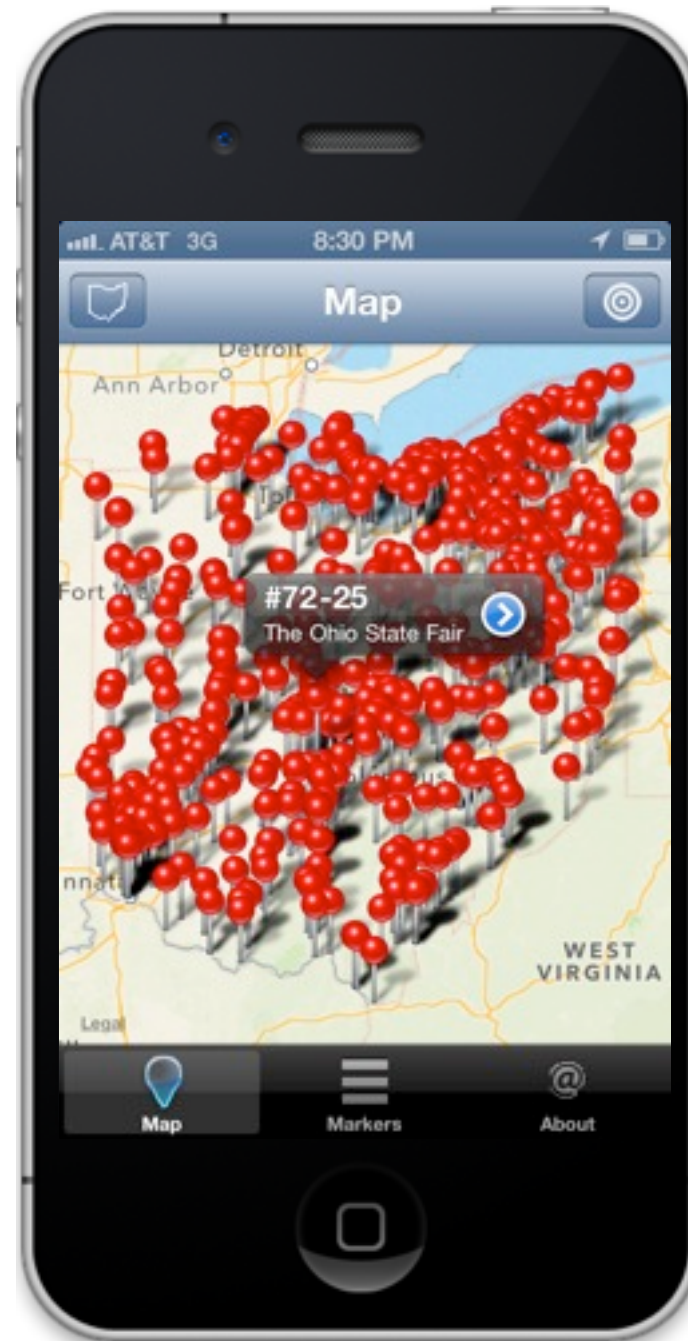


Finding your way with Mapkit & Solr



Christopher M. Judd



Christopher M. Judd

CTO and Partner at

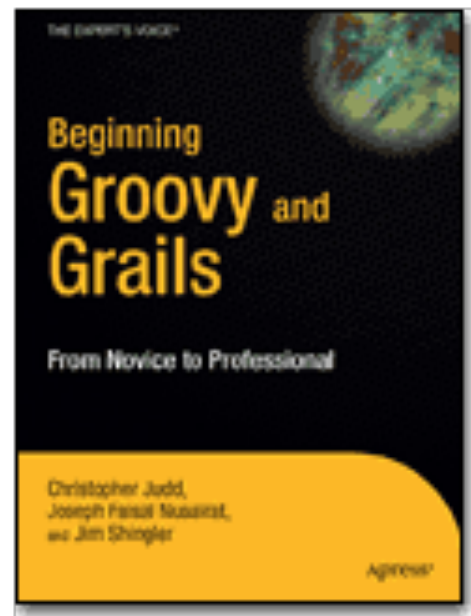


Central Ohio Java Users Group leader

Columbus

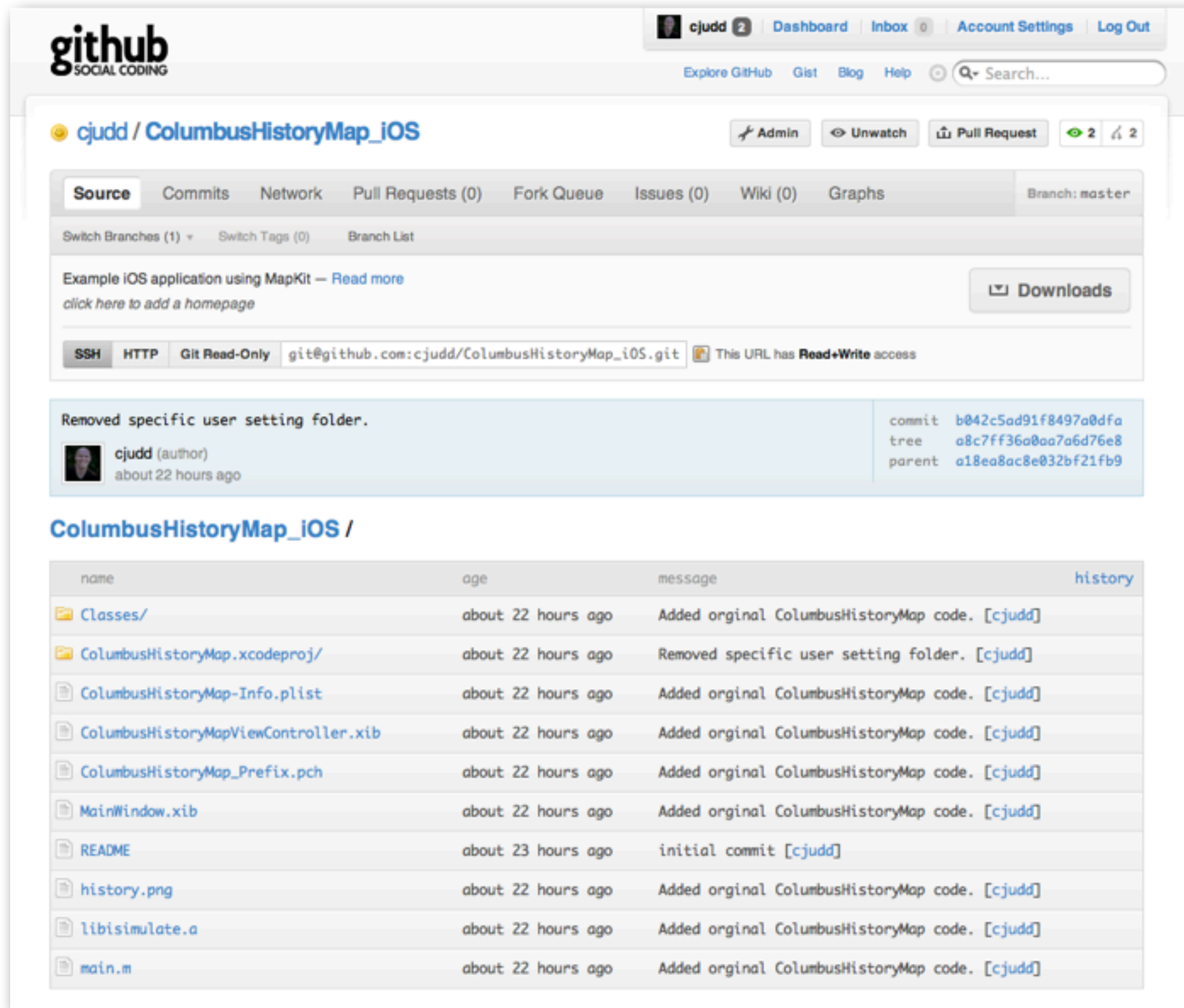


Developer User Group (CIDUG)





Columbus History Map Source



github SOCIAL CODING

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cjudd / ColumbusHistoryMap_iOS Admin Unwatch Pull Request 2 2

Source Commits Network Pull Requests (0) Fork Queue Issues (0) Wiki (0) Graphs Branch: master

Switch Branches (1) Switch Tags (0) Branch List

Example iOS application using MapKit — [Read more](#)
click here to add a homepage

SSH HTTP Git Read-Only git@github.com:cjudd/ColumbusHistoryMap_iOS.git This URL has Read+Write access

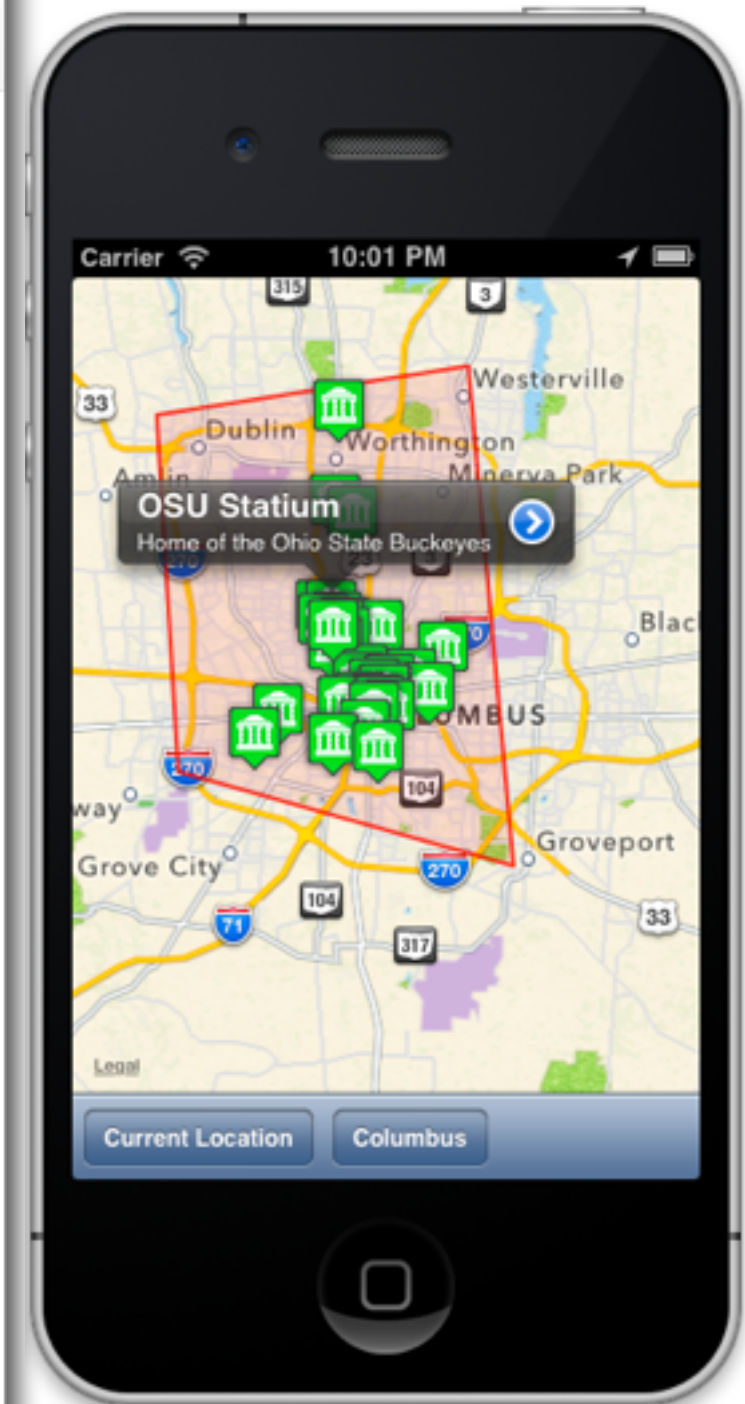
Removed specific user setting folder.

commit b042c5ad91f8497a0dfa
tree a8c7ff36a0aa7a6d76e8
parent a18ea8ac8e032bf21fb9

cjudd (author)
about 22 hours ago

ColumbusHistoryMap_iOS /

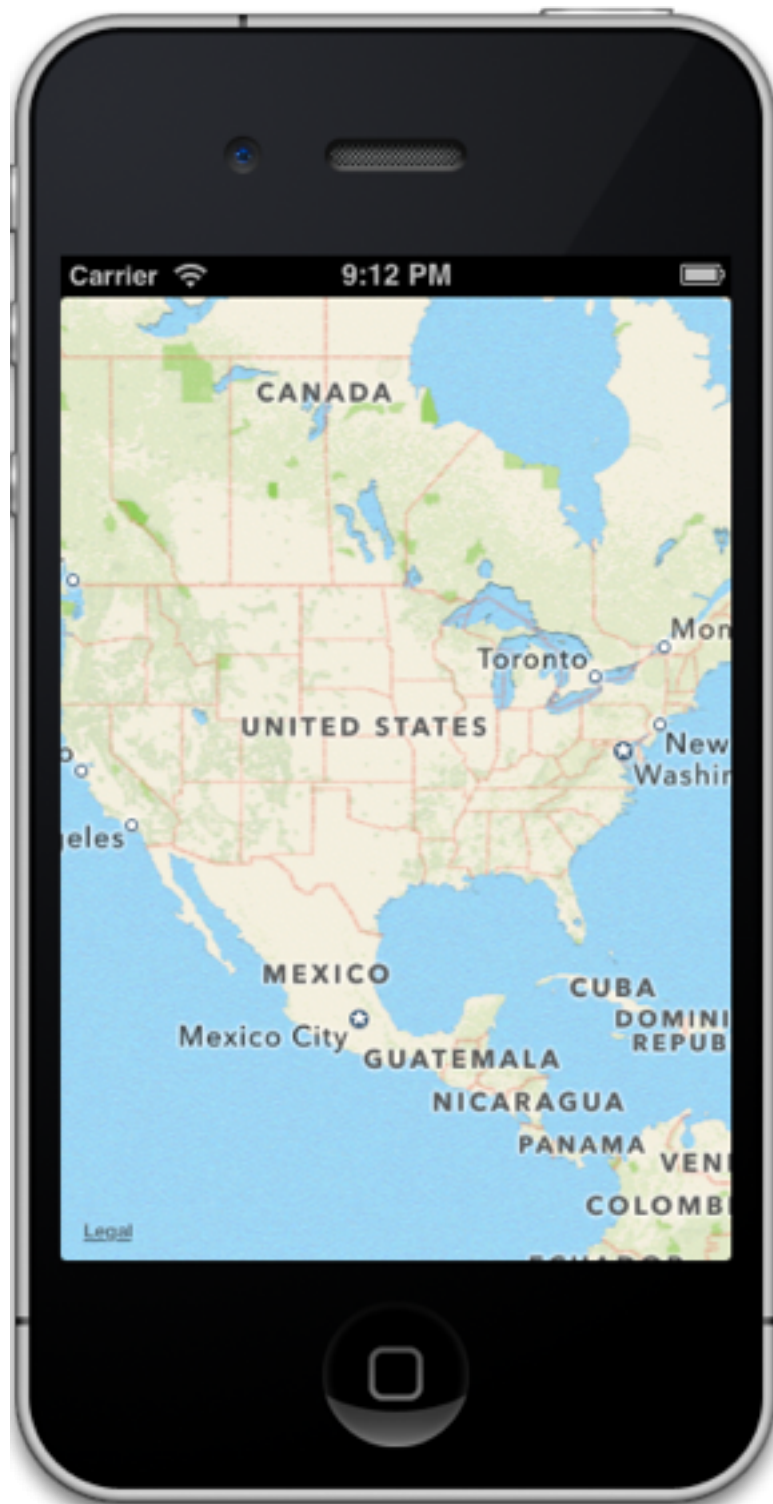
name	age	message	history
Classes/	about 22 hours ago	Added original ColumbusHistoryMap code. [cjudd]	
ColumbusHistoryMap.xcodeproj/	about 22 hours ago	Removed specific user setting folder. [cjudd]	
ColumbusHistoryMap-Info.plist	about 22 hours ago	Added original ColumbusHistoryMap code. [cjudd]	
ColumbusHistoryMapViewViewController.xib	about 22 hours ago	Added original ColumbusHistoryMap code. [cjudd]	
ColumbusHistoryMap_Prefix.pch	about 22 hours ago	Added original ColumbusHistoryMap code. [cjudd]	
MainWindow.xib	about 22 hours ago	Added original ColumbusHistoryMap code. [cjudd]	
README	about 23 hours ago	initial commit [cjudd]	
history.png	about 22 hours ago	Added original ColumbusHistoryMap code. [cjudd]	
libisimulate.a	about 22 hours ago	Added original ColumbusHistoryMap code. [cjudd]	
main.m	about 22 hours ago	Added original ColumbusHistoryMap code. [cjudd]	



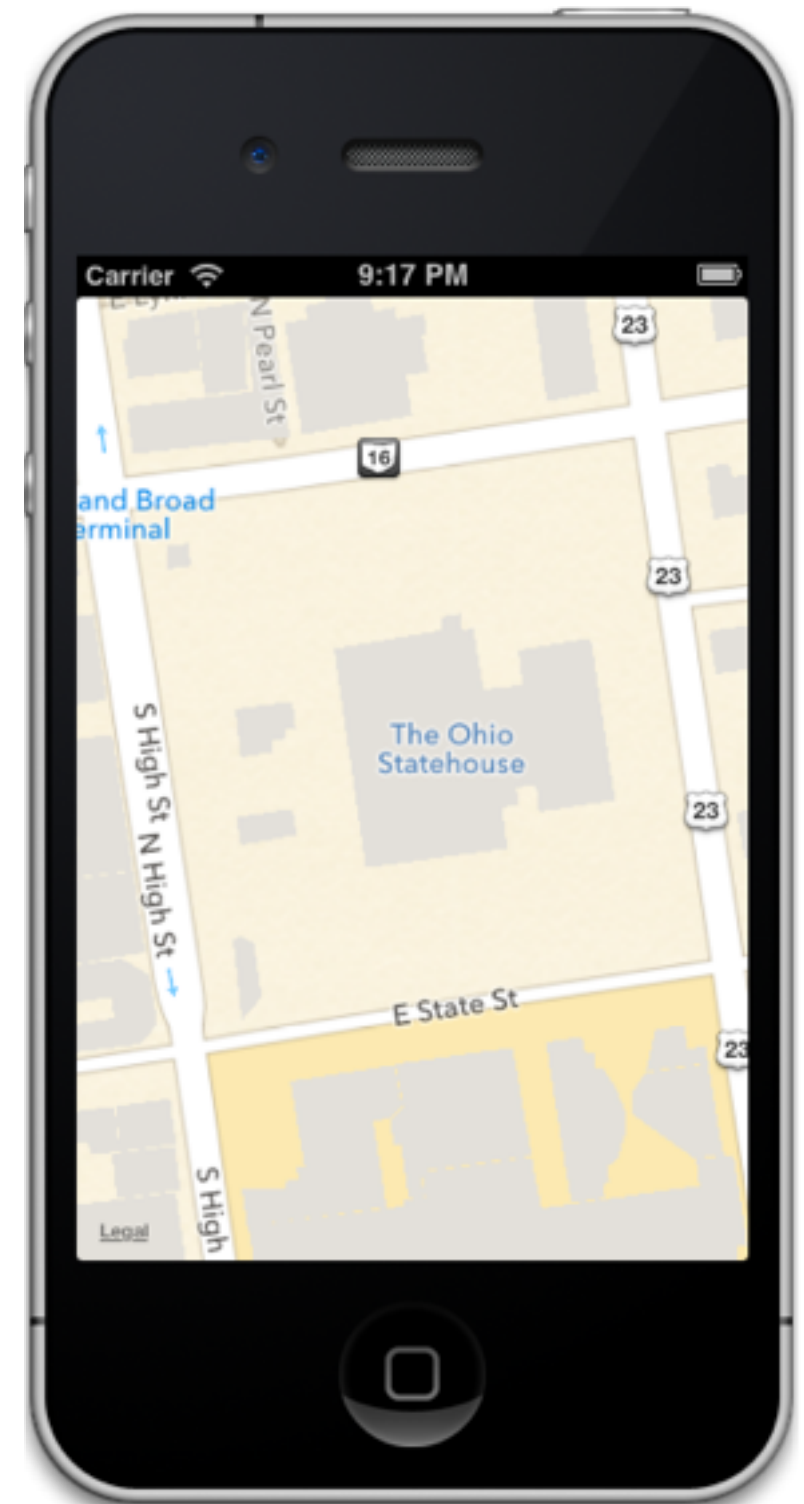
https://github.com/cjudd/ColumbusHistoryMap_iOS

MapKit Basics

MapKit

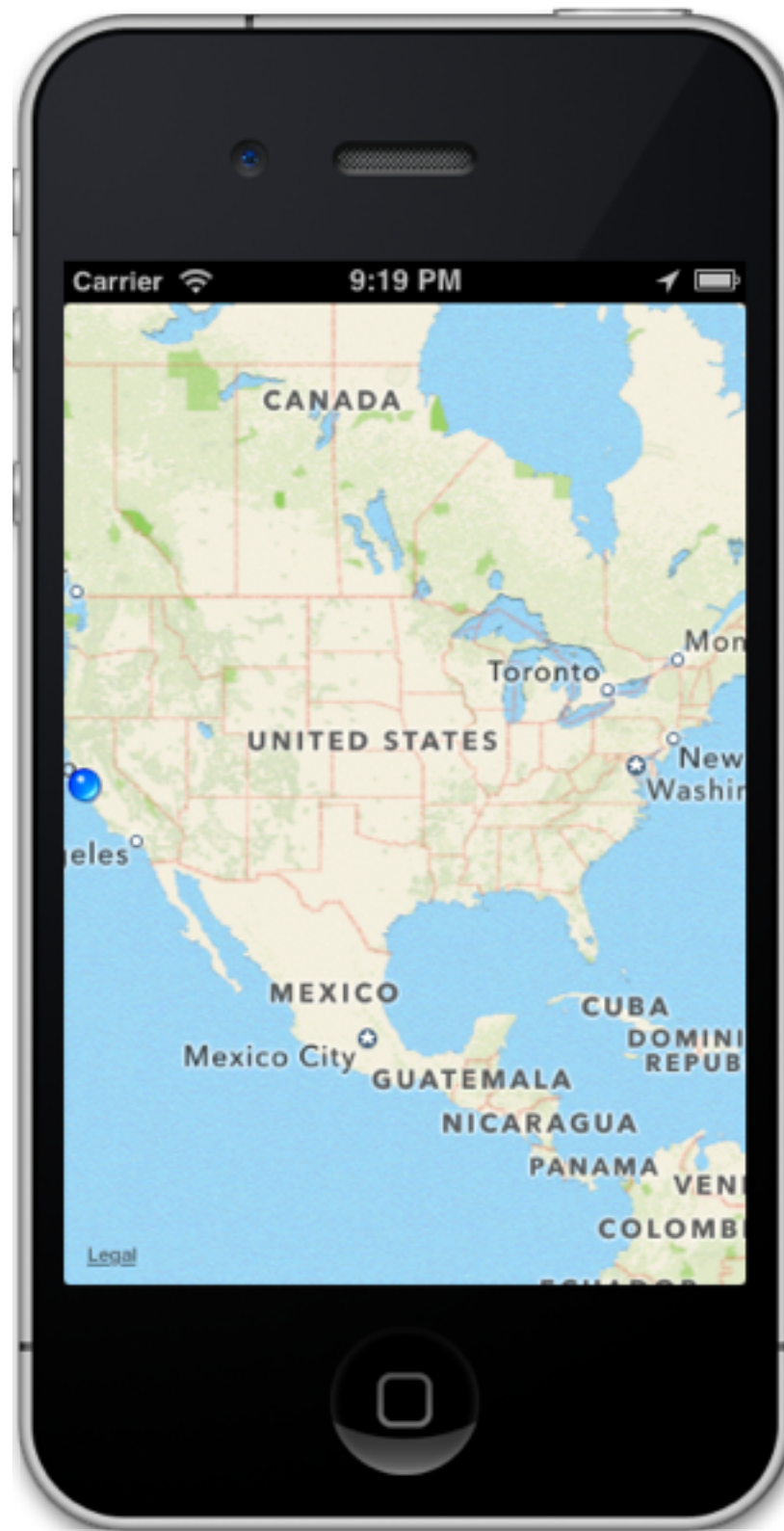


MKMapView



Google maps

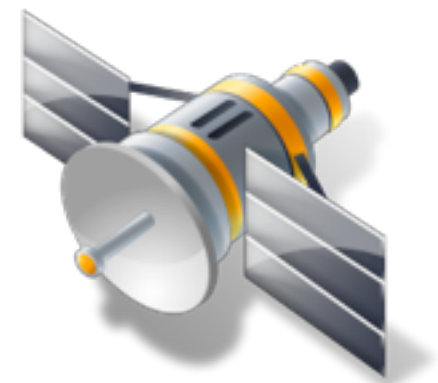
Current Location



1 kilometer



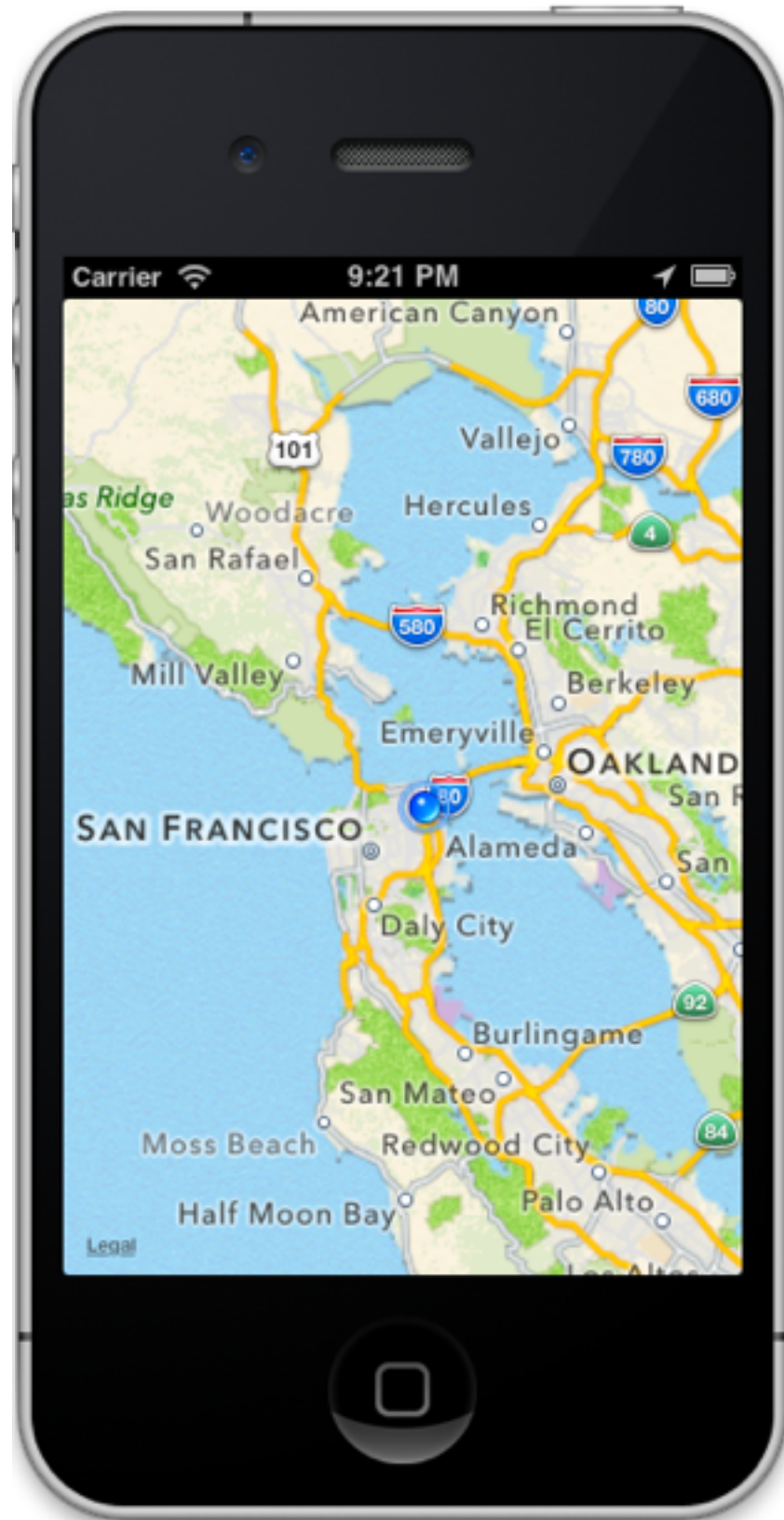
100 meters



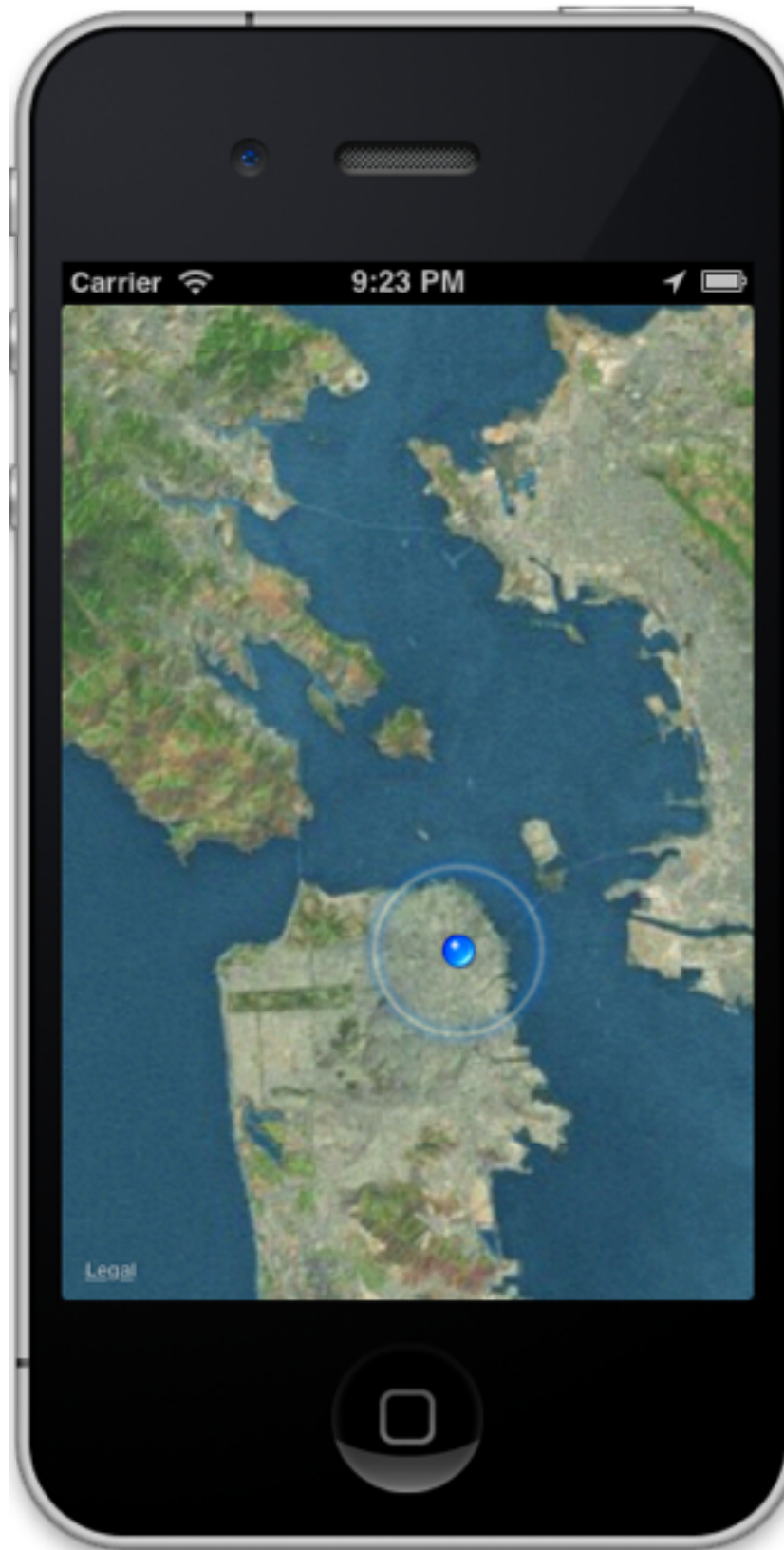
10 meters

Core Location Framework

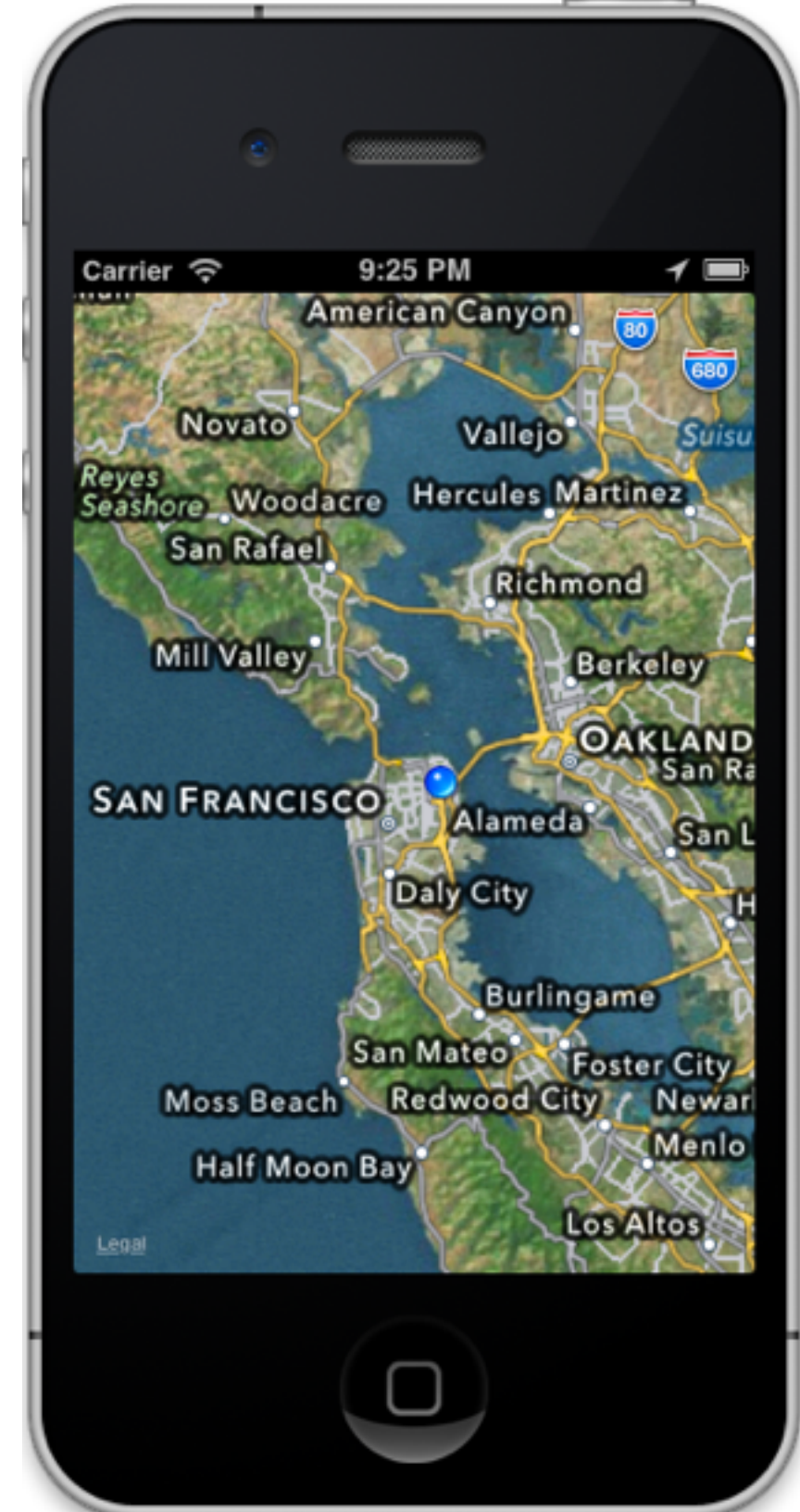
Map Types



Standard

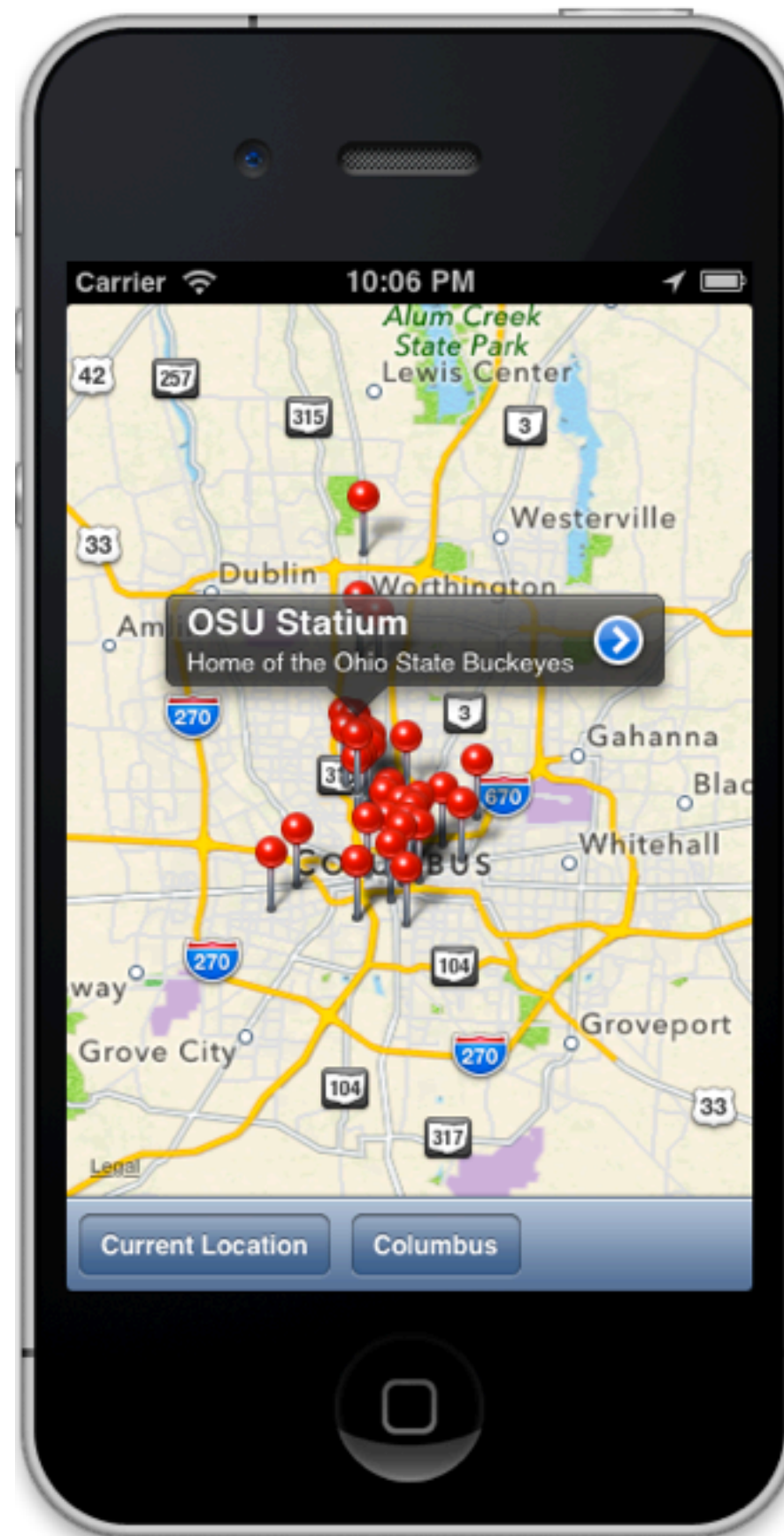


Satellite

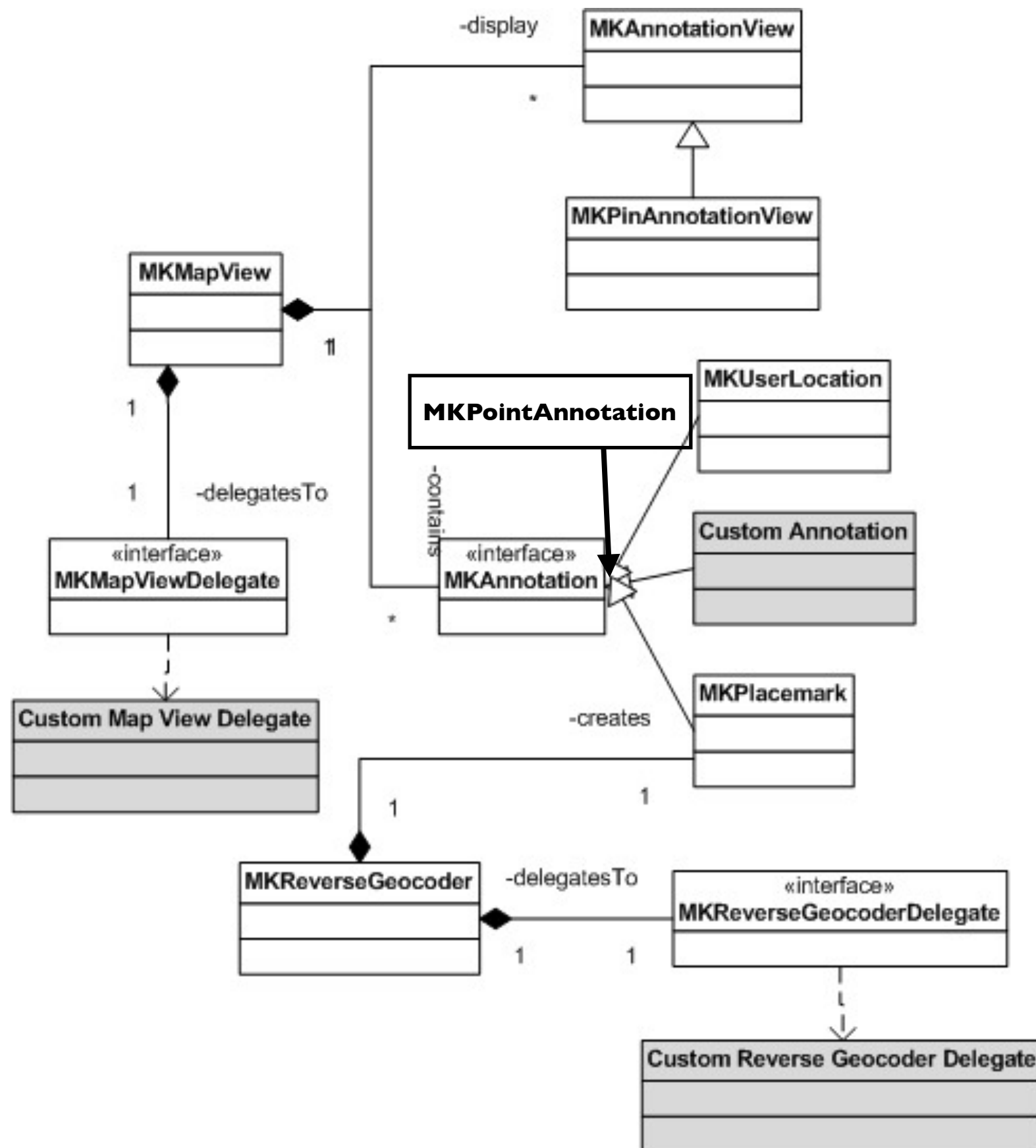


Hybrid

Annotations



Classes and Protocols

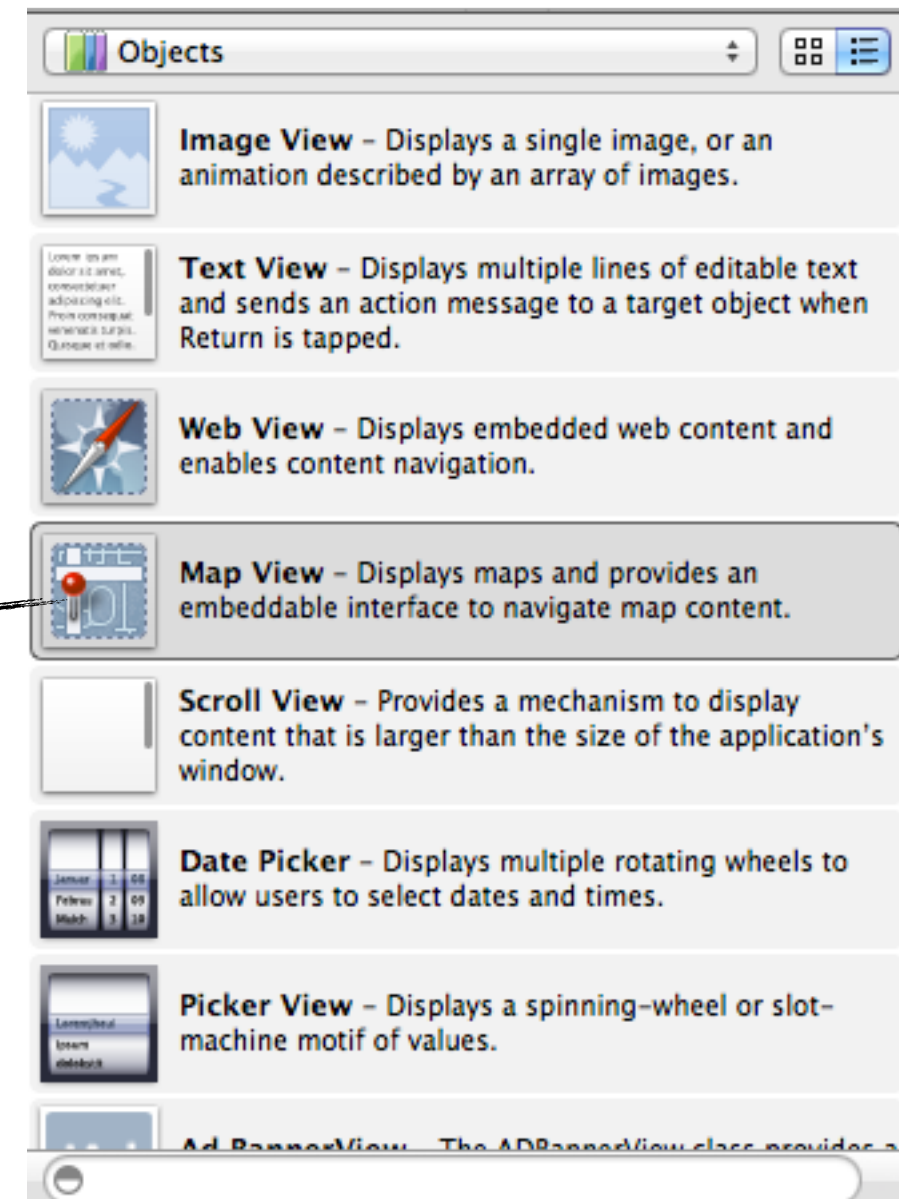
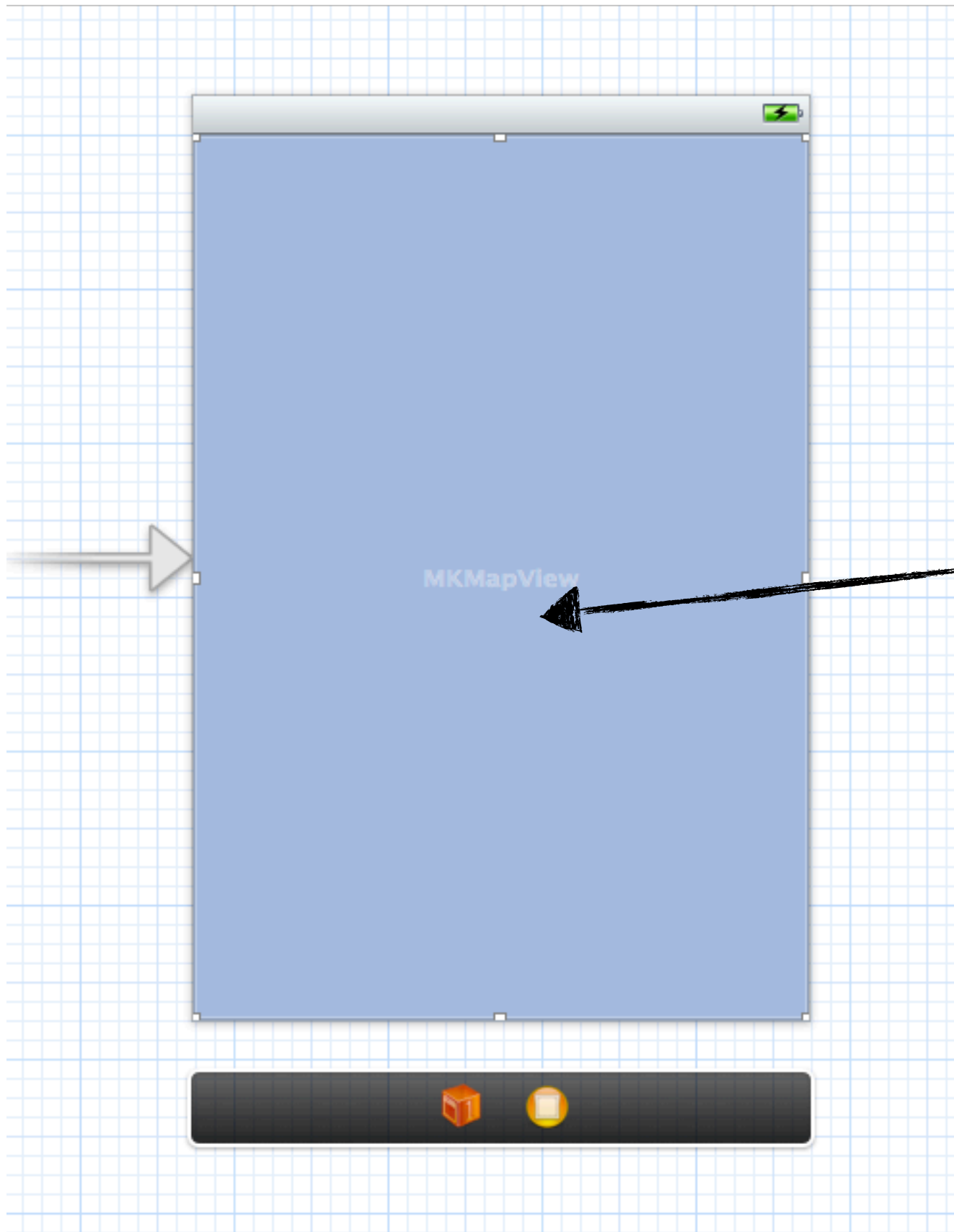


Adding Maps

Adding Maps Steps

1. Add MapView component to view 
2. Add MapKit Framework 
3. Run Application 

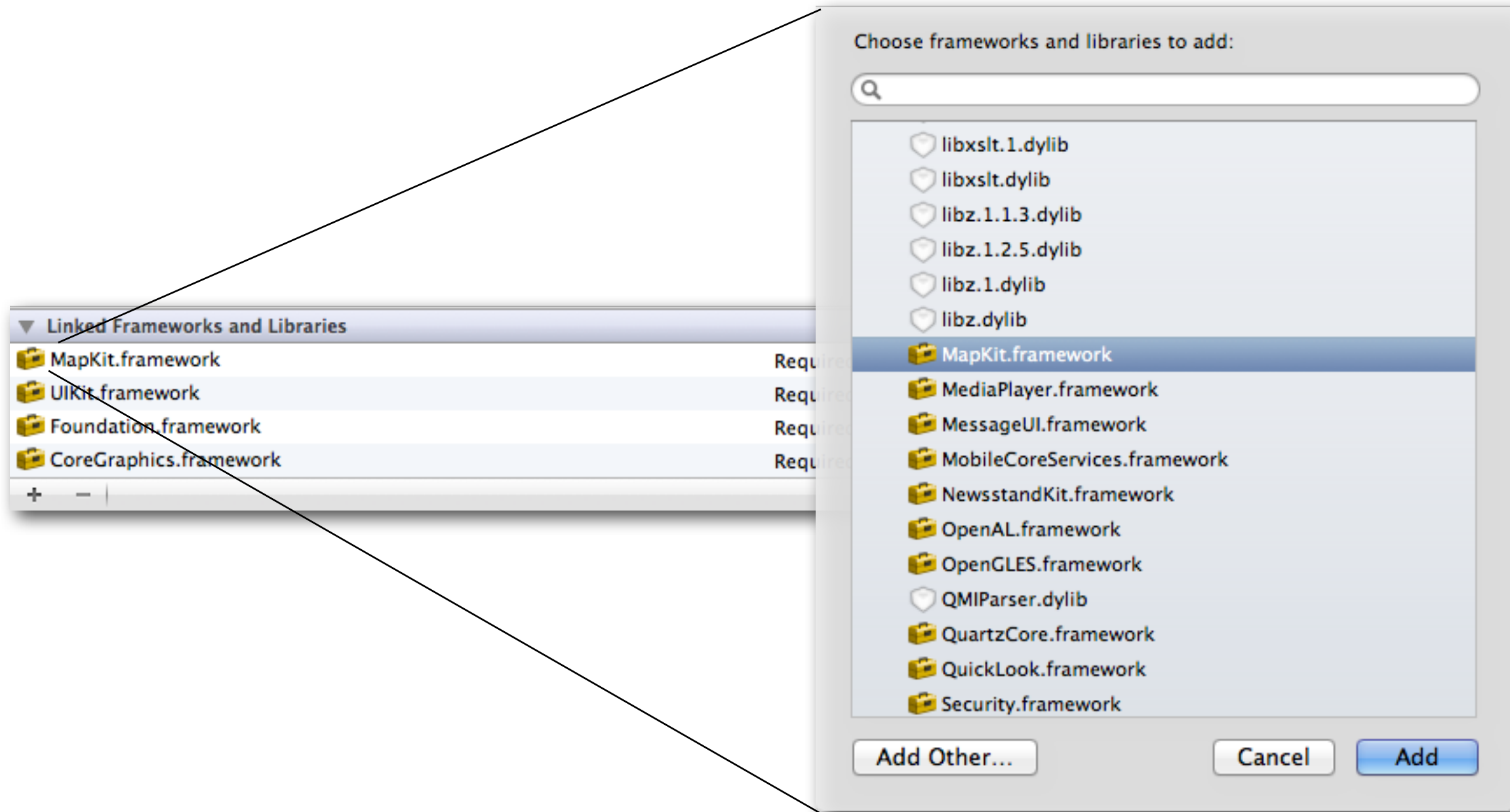
Add Map View Component



2012-06-29 06:10:37.505 ColumbusMapsiOS[11781:f803] * Terminating
app due to uncaught exception 'NSInvalidUnarchiveOperationException',
reason: 'Could not instantiate class named MKMapView'
*** First throw call stack:
(0x13c7022 0x1558cd6 0x136fa48 0x136f9b9 0x3324a3 0x33267b 0x332383
0x43002 0x332c6e 0x332383 0x232cad 0x332c6e 0x33267b 0x332383 0x232105
0xd81fc 0xd8779 0xd899b 0x37401 0x37670 0x37836 0xc881dd8 0x3e72a
0xf596 0x10274 0x1f183 0x1fc38 0x13634 0x12b1ef5 0x139b195 0x12ffff2
0x12fe8da 0x12fdd84 0x12fdc9b 0xfc65 0x11626 0x212d 0x2095 0x1)
terminate called throwing an exception**

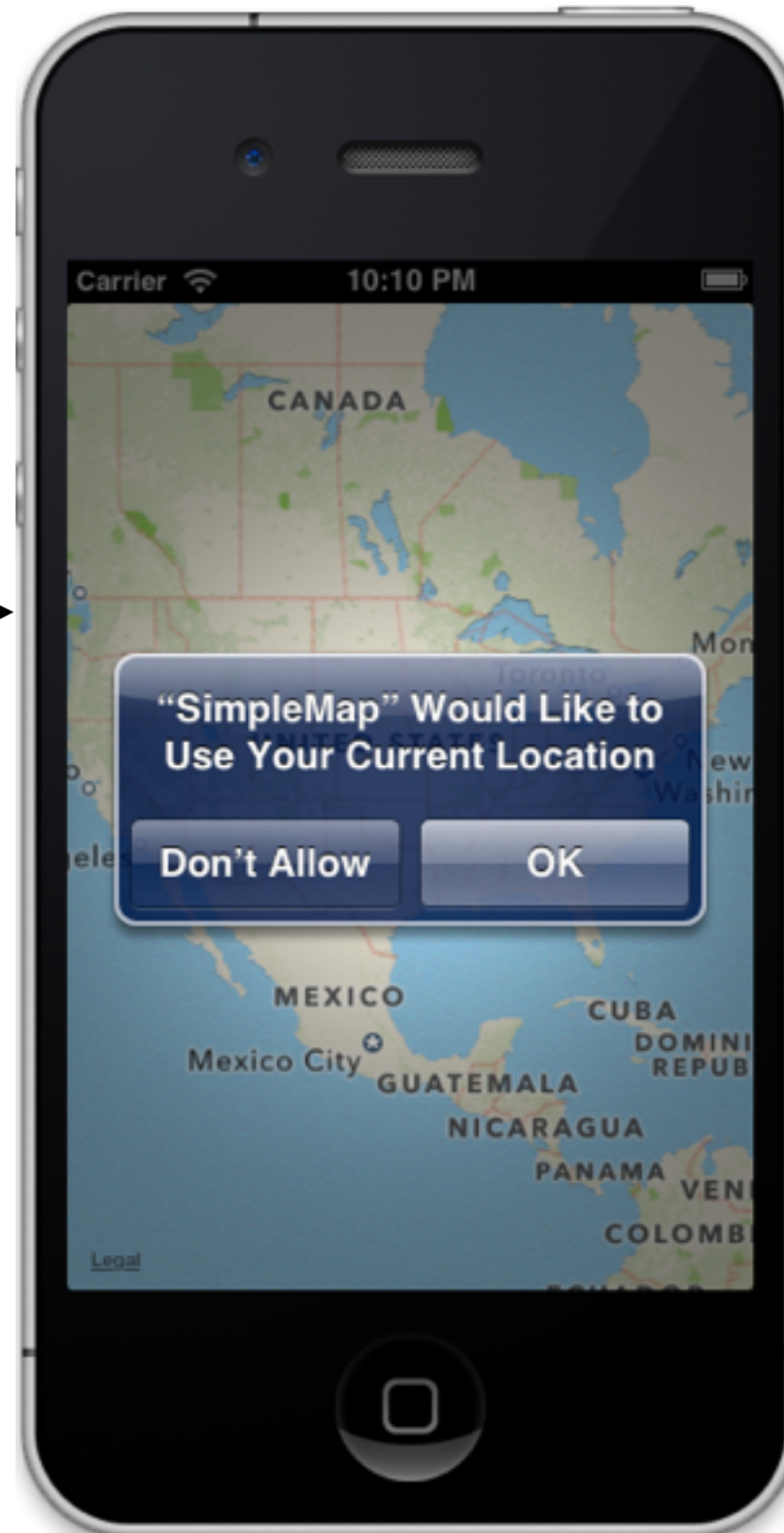
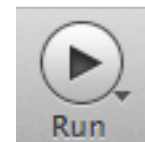


Add MapKit Framework





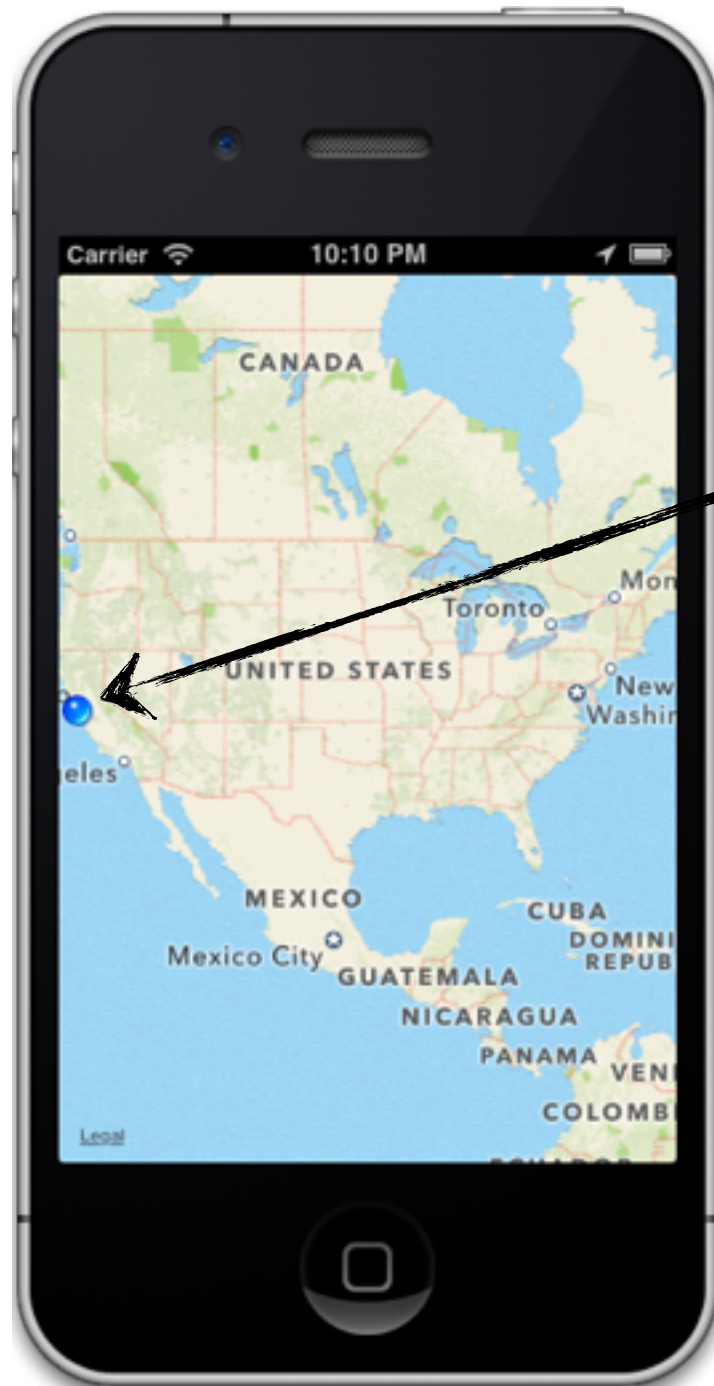
Run Application



Display Current Location



Show User Location



▼ Map View

Type

Behavior ☒ Shows User Location
☒ Allows Zooming
☒ Allows Scrolling

▼ View

Mode

Tag

Interaction ☒ User Interaction Enabled
☒ Multiple Touch

Alpha

Background

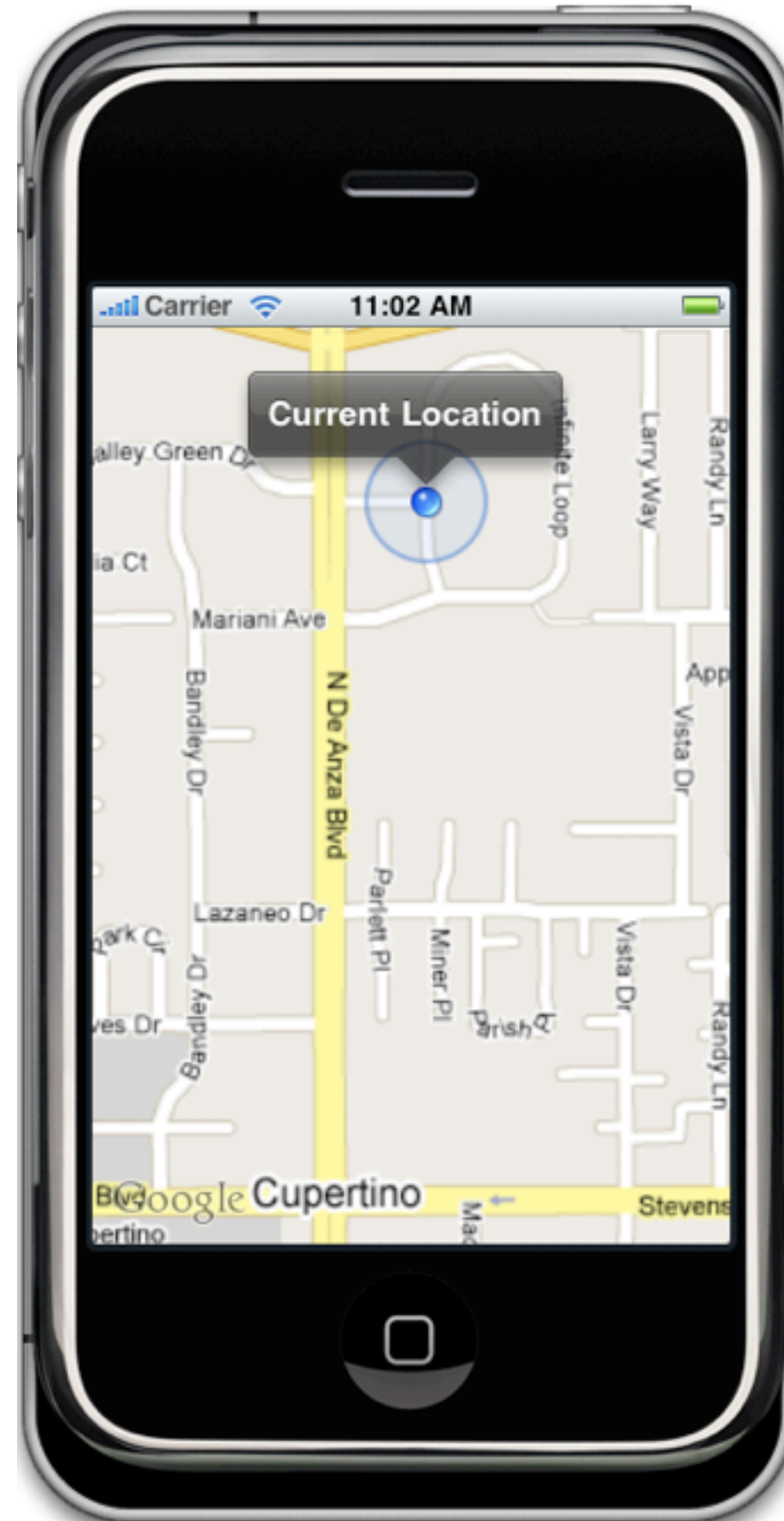
Drawing ☒ Opaque ☐ Hidden
☒ Clears Graphics Context
☒ Clip Subviews
☒ Autoresize Subviews

Stretching
X Y

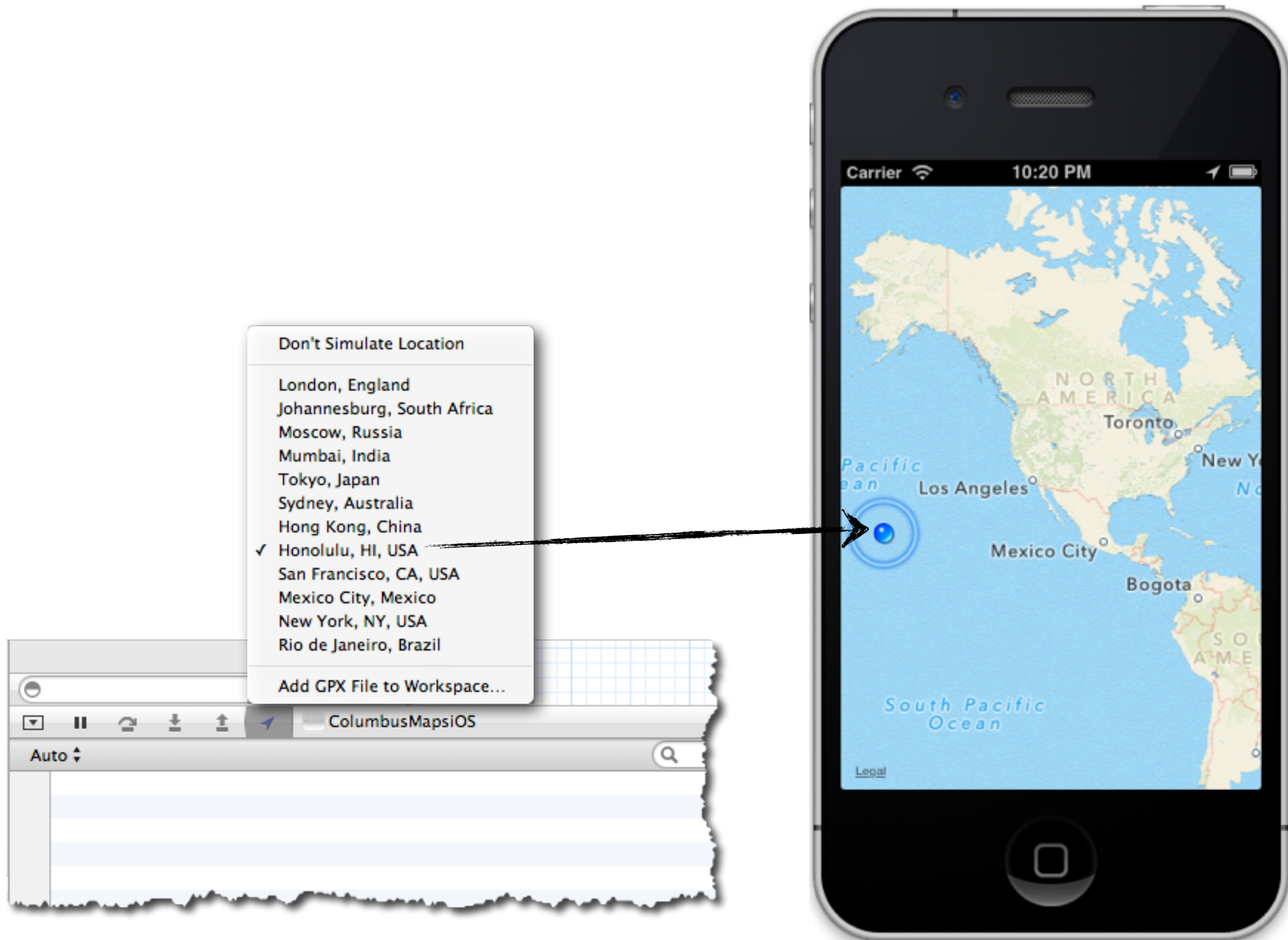
Width Height

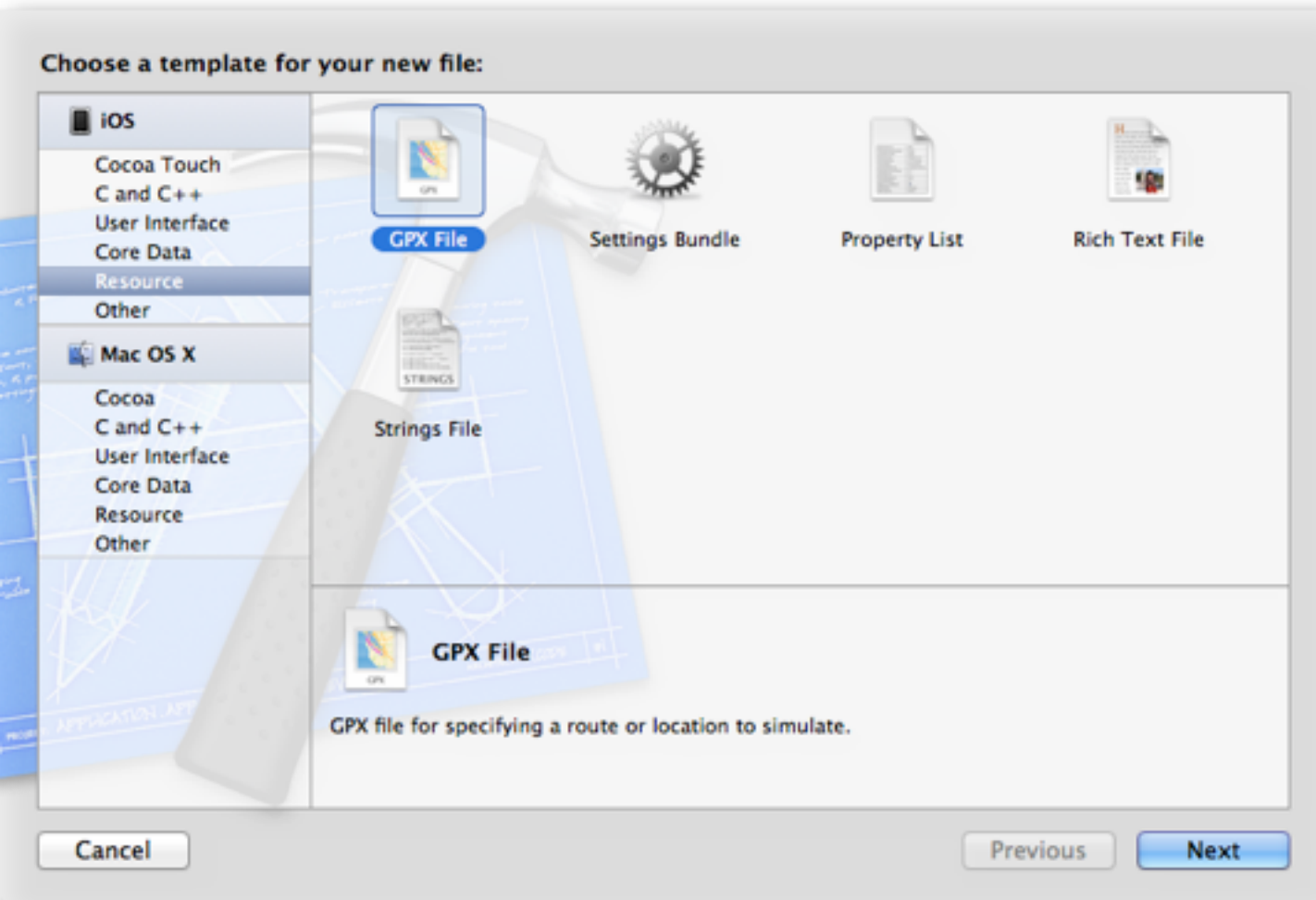


Default Simulator Location



Simulate Location



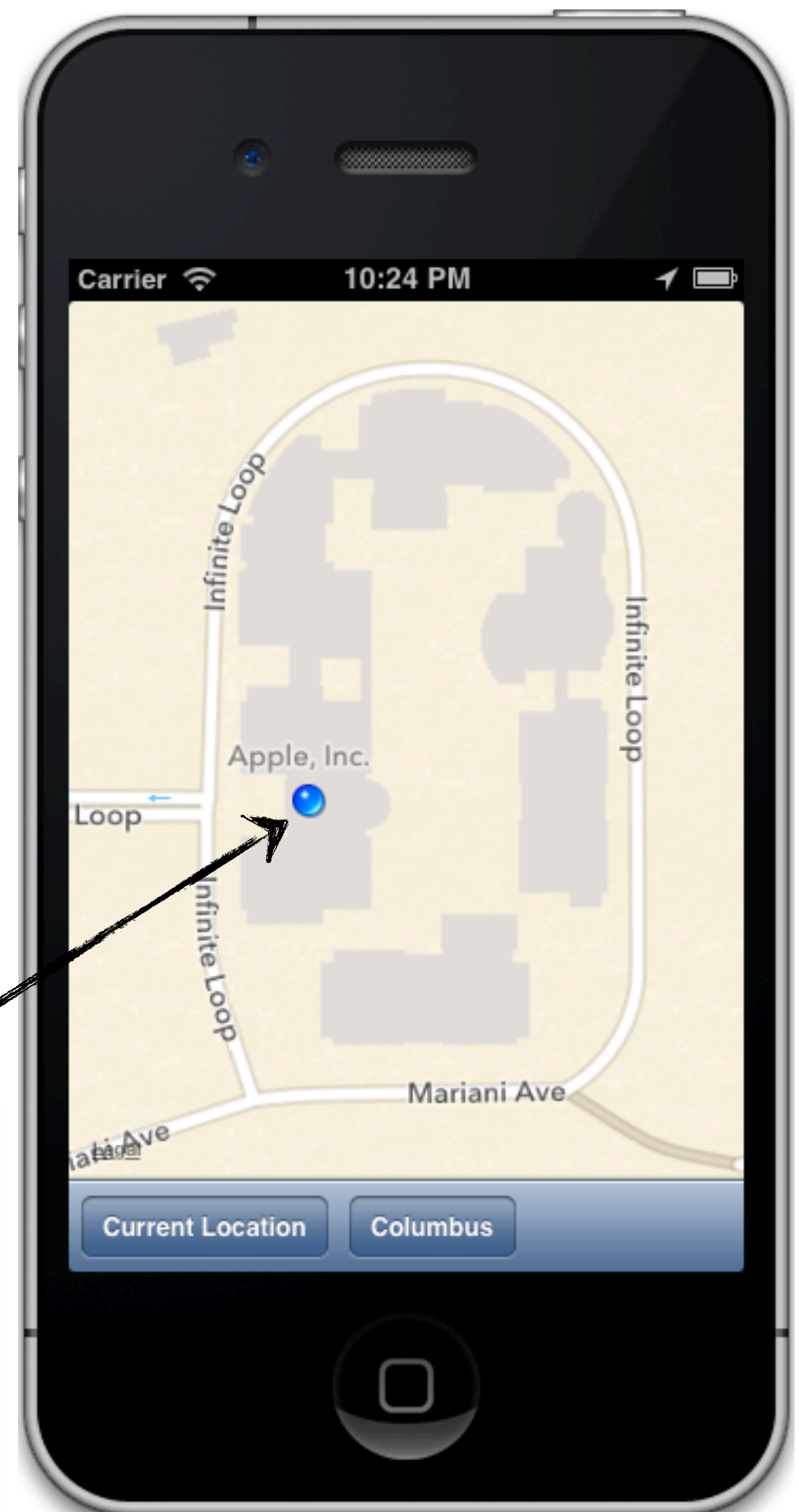
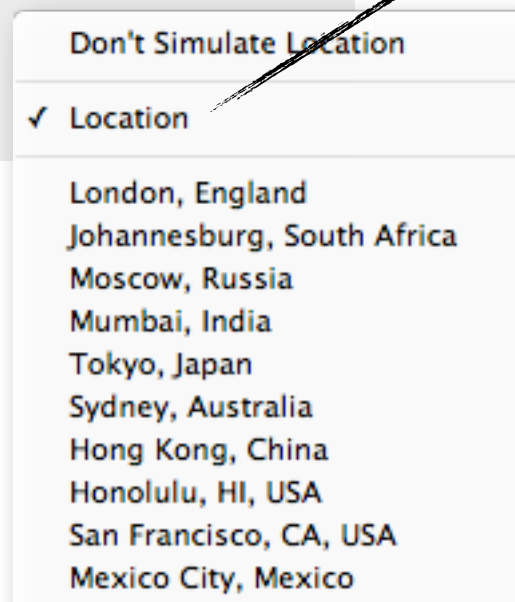


Location.gpx

```
<?xml version="1.0"?>
<gpx version="1.1" creator="Xcode">

  <wpt lat="37.331705" lon="-122.030237">
    <name>Cupertino</name>
  </wpt>

</gpx>
```



GPX *The GPS Exchange Format*

[GPX 1.1 Schema](#) [Documentation](#) [Why support GPX?](#) [Who supports GPX?](#) [Developers Forum](#) [Validating GPX](#) [Examples](#)

GPX: the GPS Exchange Format

WHAT IS GPX?

GPX (the GPS Exchange Format) is a light-weight XML data format for the interchange of GPS data (waypoints, routes, and tracks) between applications and Web services on the Internet.

CURRENT STATUS

The GPX 1.1 schema was released on August 9, 2004. GPX has been the de-facto XML standard for lightweight interchange of GPS data since the initial GPX 1.0 release in 2002. GPX is being used by **dozens of software programs and Web services for GPS data exchange, mapping, and geocaching.**

GPX FOR DEVELOPERS

If you're a developer, read how GPX can help your application or web service.

View the official **GPX 1.1 Schema**.

Read the **GPX 1.1 Documentation**.

Learn **how to validate** your GPX output.

View the official **GPX 1.1 Schema**.

GPX is an open development effort. To participate in the future development of GPX, join the **GPX Developers Forum**.

USER BENEFITS OF GPX

If you own a GPS, find out **how GPX is helping** to make all your **favorite applications** work together.

COMMENTS

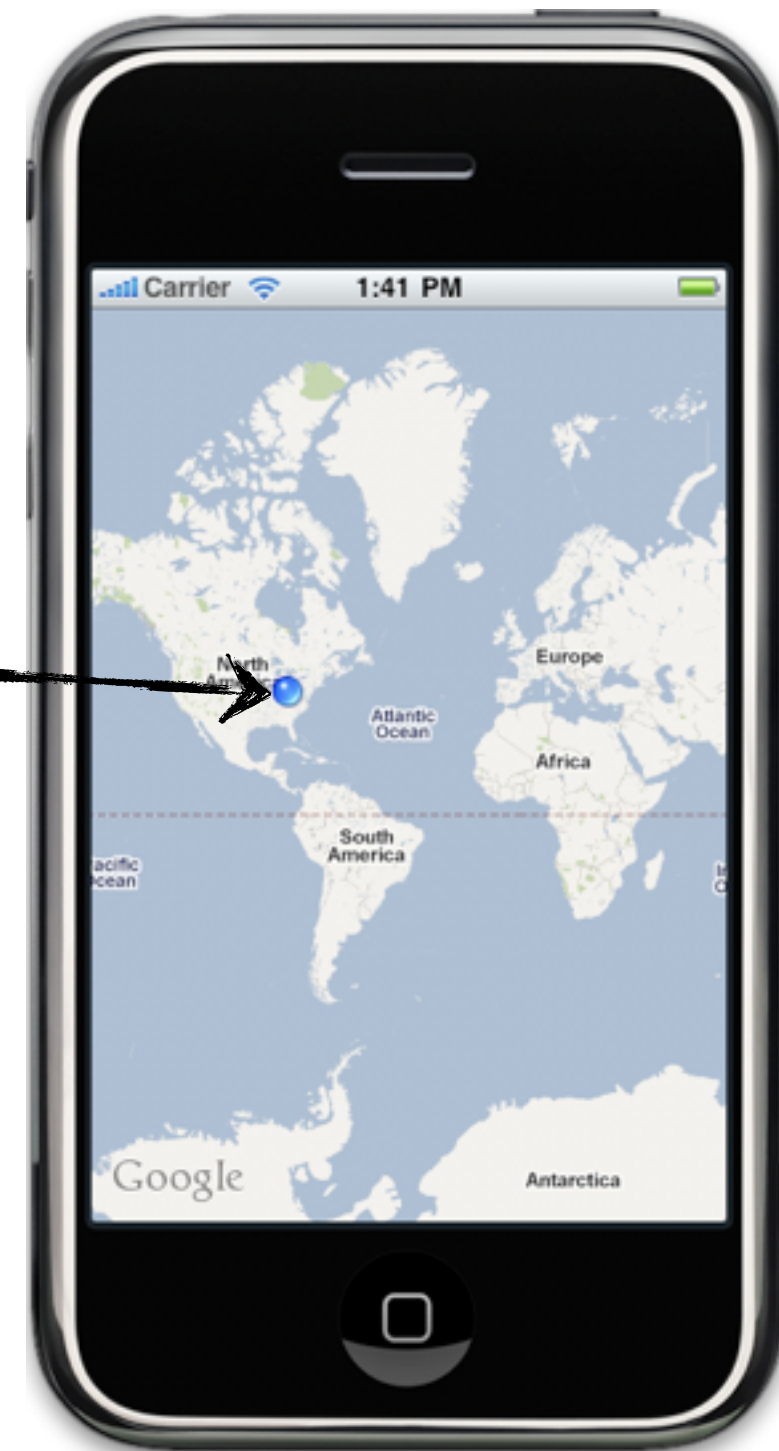
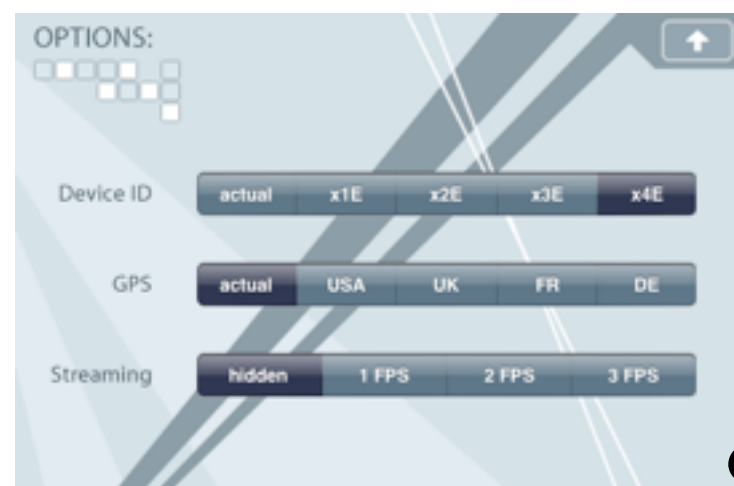
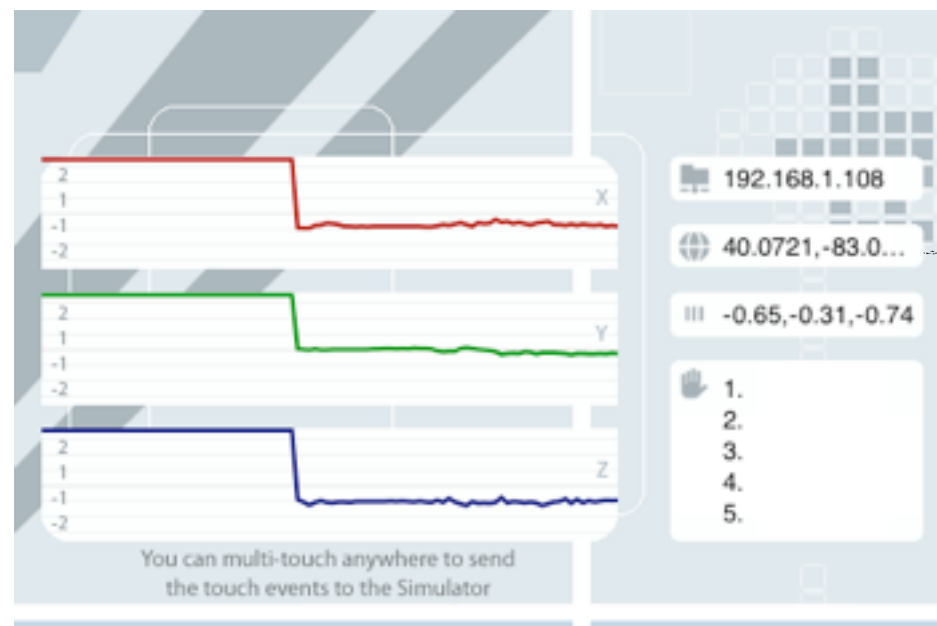
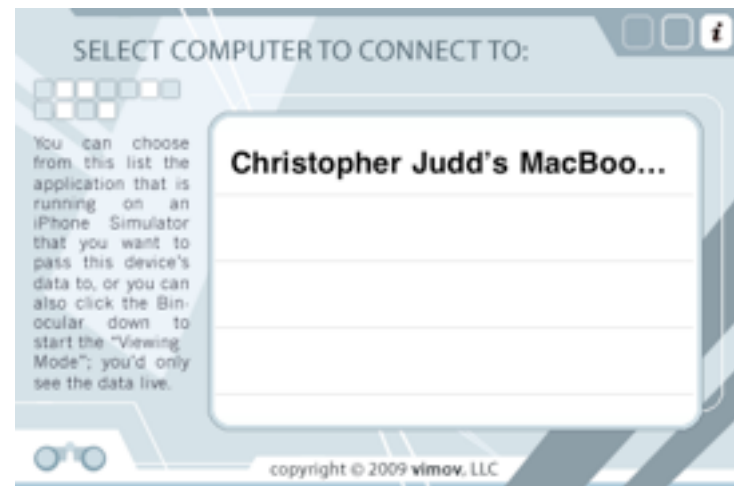
To ask questions about the GPX format or propose changes, please join the **GPX Developers Forum**. If you have a customer support question regarding the GPX brand of CD players, alarm clocks, and other consumer electronics, **visit www.gpx.com**.

GPX is an open standard. All text on this Web page is in the public domain. This page is maintained by **Dan Foster**

<http://www.topografix.com/gpx.asp>

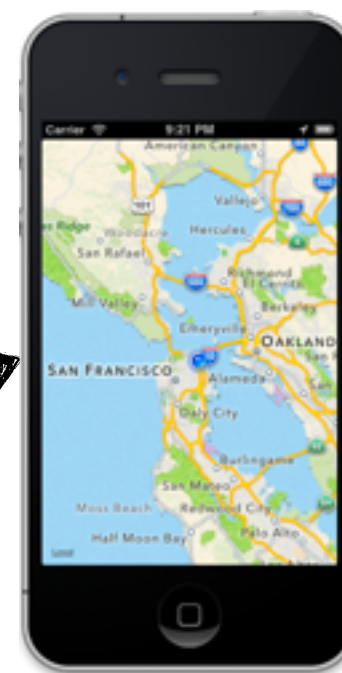
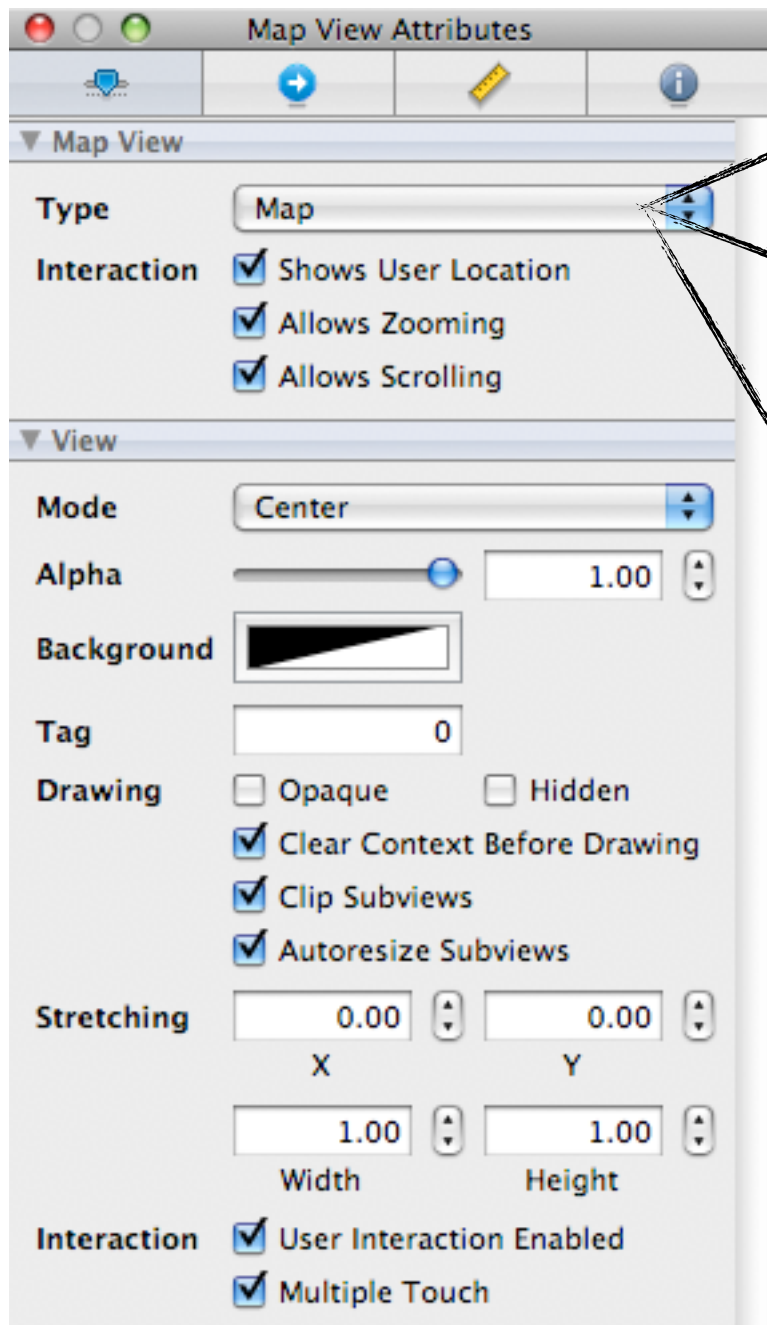


iSimulate

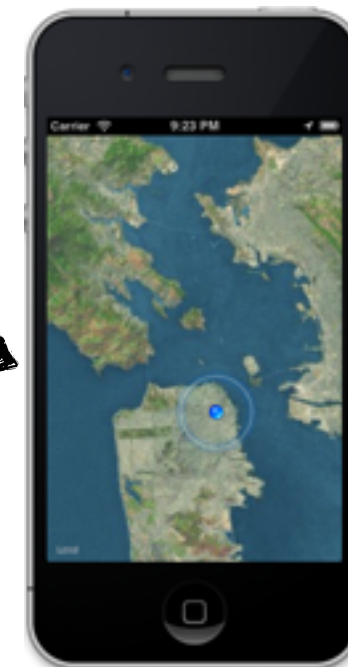


\$15.99 in App Store

Change Map Types



Map



Satellite

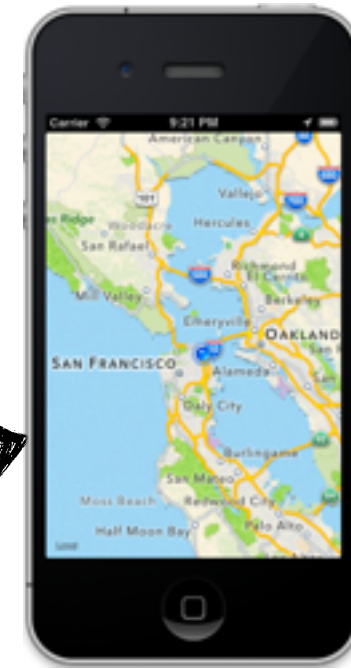


Hybrid


```

switch (((UISegmentedControl *)sender).selectedSegmentIndex)
{
    case 0: {
        mapView.mapType = MKMapTypeStandard;
        break;
    }
    case 1: {
        mapView.mapType = MKMapTypeSatellite;
        break;
    }
    default: {
        mapView.mapType = MKMapTypeHybrid;
        break;
    }
}

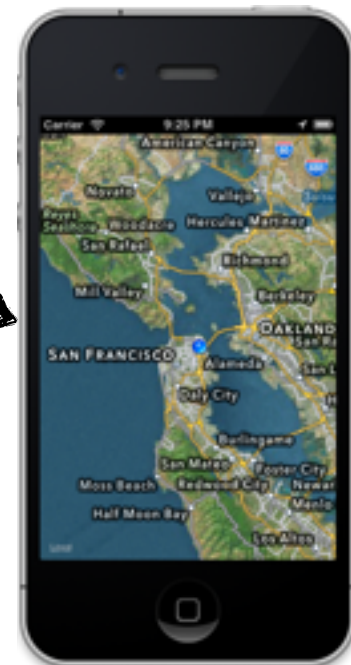
```



Map



Satellite

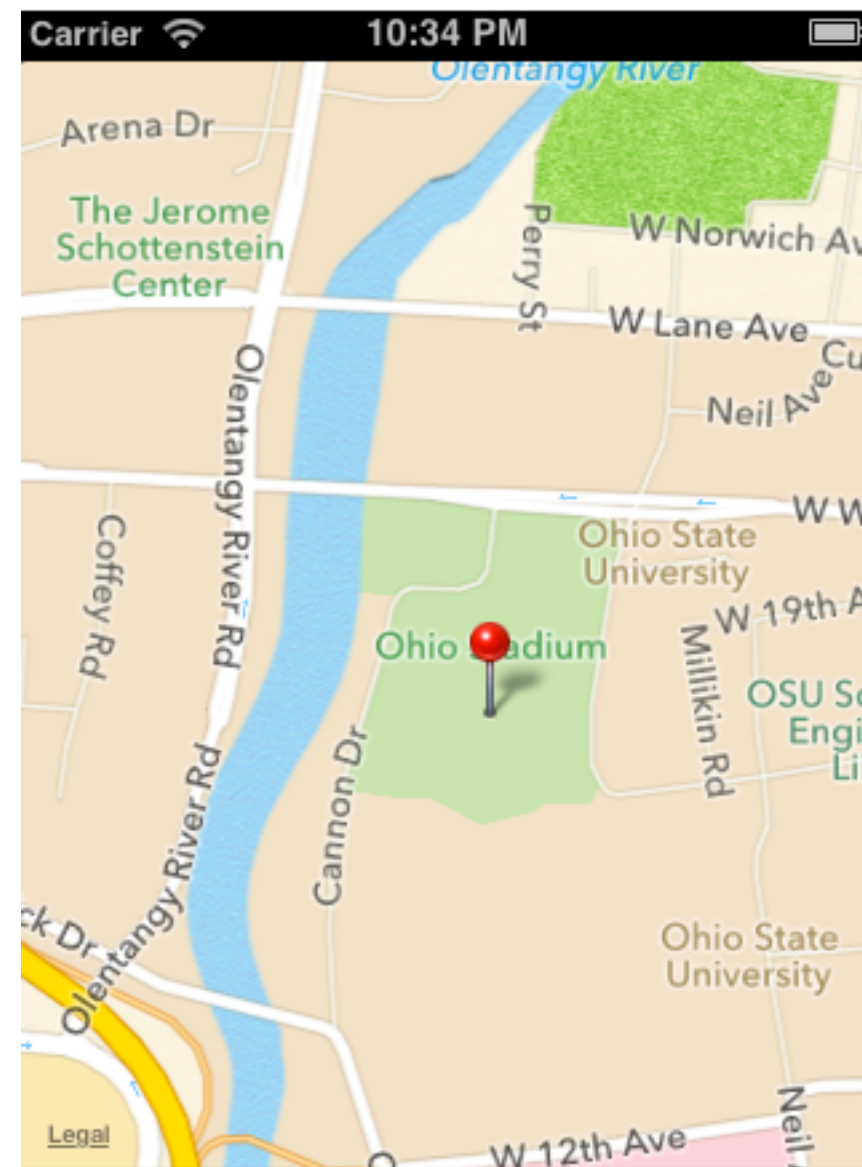
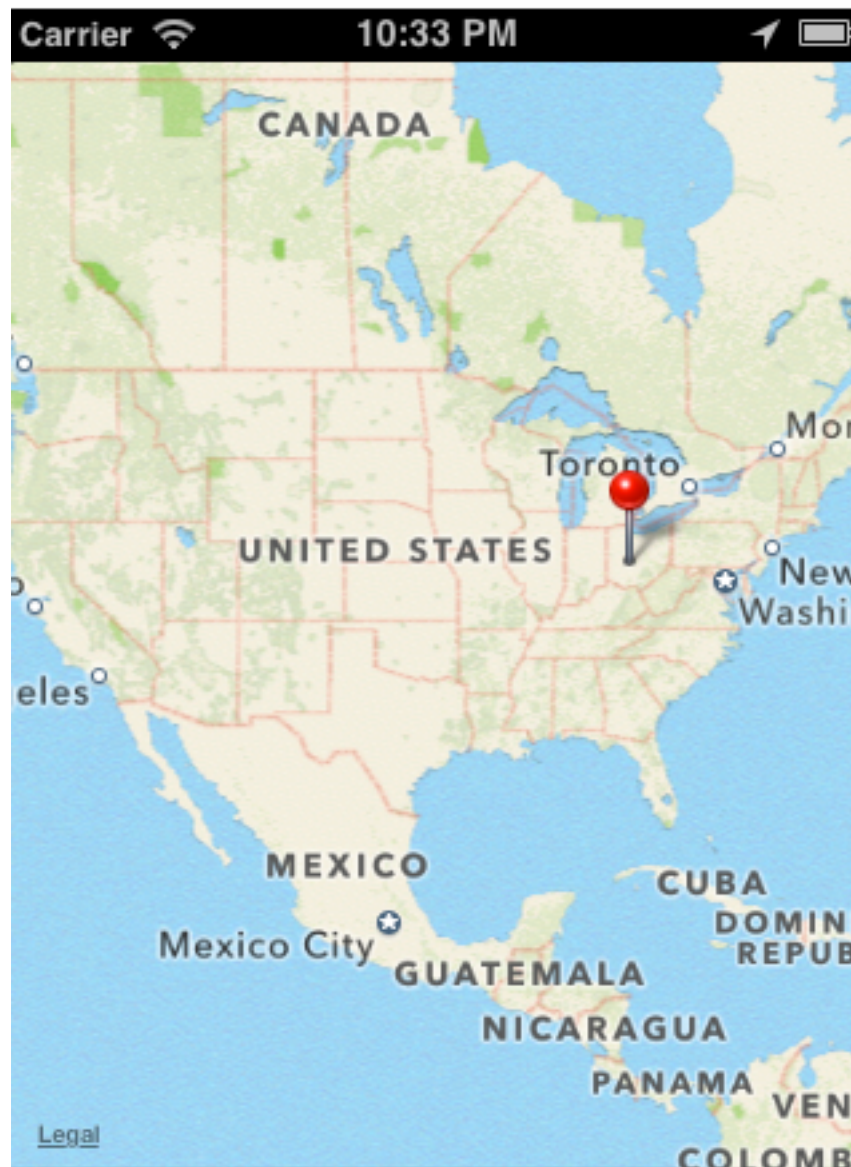


Hybrid

Adding Annotations

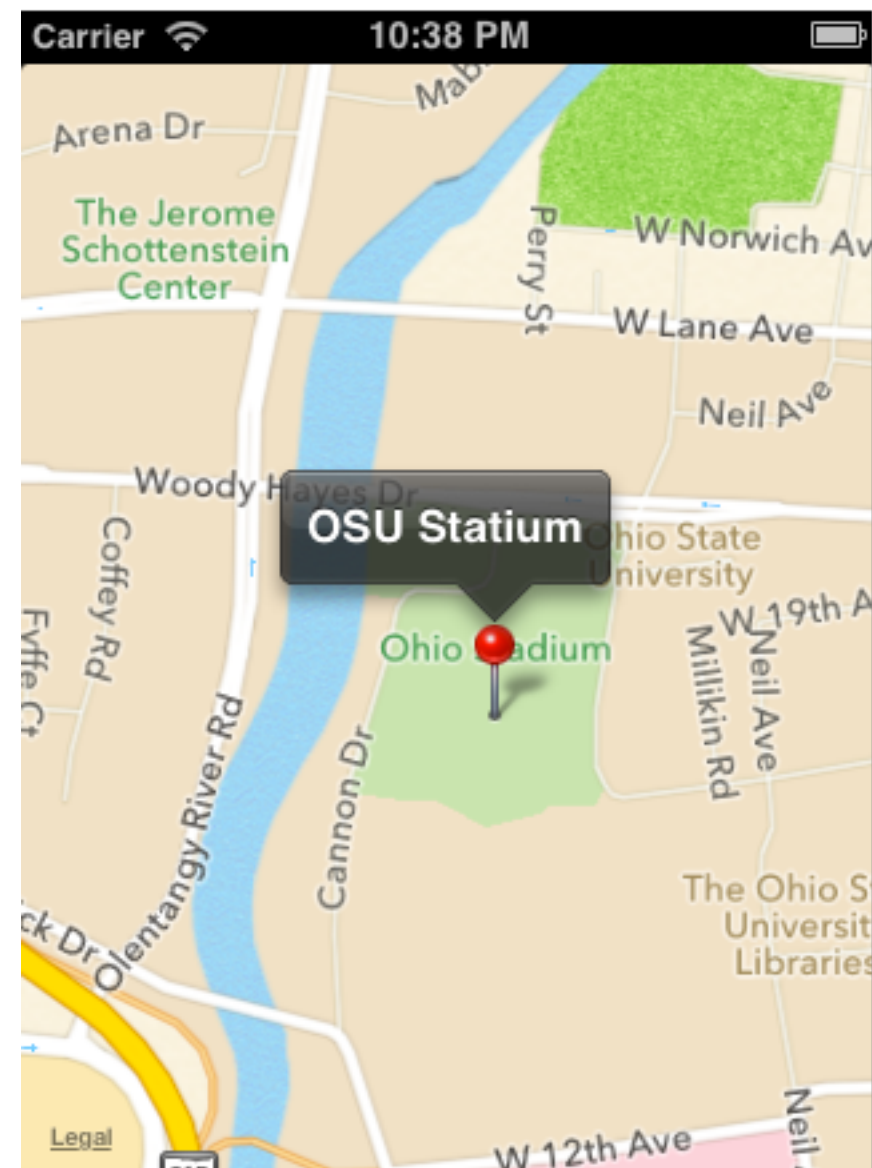
Add Annotation

```
CLLocationCoordinate2D coordinate = {40.001517, -83.019755};  
MKPointAnnotation* point = [MKPointAnnotation alloc];  
point.coordinate = coordinate;  
  
[mapView addAnnotation:point];
```



Add Annotation

```
CLLocationCoordinate2D coordinate = {40.001517, -83.019755};  
MKPointAnnotation* point = [MKPointAnnotation alloc];  
point.coordinate = coordinate;  
point.title = @"OSU Stadium";  
  
[mapView addAnnotation:point];
```



Add Annotation

```
CLLocationCoordinate2D coordinate = {40.001517, -83.019755};  
MKPointAnnotation* point = [MKPointAnnotation alloc];  
point.coordinate = coordinate;  
point.title = @"OSU Statium";  
point.subtitle = @"Home of the Ohio State Buckeyes";  
  
[mapView addAnnotation:point];
```



Custom Annotations

```
#import <Foundation/Foundation.h>
#import <MapKit/MapKit.h>

@interface JSCMHistoryMarker : NSObject <MKAnnotation>

@property (nonatomic, assign) CLLocationCoordinate2D coordinate;
@property (nonatomic, copy) NSString *name;
@property (nonatomic, copy) NSString *description;
@property (nonatomic, assign) BOOL church;

+ (JSCMHistoryMarker*)createHistoryMarker:(NSString*) name latitude: (CLLocationDegrees)lat longitude:
(CLLocationDegrees)lng;
+ (JSCMHistoryMarker*)createChurchMarker:(NSString*) name latitude: (CLLocationDegrees)lat longitude:
(CLLocationDegrees)lng;

@end
```

Diagram annotations:

- Arrow from "implement MKAnnotation" points to the `<MKAnnotation>` inheritance in the interface declaration.
- Arrow from "required property" points to the `coordinate` property.

```
#import "JSCMHistoryMarker.h"

@implementation JSCMHistoryMarker

@synthesize coordinate;
@synthesize name;
@synthesize description;
@synthesize church;

- (NSString *)title {
    return name;
}

- (NSString *)subtitle {
    return description;
}

// code removed for brevity
@end
```

Diagram annotations:

- Two arrows from "optional properties" point to the `title` and `subtitle` methods.

```

NSMutableArray* markers = [[NSMutableArray alloc] initWithCapacity:35];

[markers addObject:[JSCMHistoryMarker createHistoryMarker:@"Jesse Owens"
                    latitude: 40.012314 longitude: -83.02796]];
[markers addObject:[JSCMHistoryMarker createHistoryMarker:@"Ohio State School for the Blind"
                    latitude: 40.068763 longitude: -83.019]];
[markers addObject:[JSCMHistoryMarker createChurchMarker:@"St. Paul African Methodist Episcopal Church"
                    latitude: 39.966964 longitude: -82.9834]];
[markers addObject:[JSCMHistoryMarker createHistoryMarker:@"The Ohio State Fair"
                    latitude: 40.000943 longitude: -82.98899]];

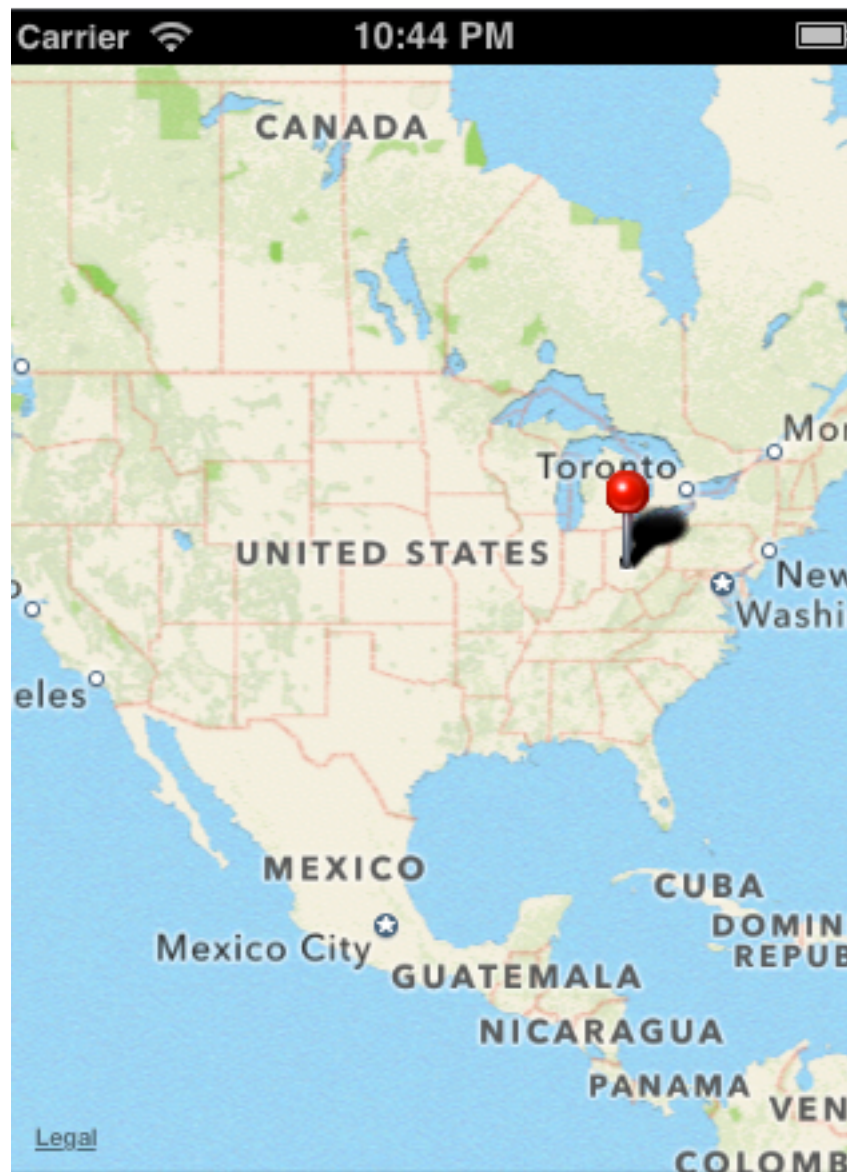
[mapView addAnnotations: markers];

```



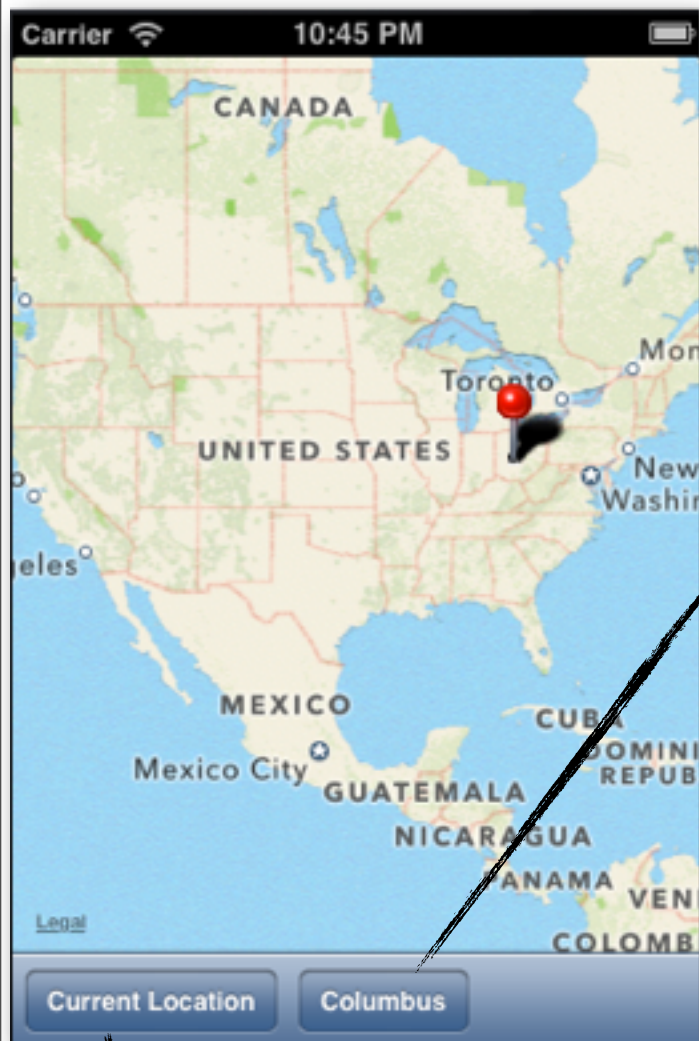
Positioning Map

Multiple Pins Can be hard to see from far away



Applications with a geographical focus should frame the region

Zooming



```
- (IBAction)zoomColumbus:(id)sender {
```

```
    CLLocationCoordinate2D columbusCenterCoordinate = {39.971793, -82.983396};
```

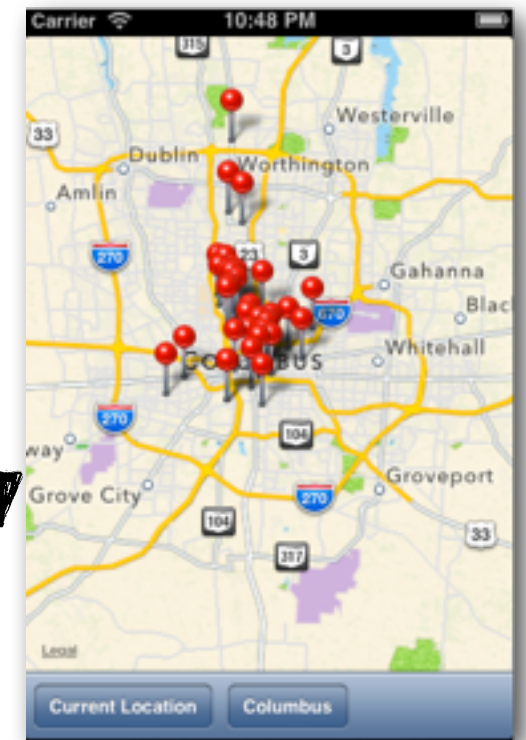
```
    MKCoordinateSpan span = MKCoordinateSpanMake( 0.390456, 0.390456);
```

```
    MKCoordinateRegion region = MKCoordinateRegionMake(columbusCenterCoordinate, span);
```

```
    [mapView setRegion:region animated:TRUE];
```

```
}
```

delta in
degrees



```
- (IBAction)zoomCurrentLocation:(id)sender {
```

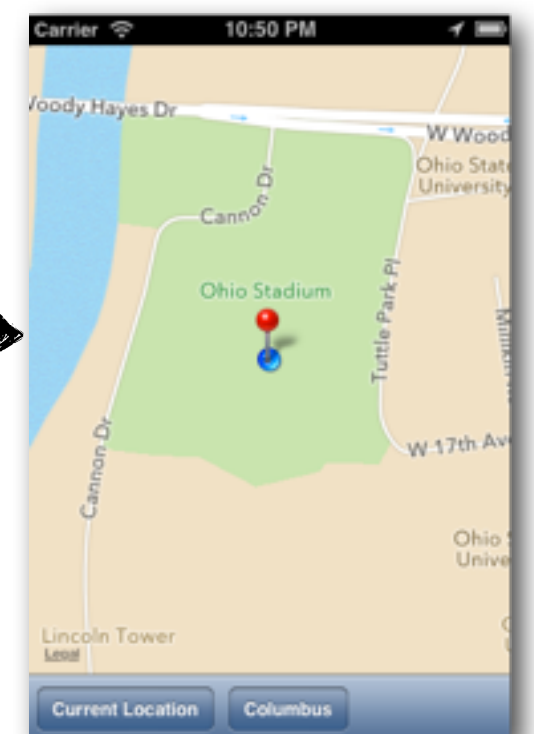
```
    MKCoordinateRegion region = MKCoordinateRegionMakeWithDistance(
```

```
        mapView.userLocation.location.coordinate, 500, 500);
```

```
    [mapView setRegion:region animated:TRUE];
```

```
}
```

meters



Decorating Annotations

Changing Annotation Appearance

*Controller.h

Add MapKit header

Implement MKMapViewDelegate protocol

```
#import <UIKit/UIKit.h>
#import <MapKit/MapKit.h>

@interface JSCMViewController : UIViewController <MKMapViewDelegate>

@end
```

*Controller.m

```
@interface JSCMViewController ()
@property (weak, nonatomic) IBOutlet MKMapView *mapView;
@end

@implementation JSCMViewController
@synthesize mapView;

- (void)viewDidLoad {
    [super viewDidLoad];
    mapView.delegate = self;
}

- (MKAnnotationView *)mapView:(MKMapView *)aMapView viewForAnnotation:(id < MKAnnotation >)annotation {
    return nil;
}

// Details removed for brevity

@end
```

Assign delegate

Implement viewForAnnotation

Returning nil will perform default behavior

MKAnnotation = data

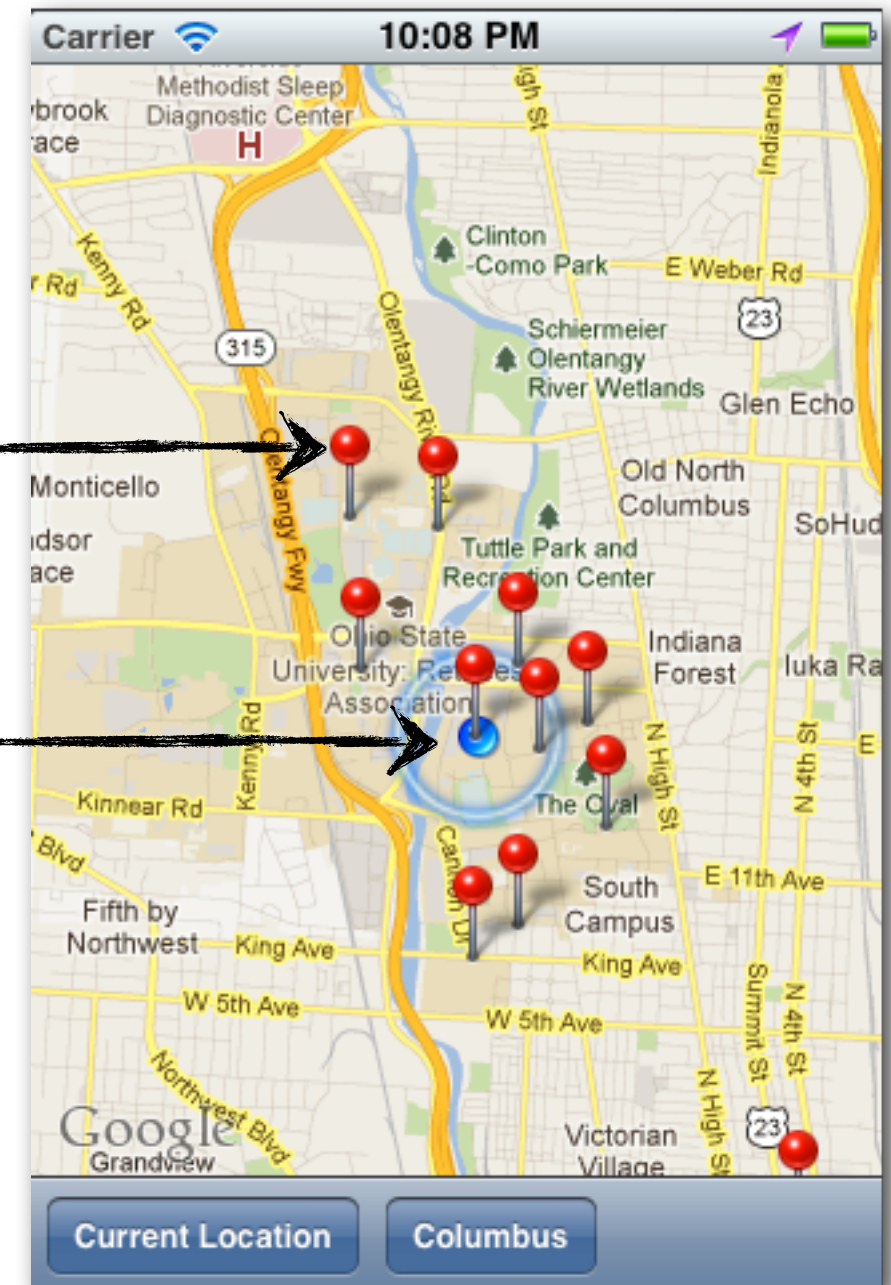
MKAnnotationView = presentation

Default Annotations

```
- (MKAnnotationView *)mapView:(MKMapView *)aMapView viewForAnnotation:(id < MKAnnotation >)annotation {  
    return nil;  
}
```

red pins

current location blue dot



Coloring Pins

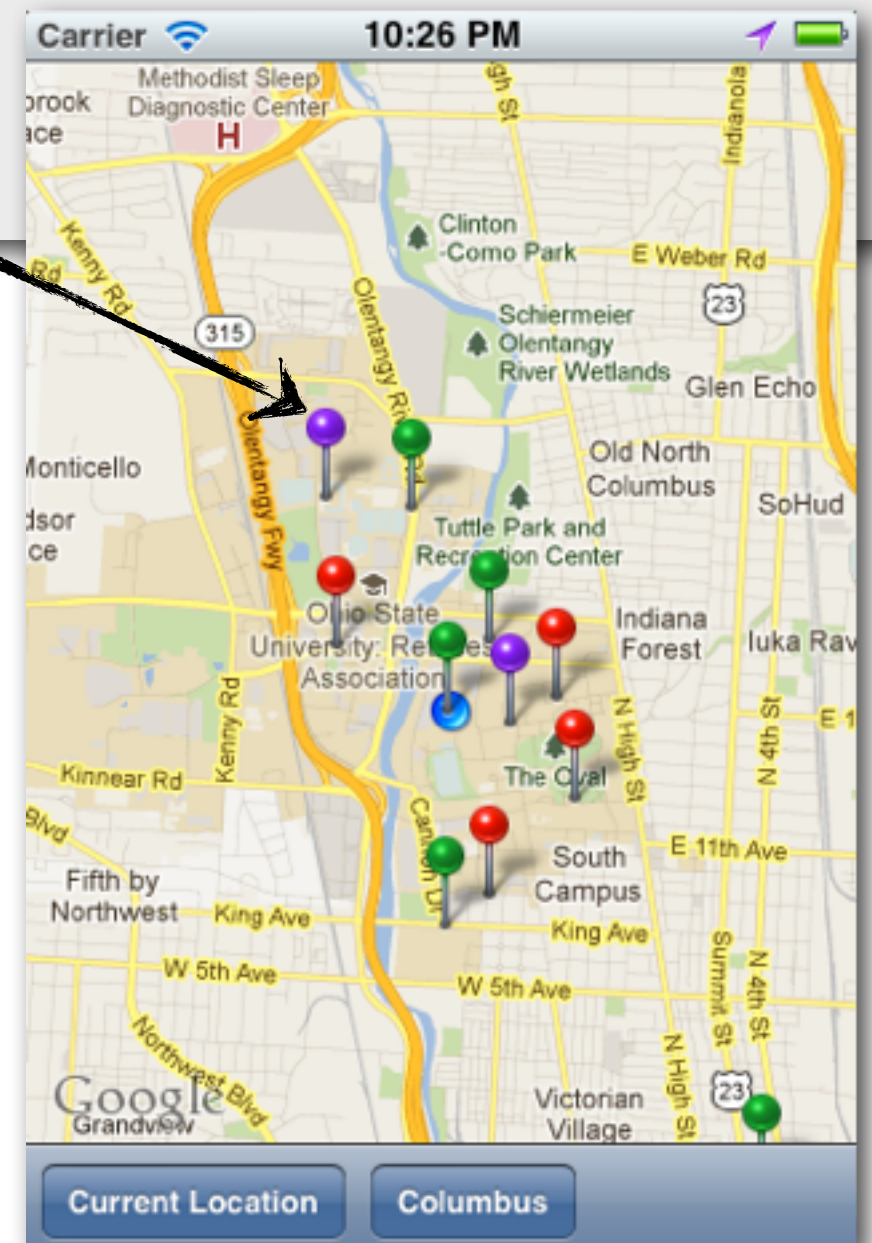
```
- (MKAnnotationView *)mapView:(MKMapView *)aMapView viewForAnnotation:(id < MKAnnotation >)annotation {  
    if(annotation == mapView.userLocation) {return nil;}  
  
    MKPinAnnotationView *annotationView =  
        (MKPinAnnotationView*)[mapView dequeueReusableAnnotationViewWithIdentifier:@"marker"];  
    if(nil == annotationView) {  
        annotationView = [[MKPinAnnotationView alloc] initWithAnnotation:annotation reuseIdentifier:@"marker"];  
        annotationView.pinColor = MKPinAnnotationColorPurple;  
    }  
  
    return annotationView;  
}
```

Limited to 3 colors

MKPinAnnotationColorPurple

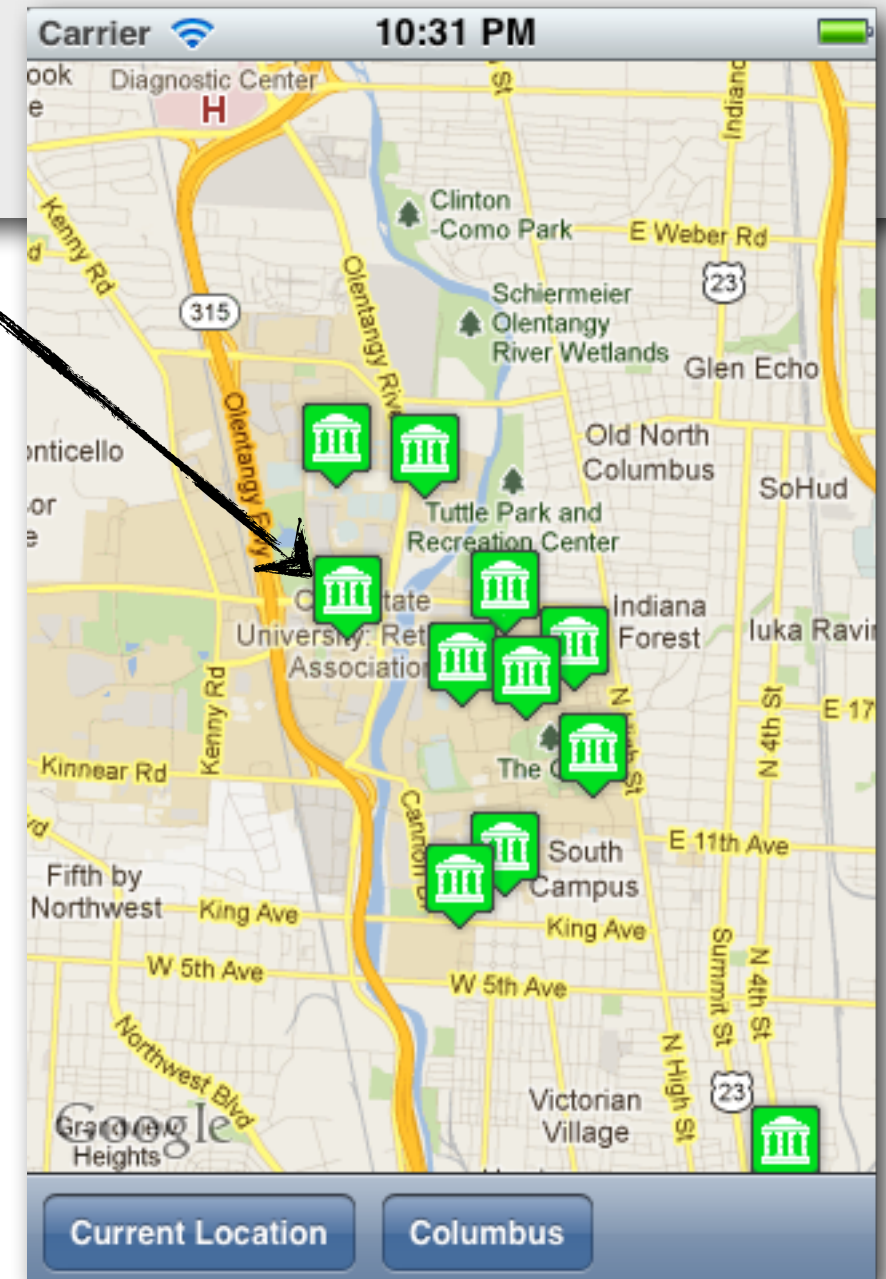
MKPinAnnotationColorRed

MKPinAnnotationColorGreen



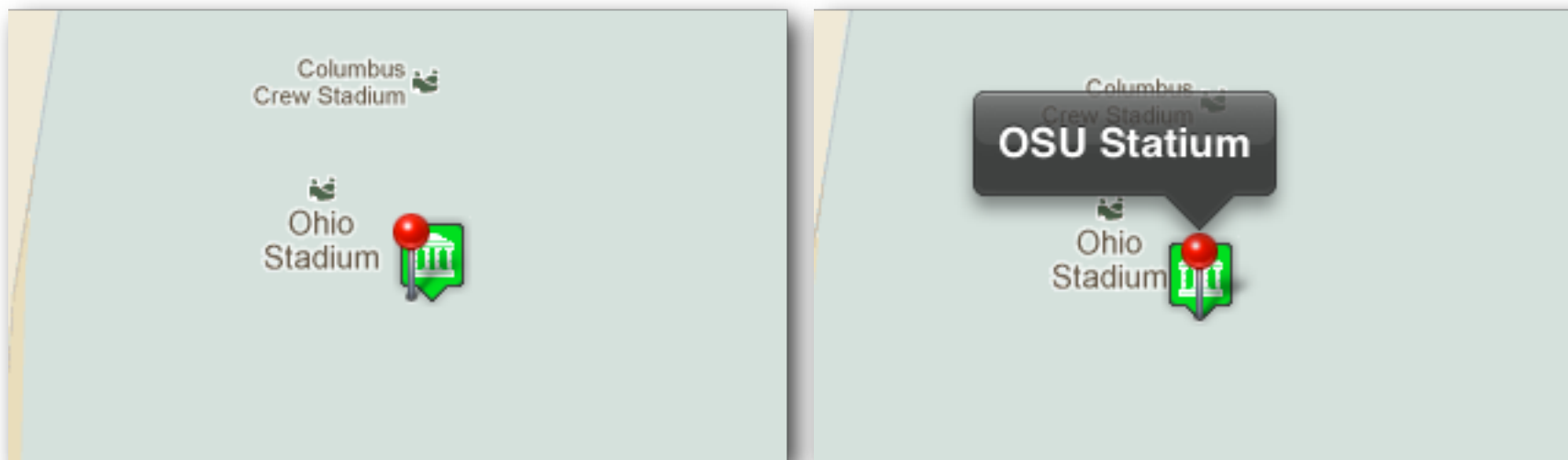
Annotation Images

```
- (MKAnnotationView *)mapView:(MKMapView *)aMapView viewForAnnotation:(id < MKAnnotation >)annotation {  
    if(annotation == mapView.userLocation) {return nil;}  
  
    MKAnnotationView *annotationView =  
        (MKAnnotationView*)[mapView dequeueReusableAnnotationViewWithIdentifier:@"marker"];  
    if(nil == annotationView) {  
        annotationView = [[MKAnnotationView alloc] initWithAnnotation:annotation reuseIdentifier:@"marker"];  
        annotationView.image = [UIImage imageNamed:@"history.png"];  
    }  
  
    return annotationView;  
}
```



Center Offset

```
- (MKAnnotationView *)mapView:(MKMapView *)aMapView viewForAnnotation:(id < MKAnnotation >)annotation {  
    if(annotation == mapView.userLocation) {return nil;}  
  
    MKAnnotationView *annotationView =  
        (MKAnnotationView*)[mapView dequeueReusableAnnotationViewWithIdentifier:@"marker"];  
    if(nil == annotationView) {  
        annotationView = [[MKAnnotationView alloc] initWithAnnotation:annotation reuseIdentifier:@"marker"];  
        annotationView.image = [UIImage imageNamed:@"history.png"];  
  
        CGPoint offsetPoint = CGPointMake(-8, 0);  
        [annotationView setCenterOffset:offsetPoint];  
    }  
  
    return annotationView;  
}
```



pins are placed using the center point

Free Map Icons

<http://code.google.com/p/google-maps-icons/>

Administration, Office & Industry



All the icons in this Icon Category [described and tagged](#).

Culture & Entertainment



All the icons in this Icon Category [described and tagged](#).

Education & Kids

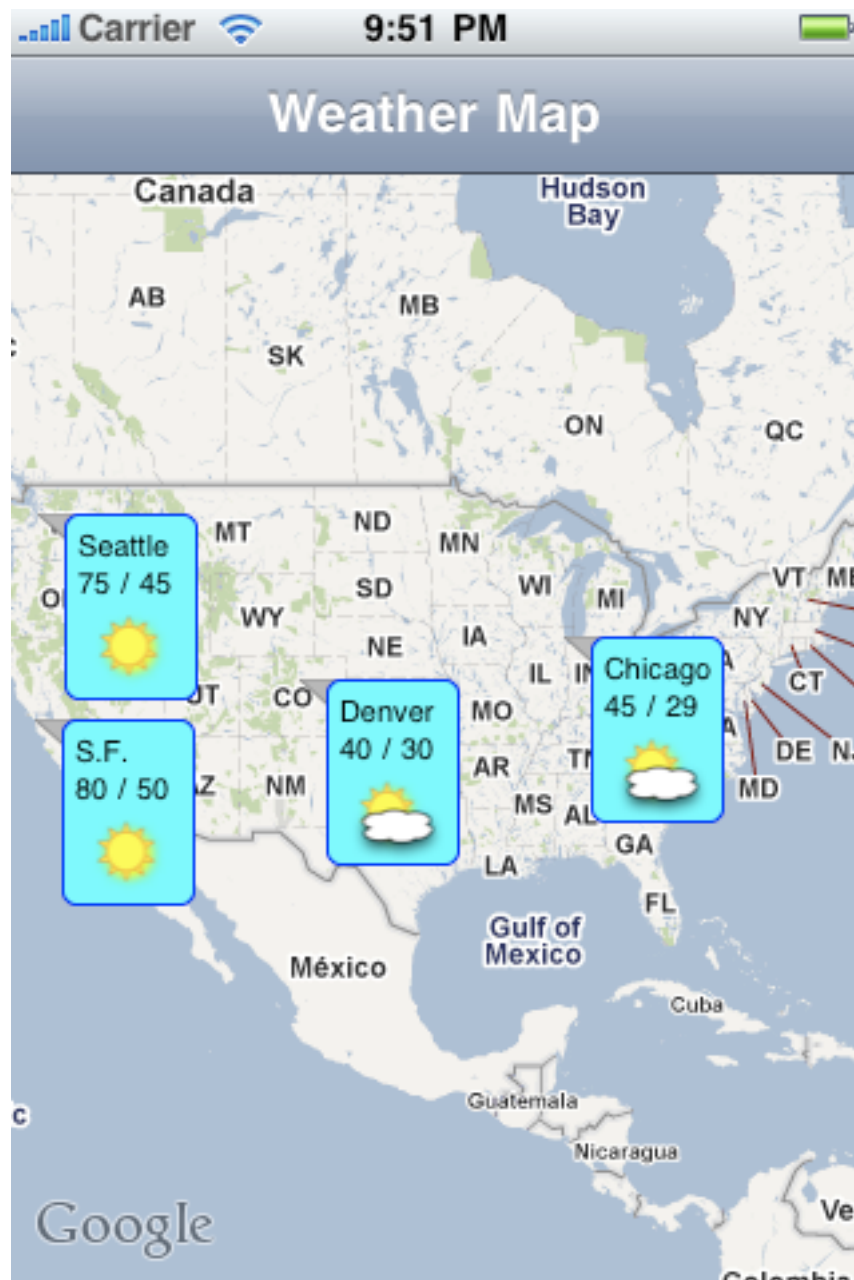


All the icons [described and tagged](#).

Events & Weather

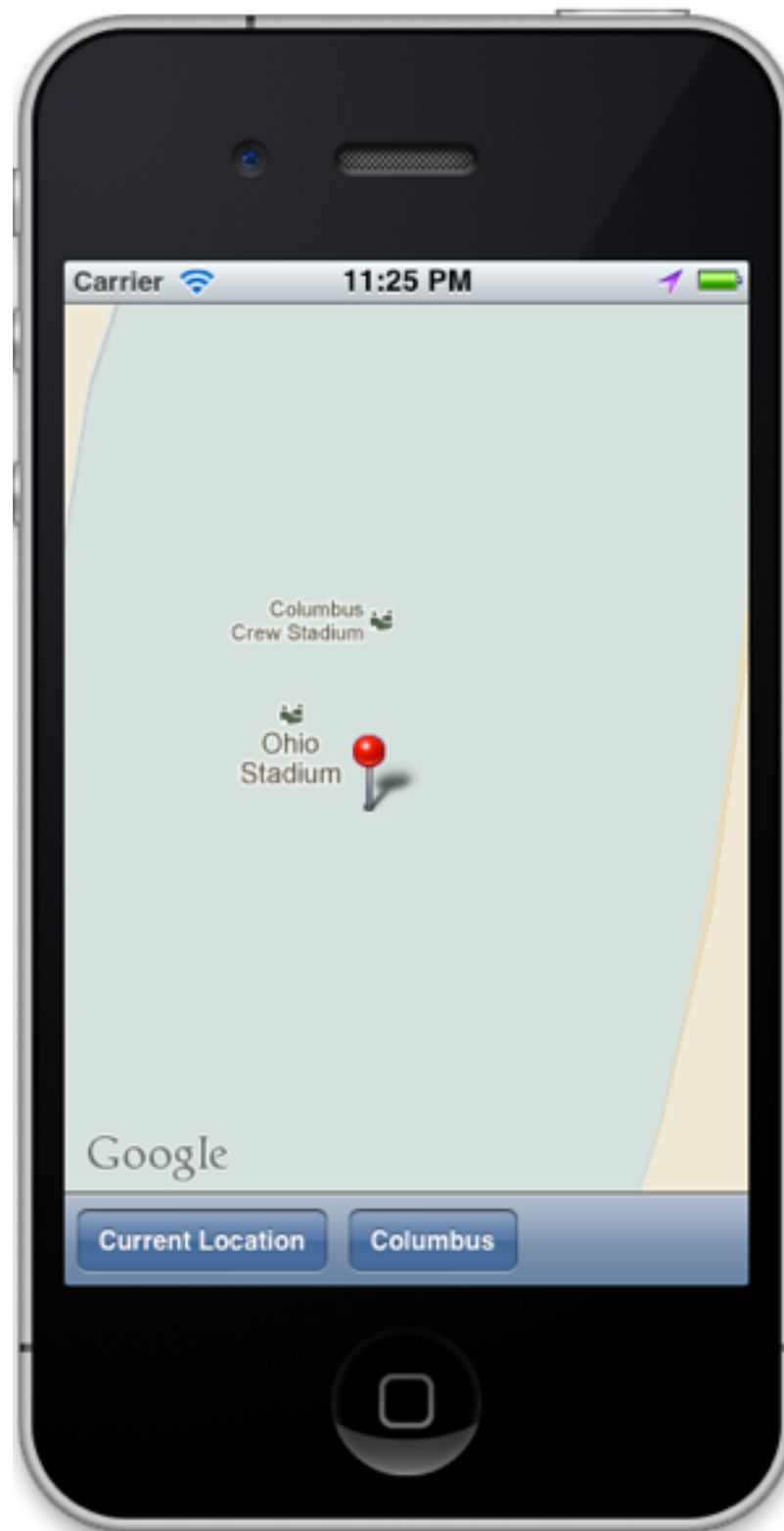


All the icons [described and tagged](#).



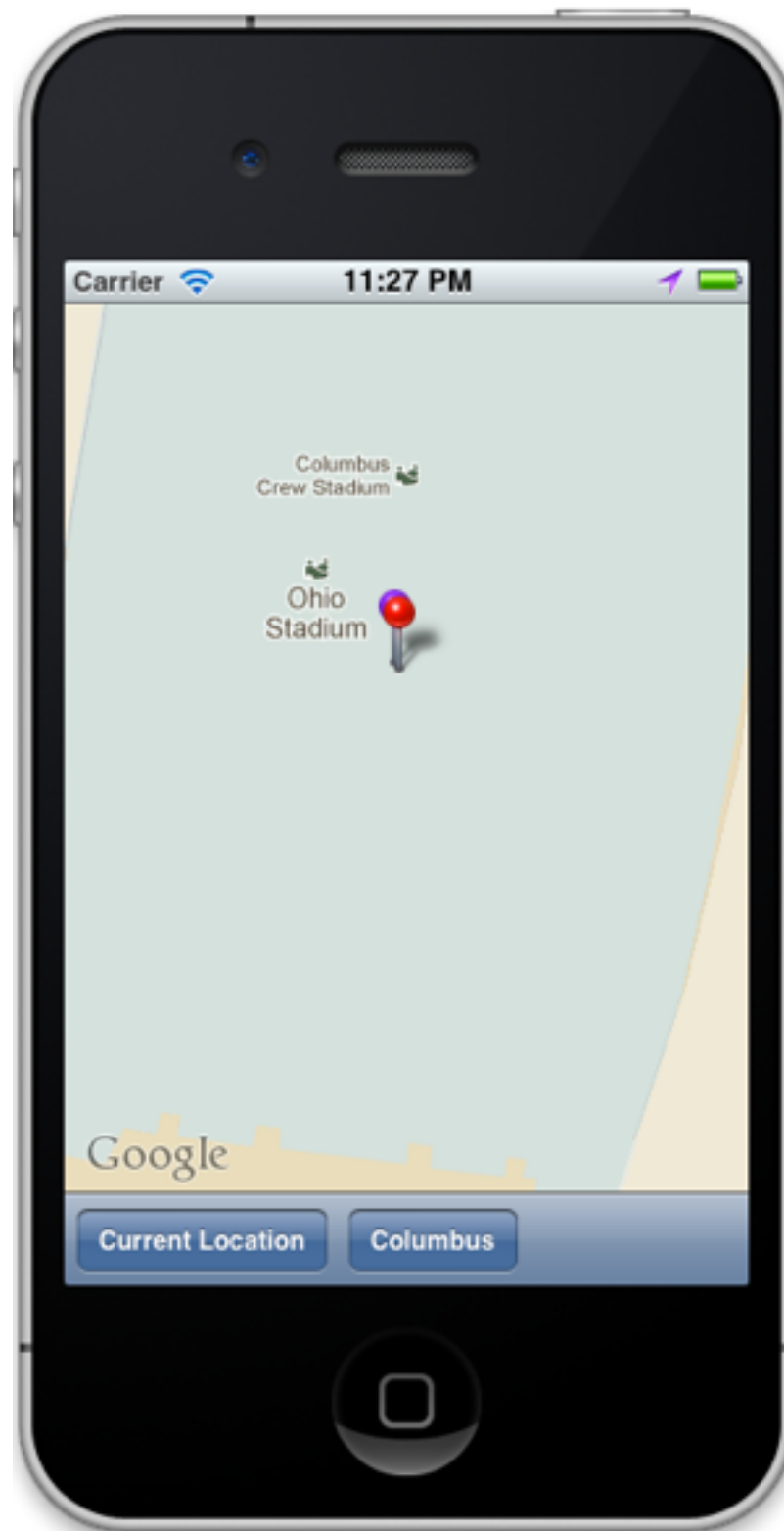
Be Creative

Precision



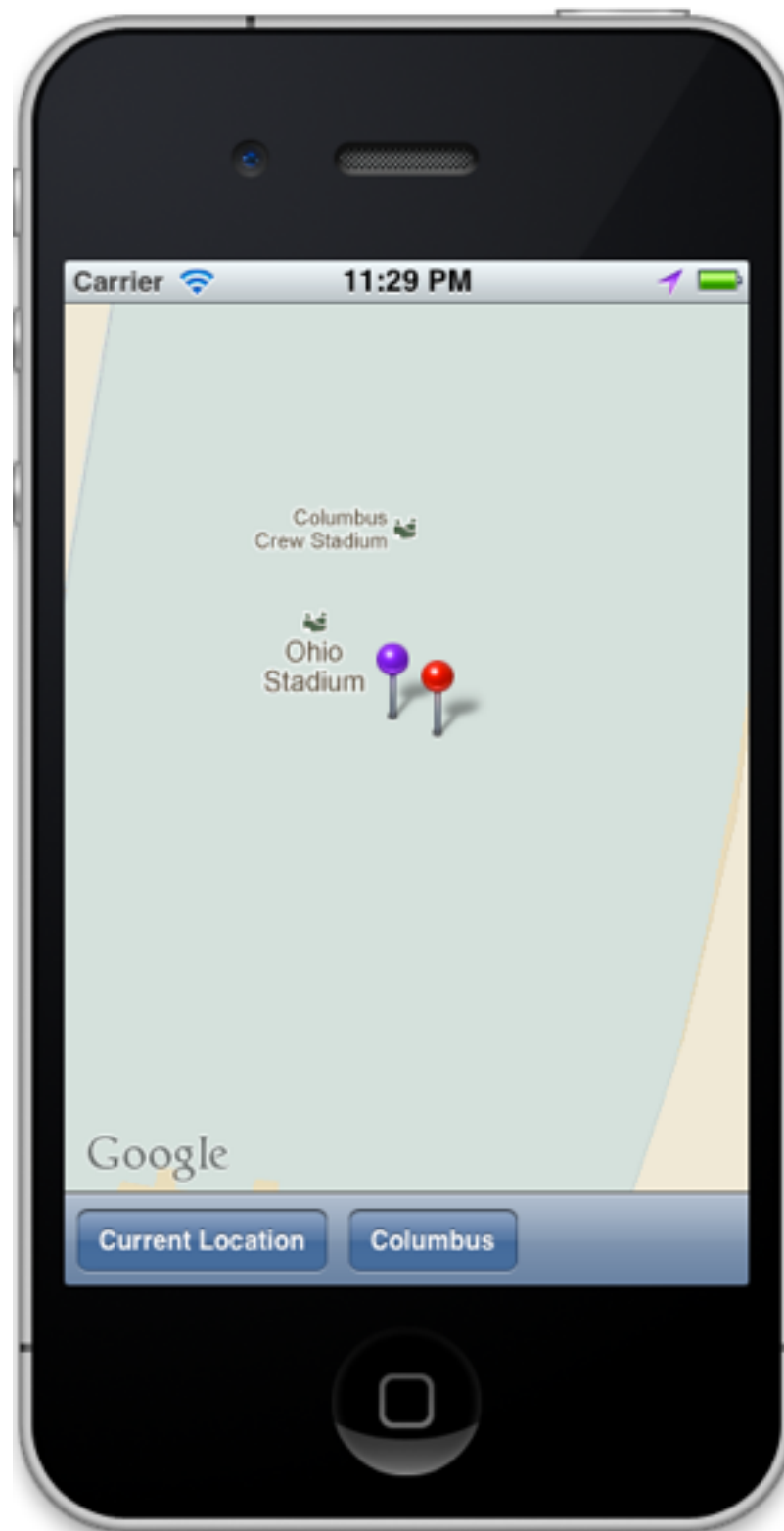
$\{40.001517, -83.019755\}$

Precision



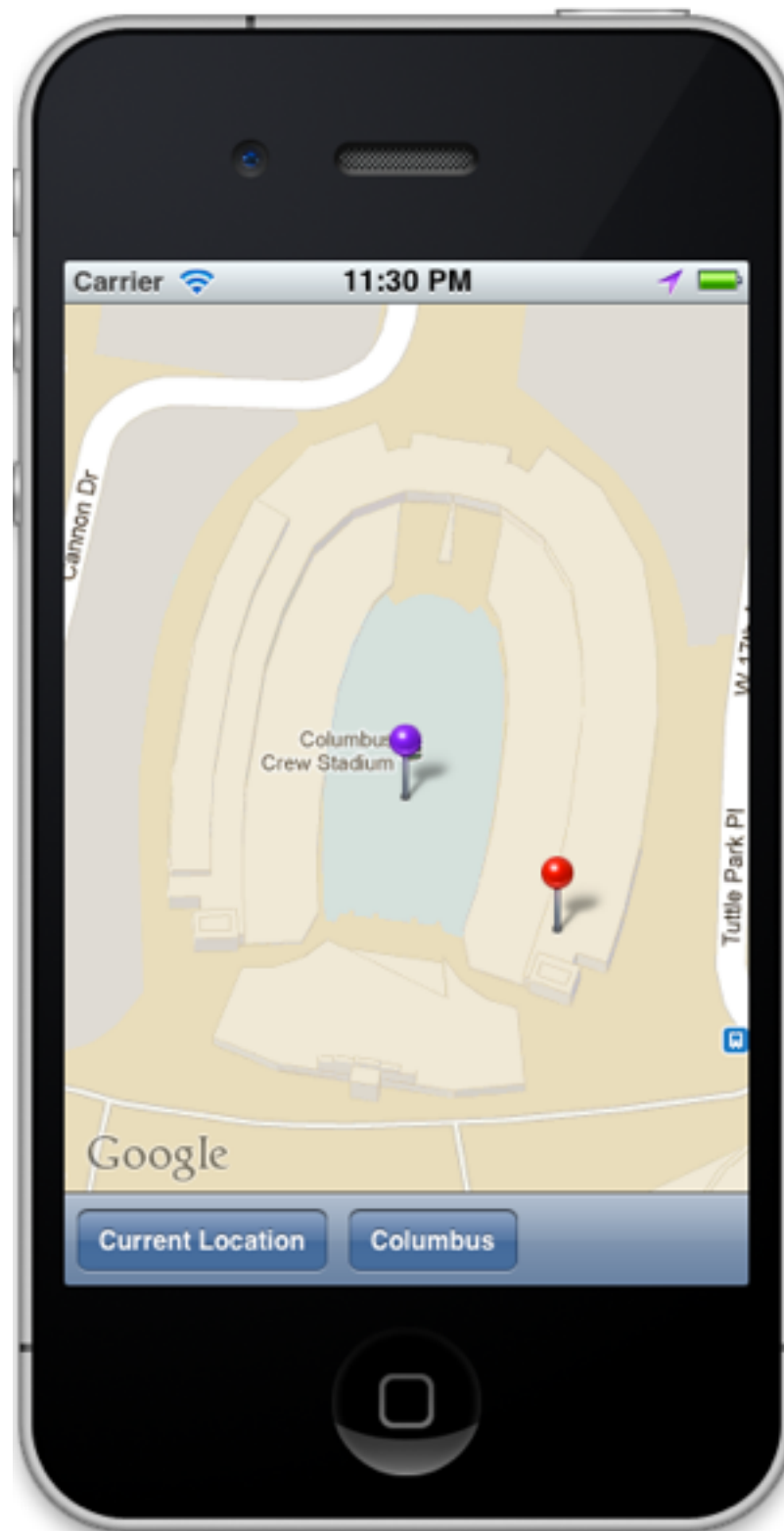
$\{40.00151, -83.01975\}$

Precision



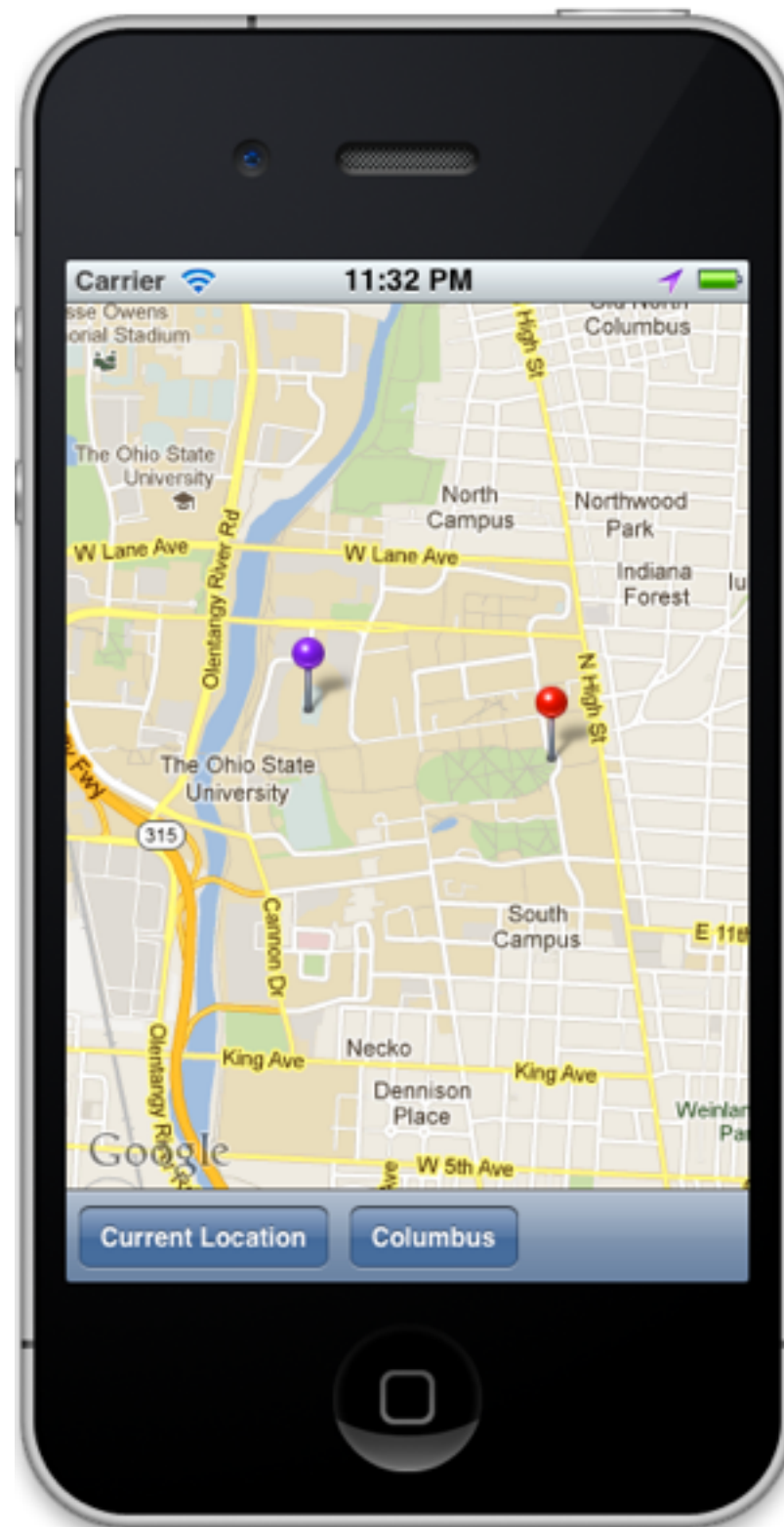
$\{40.0015, -83.0197\}$

Precision



$\{40.001, -83.019\}$

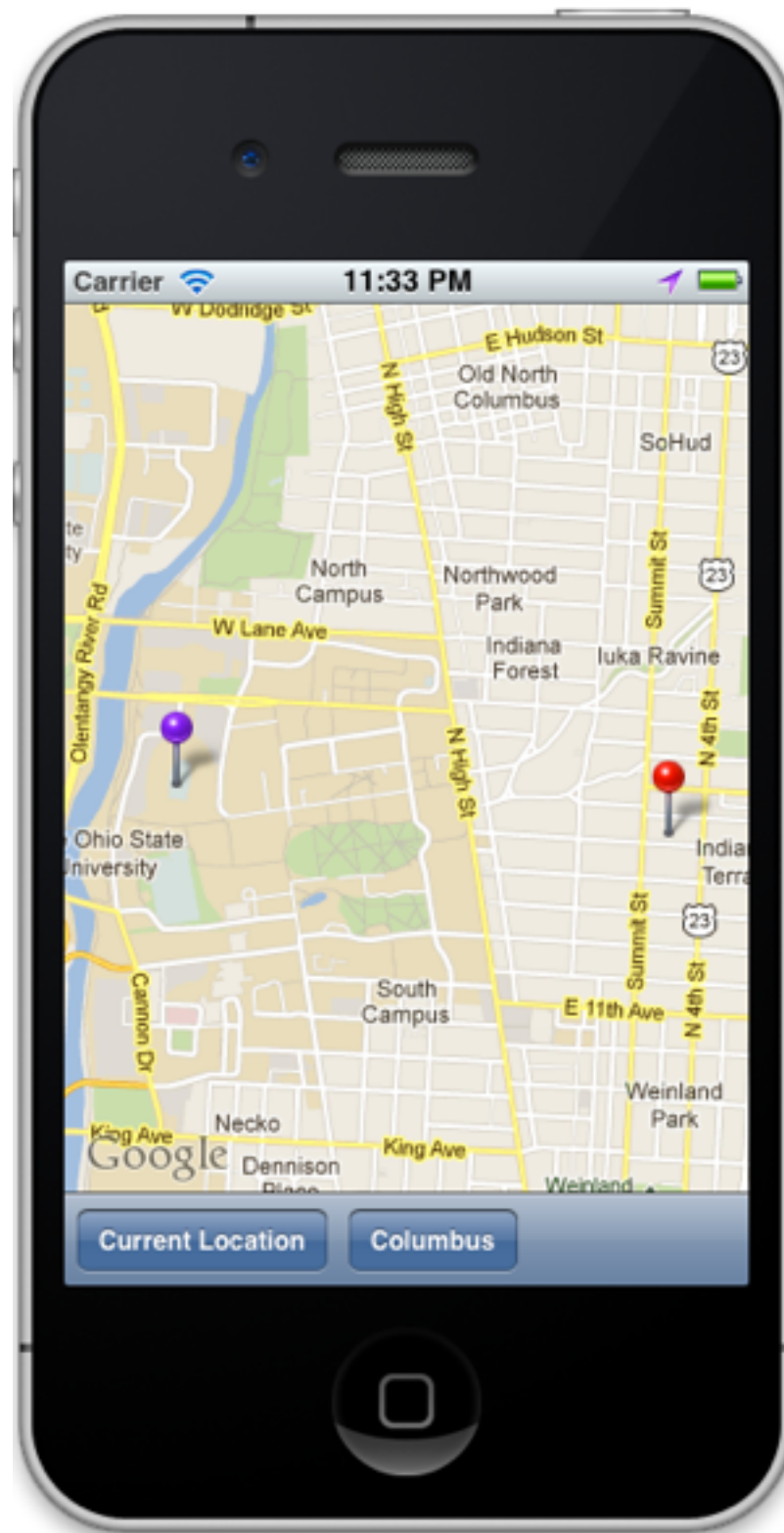
Precision



$\{40.00, -83.01\}$

Precision

make sure the
incoming data
is as qualified
as possible



don't loose
precision

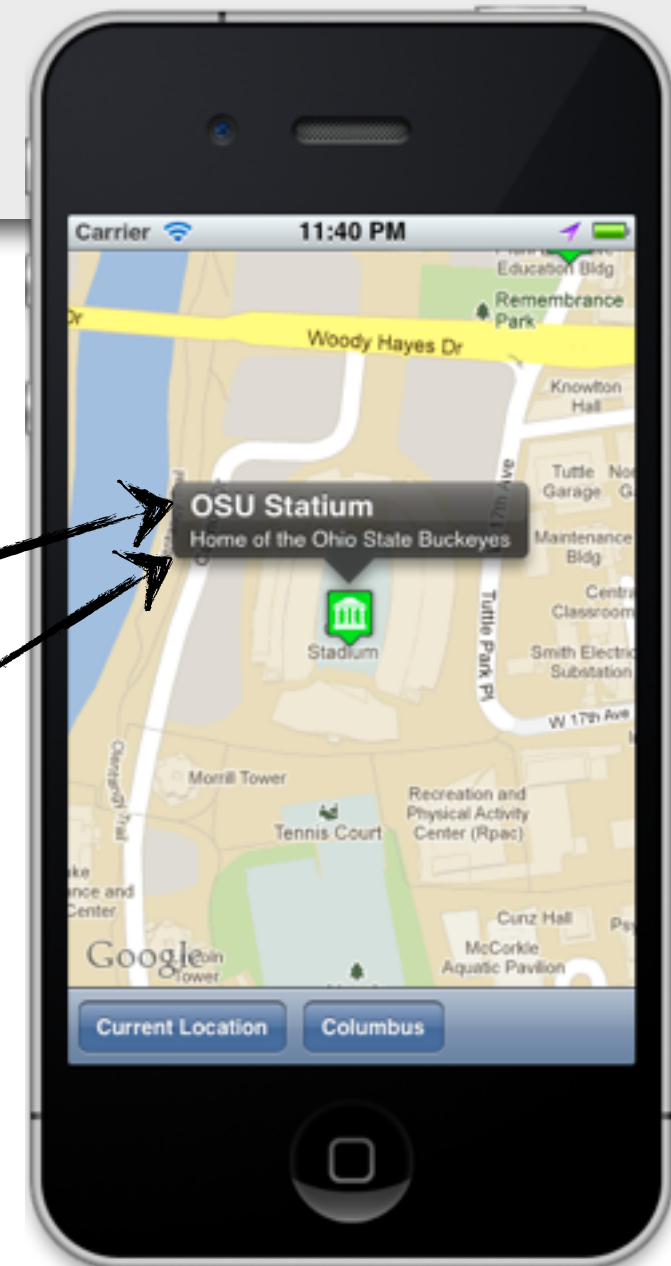
$\{40.0, -83.0\}$

Callouts

Enable Callouts

```
- (MKAnnotationView *)mapView:(MKMapView *)aMapView viewForAnnotation:(id < MKAnnotation >)annotation {  
    if(annotation == mapView.userLocation) {return nil;}  
  
    MKAnnotationView *annotationView =  
        (MKAnnotationView*)[mapView dequeueReusableAnnotationViewWithIdentifier:@"marker"];  
    if(nil == annotationView) {  
        annotationView = [[MKAnnotationView alloc] initWithAnnotation:annotation reuseIdentifier:@"marker"];  
        annotationView.image = [UIImage imageNamed:@"history.png"];  
        annotationView.canShowCallout = YES; ← Set canShowCallout  
    }  
  
    return annotationView;  
}
```

```
CLLocationCoordinate2D coordinate = {40.001517, -83.019755};  
MKPointAnnotation* point = [MKPointAnnotation alloc];  
point.coordinate = coordinate;  
point.title = @"OSU Stadium";  
point.subtitle = @"Home of the Ohio State Buckeyes";
```



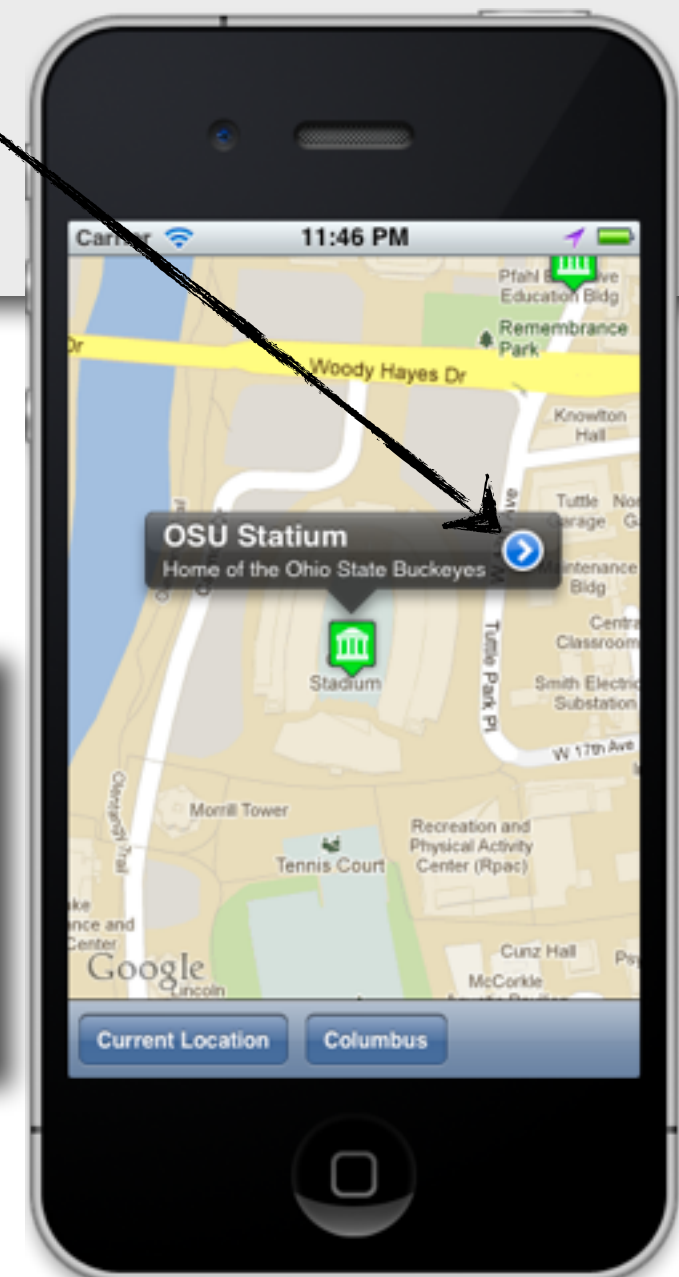
Add Behavior to Callouts

```
(MKAnnotationView *)mapView:(MKMapView *)aMapView viewForAnnotation:(id < MKAnnotation >)annotation {  
    if(annotation == mapView.userLocation) {return nil;}  
  
    MKAnnotationView *annotationView =  
        (MKAnnotationView*)[mapView dequeueReusableAnnotationViewWithIdentifier:@"marker"];  
    if(nil == annotationView) {  
        annotationView = [[MKAnnotationView alloc] initWithAnnotation:annotation reuseIdentifier:@"marker"];  
        annotationView.rightCalloutAccessoryView = [UIButton buttonWithType:UIButtonTypeDetailDisclosure];  
        annotationView.image = [UIImage imageNamed:@"history.png"];  
        annotationView.canShowCallout = YES;  
    }  
  
    return annotationView;  
}
```

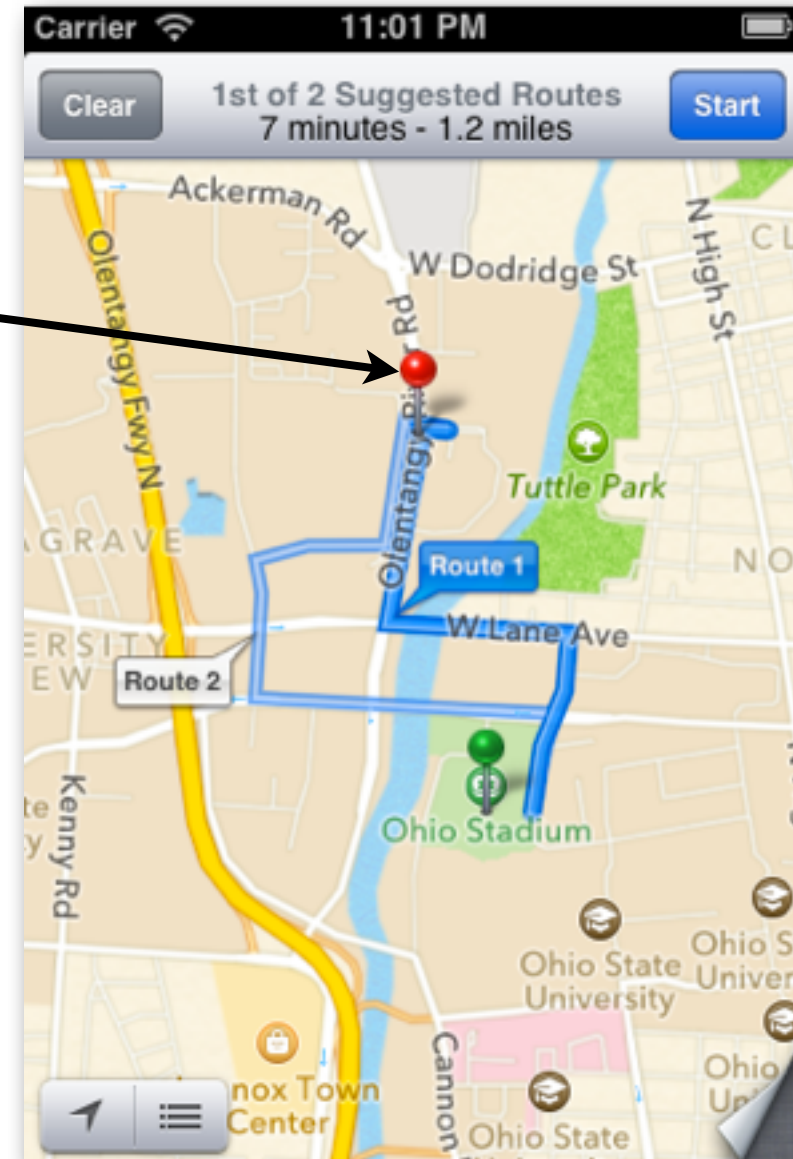
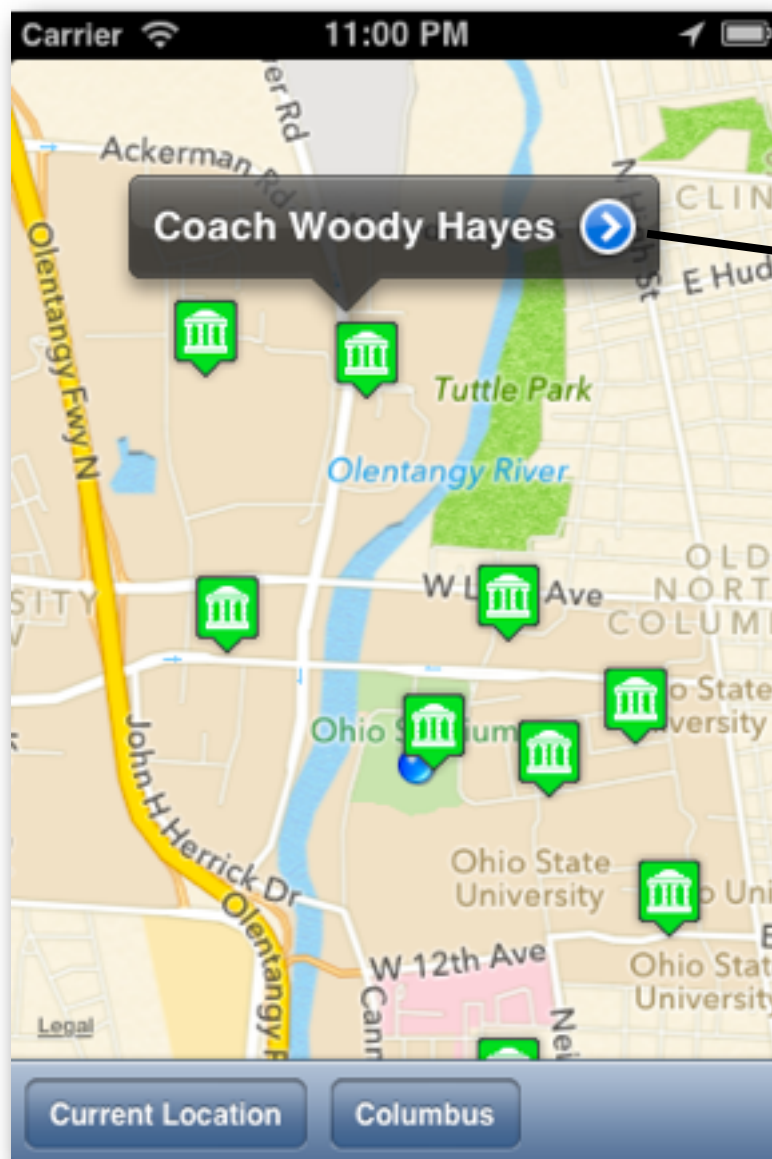
Implement calloutAccessoryControlTapped



```
(void)mapView:(MKMapView *)mapView annotationView:  
    (MKAnnotationView *)view  
    calloutAccessoryControlTapped:(UIControl *)control  
{  
  
    NSLog(@"%@ marker was selected.", view.annotation.title);  
    //Could open a detail view, navigate to a website, call, etc.  
}
```



Directions



```
- (void)mapView:(MKMapView *)mapView annotationView:(MKAnnotationView *)view
    calloutAccessoryControlTapped:(UIControl *)control {

    HistoryMarker* historyMarker = (HistoryMarker*)view.annotation;

    NSString* url = [NSString stringWithFormat:@"http://maps.apple.com/maps?daddr=%f,%f&saddr=%f,%f",
        historyMarker.coordinate.latitude, historyMarker.coordinate.longitude,
        mapView.userLocation.location.coordinate.latitude,
        mapView.userLocation.location.coordinate.longitude];
    [[UIApplication sharedApplication] openURL:[NSURL URLWithString:url]];
}
```

https://developer.apple.com/library/ios/#featuredarticles/iPhoneURLScheme_Reference/Articles/MapLinks.html

Overlays

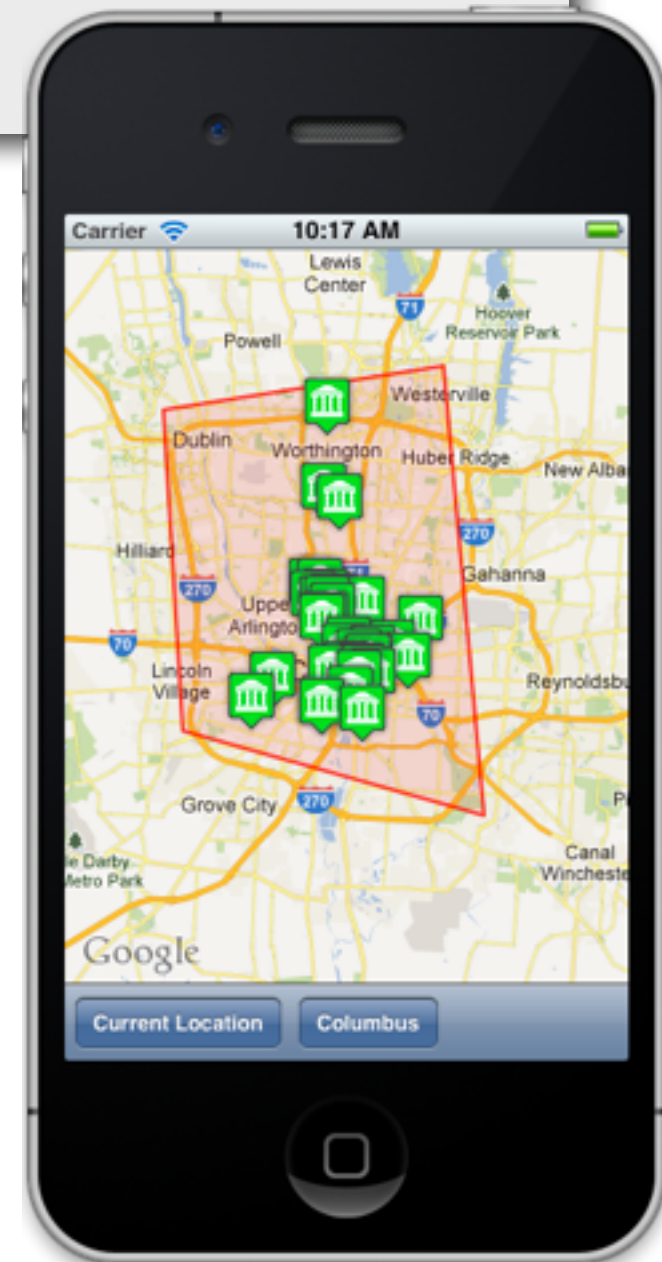
Overlays

```
CLLocationCoordinate2D topLeftLatLng = {40.116940, -83.144531};
MKMapPoint topLeftPoint = MKMapPointForCoordinate(topLeftLatLng);
CLLocationCoordinate2D topRightLatLng = {40.143190, -82.926178};
MKMapPoint topRightPoint = MKMapPointForCoordinate(topRightLatLng);
CLLocationCoordinate2D bottomLeftLatLng = {39.925535, -83.129425};
MKMapPoint bottomLeftPoint = MKMapPointForCoordinate(bottomLeftLatLng);
CLLocationCoordinate2D bottomRightLatLng = {39.874966, -82.894592};
MKMapPoint bottomRightPoint = MKMapPointForCoordinate(bottomRightLatLng);

MKMapPoint points[4] = { topLeftPoint, topRightPoint, bottomRightPoint, bottomLeftPoint };

MKPolygon* columbusOverlay = [MKPolygon polygonWithPoints:points count:4];
[mapView addOverlay:columbusOverlay];
```

```
- (MKOverlayView *)mapView:(MKMapView *)mapView
viewForOverlay:(id <MKOverlay>)overlay
{
    MKPolygonView* view = nil;
    if ([overlay isKindOfClass:[MKPolygon class]]) {
        view = [[MKPolygonView alloc] initWithPolygon:(MKPolygon*)overlay];
        view.fillColor = [[UIColor redColor] colorWithAlphaComponent:0.1];
        view.strokeColor = [[UIColor redColor] colorWithAlphaComponent:0.8];
        view.lineWidth = 2;
    }
    return view;
}
```



Alternatives

Why MapKit

- easy to implement
- apple support
 - WWDC videos
- well documented
- Demos Actually Compile!

Why Not MapKit

- area required is not well covered
- routing and turn-by-turn needed
- alternative tiles desired
- advertising or other data sets
- offline use



route-me

Open source iPhone-native sloppy map.



New Free BSD

OpenStreetMap



The Free Wiki World Map

bing™

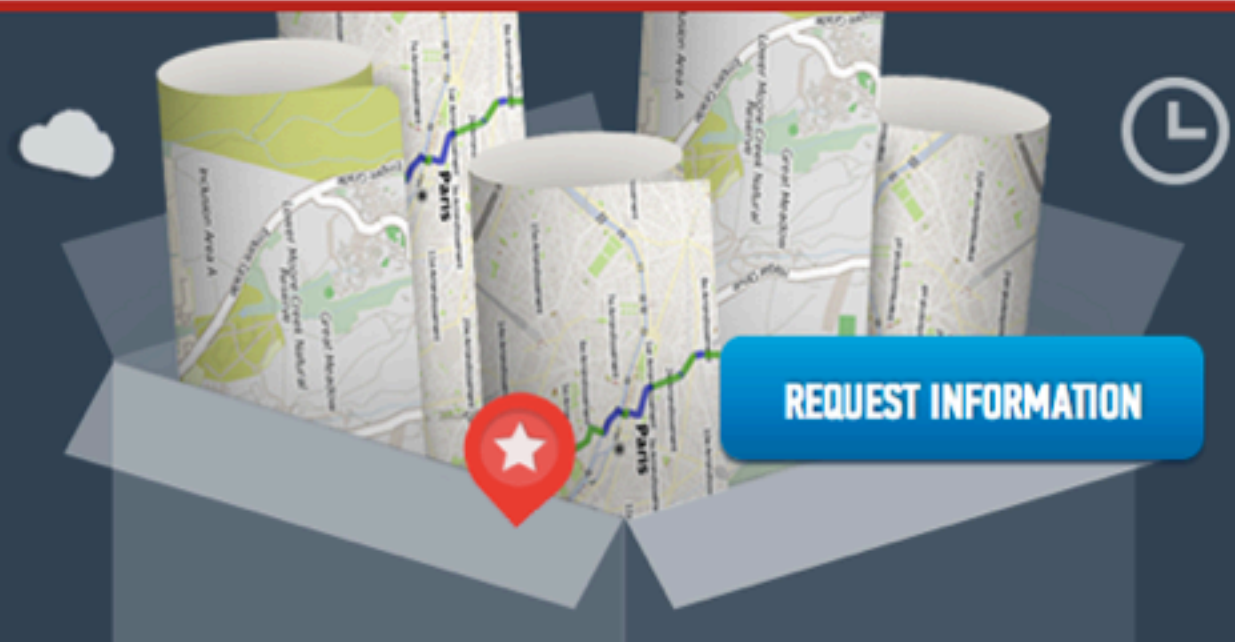


<https://github.com/route-me/route-me>

[SOLUTIONS](#)[PRODUCTS](#)[TECHNOLOGIES](#)[CASE STUDIES](#)[ABOUT US](#)[BLOG](#)[SUPPORT](#)[CONTACTS](#)[ACCOUNT](#)[MAP TILES](#)[GEOCODING](#)[ROUTING](#)[NAV SDK](#)[MAP SDK](#)[GEO SDK](#)[WEB SERVER](#)

Map SDK

The CloudMade Map SDK provides comprehensive on-board (offline) and off-board (online) map rendering features. It enables you to use our latest technology.



WHAT'S IMPORTANT

- ★ Supports any screen size, both landscape and portrait orientation
- ★ OpenGL animated maps
- ★ Foot maps are optimized for pedestrians and highlight features
- ★ Bitmap / raster image export, e.g. bmp, jpg, png, gif
- ★ Vector map export, e.g. svg, pdf
- ★ Customizable map styles that can be changed on the fly (day time vs night time themes for example)

[DOCUMENTATION >](#)

QUOTES



"Customized map themes are critical for maintaining the brand across the entire application"

Jim Brown, CTO
CloudMade

[MORE CASE STUDIES >](#)

<http://cloudmade.com/products/map-sdk>



No Preset Limit on Free Maps

New Free Map API Transaction Limits

With all the recent discussion regarding transactional limits among map APIs, we have [announced a few changes to our licensing terms](#). For starters, there will be **NO PRESET LIMIT** on maps using our Community Edition license!

Unlike our competitors, we're happy to let you pull up a chair to the buffet and gorge away!

How about web service calls (like geocodes)? 5,000 per day, double that of Google. Just to top it off, we've loosened the restrictions on the number of apps you can build. A paid mobile app? Sure. SSL? Go for it!

Be sure to check out the [Map API Licensing and Terms Overview](#) for details.

[Read more »](#)

1 2



BUSINESS MANAGERS **Why MapQuest?**

MapQuest has been providing business solutions for nearly 15 years, combining top-notch service and support with easy-to-use technology. As we continue to invest in our services, we consider our clients' needs first. If you're looking for a reliable platform backed by a trusted organization, partner with MapQuest.

- [Why MapQuest?](#)



DEVELOPERS **Resources & Documentation**

Our APIs and Web Services enable powerful mapping applications on the desktop, web or mobile. You can choose between commercial data providers or crowdsourced OpenStreetMap data. Take advantage of easy mobile mapping tools to enable rich mobile web or native applications.

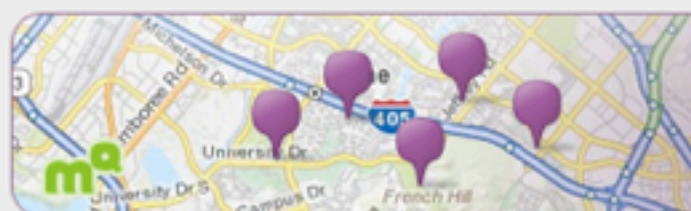
- [Quick Start for Developers](#)



BLOGGERS & WEB DESIGNERS **Easy Mapping Tools**

Adding a map to your website or blog is easy as copy and paste. Grab a custom map, driving directions or even a whole day's errands and link or embed it in your website - for FREE.

- [Quick Start for Easy Mapping Tools](#)



Create a MapQuest Developer Account
Get your AppKey and start developing today.

Join Now

<http://developer.mapquest.com/>



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Microsoft

Bing Maps Control for iOS



Quick links

[↓ Overview](#)

[↓ System requirements](#)

[↓ Instructions](#)

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Microsoft

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 Windows Azure

Add Bing maps to your native iOS apps

Quick details

Version:	1.1	Date published:	5/3/2011
Language:	English		
File name		Size	
BingMapsIOS-1.1.dmg		6.5 MB	DOWNLOAD

Overview

The Bing Maps iOS Control is an Objective-C control for embedding maps directly into native iOS apps. With a rich, gesture-based UI provided by Seadragon, the Bing Maps iOS Control provides support for adding pushpins and other overlays to the map, allows your device location to be displayed, and provides the ability to retrieve contextual information for a given map location.

↑ Top of page

System requirements

Supported operating systems: Mac OS X

Mac OS X Snow Leopard, version 10.6.4 or later on a Macintosh computer with an Intel x86 processor.

- Xcode version 4.0 or later
- The latest version of the iOS SDK. (This SDK is available from <http://developer.apple.com>. An Apple Developer account is required.)

↑ Top of page

<http://www.microsoft.com/en-us/download/details.aspx?id=1112>



iOS SDK

Open source alternative to MapKit

[GUIDE](#)[API](#)[EXAMPLES](#)[CHANGELOG](#)

SDK installation

[CocoaPods](#)[Binary](#)[Source](#)

API overview

[Map view](#)[Map view delegate](#)[Tile sources](#)[Markers & shapes](#)[Embedded interactivity](#)[Tile caching](#)[Attribution](#)[Retina support](#)

iOS SDK

The [MapBox iOS SDK](#) is a toolset for building mapping applications for iPhone and iPad devices. It is quite similar in behavior to Apple's [MapKit](#) framework, but with much greater flexibility for visual styling, offline use, and general customizability – plus it's open source.

SDK Installation

CocoaPods

Follow these steps in order to use the MapBox iOS SDK within your own Xcode 4 project using [CocoaPods](#). This is the easiest installation method if you are familiar with CocoaPods.

1. Obtain the map ID for your hosted map by clicking **Publish** and copying the **Map ID**.
2. Ensure that your `Podfile` is targeting `:ios` and `'5.0'`.
3. Add a line containing `pod 'MapBox'` to your `Podfile`.
4. Run `pod install` in the Terminal.
5. At a minimum, `#import MapBox.h` and instantiate an `RMMMapView` in your code along with an `RMMapBoxSource` using `-initWithMapID:` and an `NSString` made from your **Map ID** obtained above.

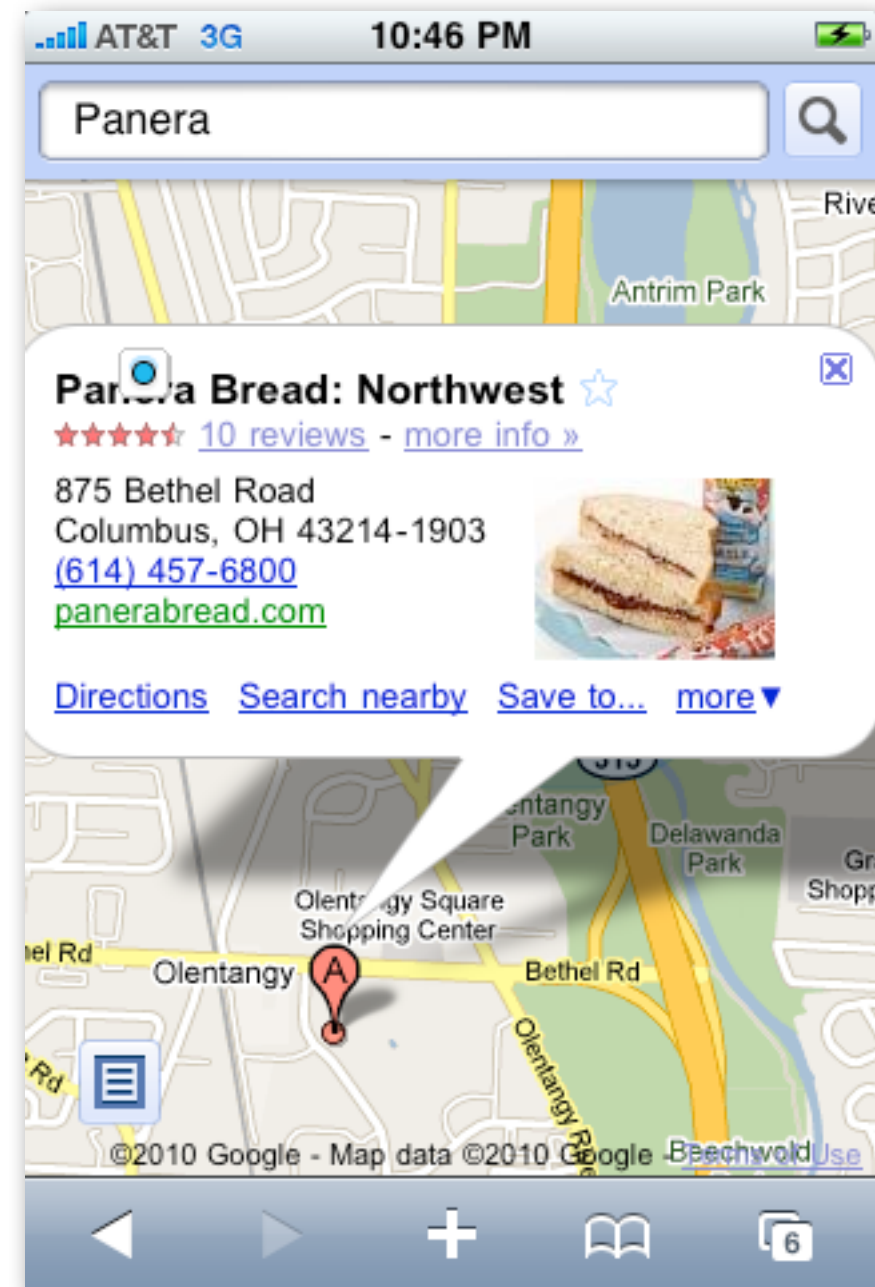
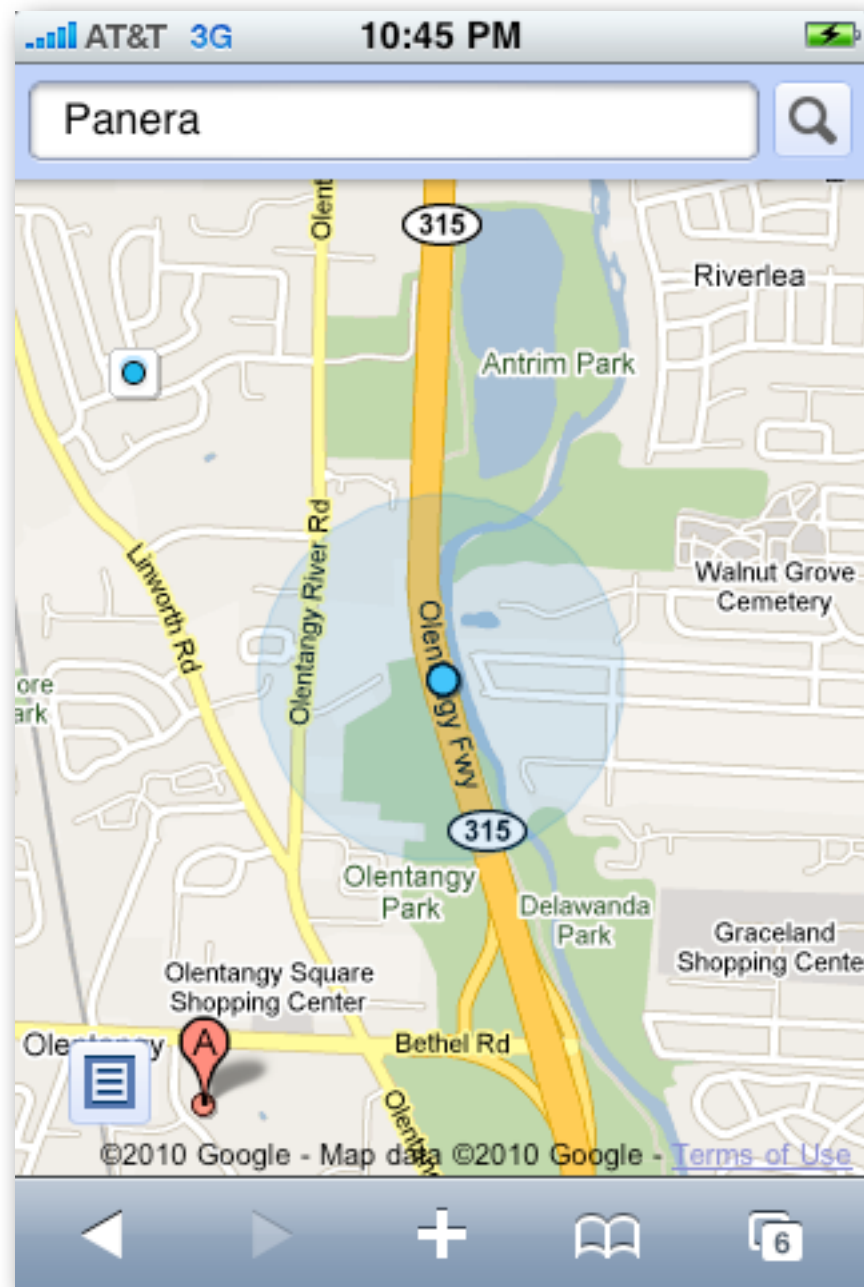
OpenStreetMap



The Free Wiki World Map

<http://mapbox.com/mobile/docs/sdk/>

Google maps





ArcGIS Runtime SDK for iOS

Resource Center

Home

Concepts

Samples

API Reference

What is ArcGIS Runtime SDK for iOS?

The Runtime SDK for iOS allows you to add maps and spatial functionality to your custom iOS applications.

[Learn More... ▶](#)

Quick Links

Download & Install

- [Requirements & Installation](#)
- [Get the latest SDK \(v2.3\)](#)

Resources

- [Concepts](#)
- [Samples](#)
- [API Reference](#)
- [Esri Training Courses](#)

Support

- [Forums](#)
- [Esri Support](#)

Other links

- [ArcGIS for iOS Application](#)
- [ArcGIS Ideas](#)

Gallery

[More Gallery posts ▶](#)

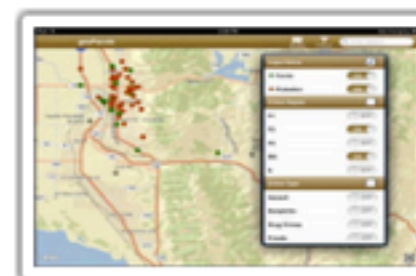
Macau GeoGuide



Health Indicators



FindAControl for iOS



geoParole



경기도교통정보

<http://resources.arcgis.com/en/communities/runtime-ios-sdk/>

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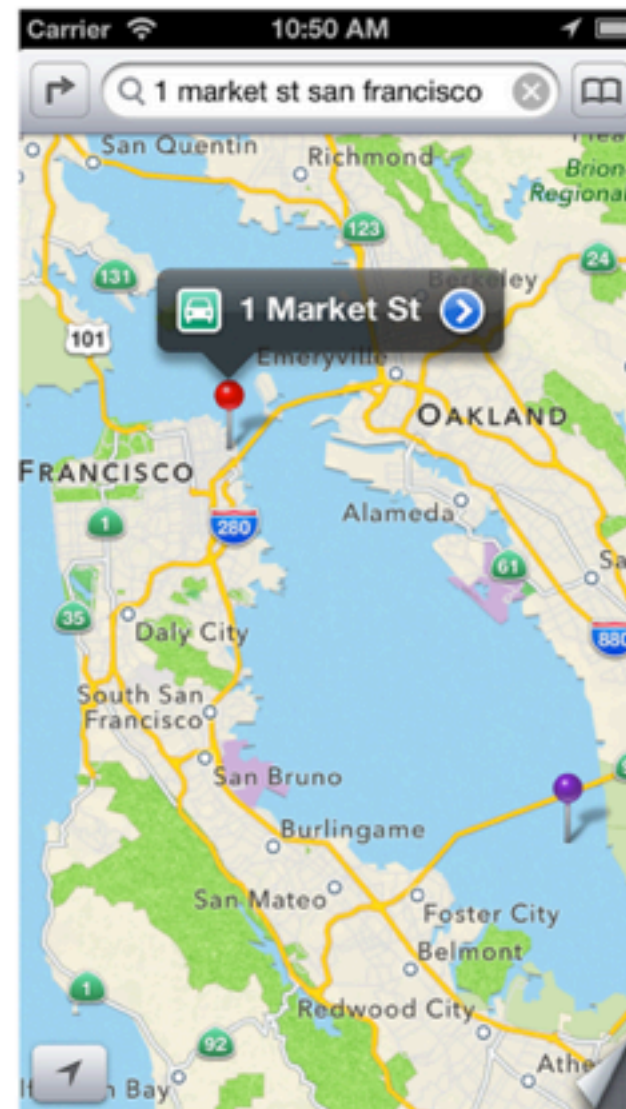
Introduction

- ▶ Getting the User's Location
- ▶ Getting Direction-Related Events
- ▶ Geocoding Location Data
- ▶ Displaying Maps
- ▶ Annotating Maps
- ▶ Providing Directions
- ▶ Appendix A: Legacy Map Techniques
- Revision History

[Next](#)

Making Your App Location-Aware

Using location-based information in your apps is a way to keep the user connected to the surrounding world. Whether you use this information for practical purposes (such as navigation) or for entertainment, location-based information can improve the overall user experience.



Location-based information in iOS comprises two pieces: location services and maps. Location services are provided by the Core Location framework, which provides Objective-C interfaces for obtaining information about the user's location and heading. Maps are provided by the Map Kit framework, which supports both the display and annotation of maps similar to those found in the Maps app.



Apache Lucene - Apache Solr x

lucene.apache.org/solr/

Search with Apache @ select provider

Apache Solr

SOLR NEWS DOWNLOAD MAILING LISTS WIKI TUTORIAL ISSUE TRACKER LUCENE TLP

Ultra-fast Lucene-based Search Server

Apache Solr

Apache Solr offers Lucene's capabilities in an easy to use, fast search server with additional features like faceting, scalability and much more

Apache Solr

Solr is the popular, blazing fast open source enterprise search platform from the Apache Lucene project. Its major features include powerful full-text search, hit highlighting, faceted search, dynamic clustering, database integration, rich document (e.g., Word, PDF) handling, and geospatial search. Solr is highly scalable, providing distributed search and index replication, and it powers the search and navigation features of many of the world's largest internet sites.

Solr is written in Java and runs as a standalone full-text search server within a servlet container such as Tomcat. Solr uses the Lucene Java search library at its core for full-text indexing and search, and has REST-like HTTP/XML and JSON APIs that make it easy to use from virtually any programming language. Solr's powerful external configuration allows it to be tailored to almost any type of application without Java coding, and it has an extensive plugin architecture when more advanced customization is required.

See the complete feature list for more details.

DOWNLOAD

Apache Solr 3.6.1

DOWNLOAD

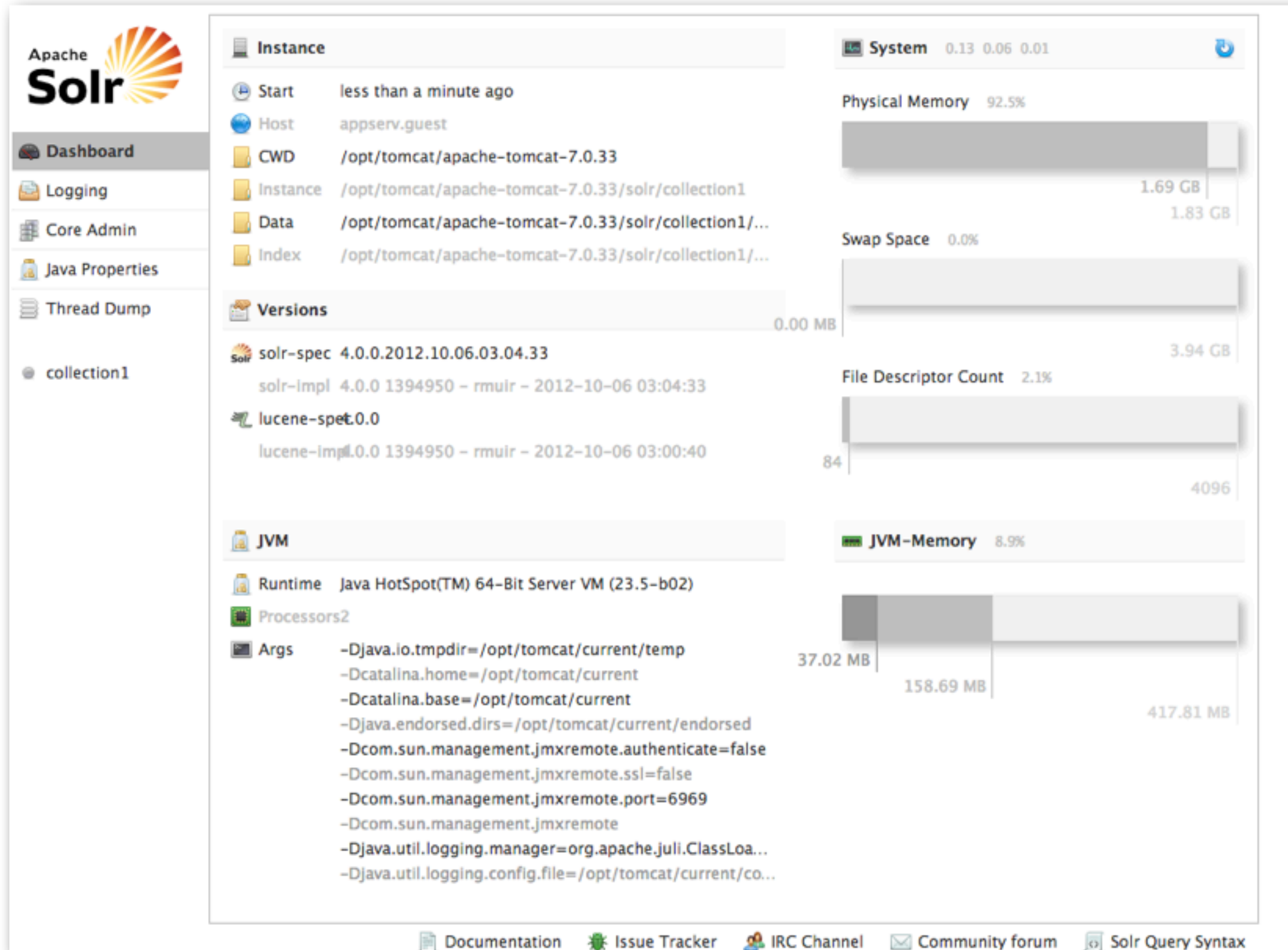
Apache Solr 4.0

Resources

- Features
- Tutorial
- Release Documentation
- Version Control
- Books
- Screenshots

<http://lucene.apache.org/solr/>

java -jar start.jar



<http://localhost:8983/solr/>



Dashboard

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Thread Dump

collection1

Ping

Query

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Config

Replication

Analysis

Schema Browser

Plugins / Stats

Dataimport

Request-Handler (qt)

/select

— common —

q

.

fq

sort

start, rows

0

10

fl

df

wt

xml

☐ indent

☐ debugQuery

☐ dismax

☐ edismax

☐ hl

☐ facet

☐ spatial

☐ spellcheck

Execute Query

http://localhost:8983/solr/collection1/select?q=%3A*&wt=xml

02xml*.*

[Documentation](#)

[Issue Tracker](#)

[IRC Channel](#)

[Community forum](#)

[Solr Query Syntax](#)

Handler (qt)

 http://localhost:8983/solr/collection1/select?q=%3A*&wt=xml

02xml*:*

on

WS

http://localhost:8983/solr/collection1/select?q=*:*&wt=xml



search for everything

```
<?xml version="1.0" encoding="UTF-8"?>
<response>
<lst name="responseHeader"><int name="status">0</int><int
name="QTime">2</int><lst name="params"><str name="wt">xml</str><str
name="q">*:*</str></lst></lst><result name="response" numFound="0"
start="0"></result>
</response>
```

http://localhost:8983/solr/collection1/select?q=*:*&wt=xml&indent=on



pretty print

```
<?xml version="1.0" encoding="UTF-8"?>
<response>

  <lst name="responseHeader">
    <int name="status">0</int>
    <int name="QTime">1</int>
    <lst name="params">
      <str name="indent">on</str>
      <str name="wt">xml</str>
      <str name="q">*:*</str>
    </lst>
  </lst>
  <result name="response" numFound="0" start="0">
  </result>
</response>
```

http://localhost:8983/solr/collection1/select?q=*:*&wt=json&indent=on

↑
json

```
{  
  "responseHeader": {  
    "status": 0,  
    "QTime": 0,  
    "params": {  
      "indent": "on",  
      "wt": "json",  
      "q": "*:*" }  
    },  
  "response": { "numFound": 0, "start": 0, "docs": [] }  
}
```



```
curl http://localhost:8983/solr/update/json --data-binary @fileName  
-H 'Content-type:application/json'
```

```
[
```

```
{  
  "id": "Myrtle Waves Water Park",  
  "name": "Myrtle Waves Water Park",  
  "description": "USA-North Myrtle Beach<br />\nUS 17 Bypass at 10th Avenue<br />\n",  
  "coordinates_p": "33.81673,-78.68005",  
  "store": "33.81673,-78.68005",  
  "source_s": "USA-Amusement & Theme Parks"  
},  
{  
  "id": "Coney Island",  
  "name": "Coney Island",  
  "description": "USA-New York-Brooklyn<br />\n1208 Surf Ave.<br />\n+1 718-372-5159",  
  "coordinates_p": "40.57546,-73.98017",  
  "store": "40.57546,-73.98017",  
  "source_s": "USA-Amusement & Theme Parks"  
},  
{  
  "id": "Six Flags Over Georgia",  
  "name": "Six Flags Over Georgia",  
  "description": "USA-Austell<br />\n7561 Six Flags Pkwy<br />\n+1 770-948-9290",  
  "coordinates_p": "33.77091,-84.55220",  
  "store": "33.77091,-84.55220",  
  "source_s": "USA-Amusement & Theme Parks"  
}
```

```
]
```

http://localhost:8983/solr/collection1/select?q=*&wt=json&indent=on&rows=3

↑
pagination

```
{
  "responseHeader":{
    "status":0,
    "QTime":1,
    "params":{
      "indent":"on",
      "wt":"json",
      "q":"*:*",
      "rows":"3"}},
  "response":{"numFound":122,"start":0,"docs":[
    {
      "id":"Myrtle Waves Water Park",
      "name":"Myrtle Waves Water Park",
      "description":"USA-North Myrtle Beach<br />\nUS 17 Bypass at 10th Avenue<br />\n",
      "coordinates_p":"33.81673,-78.68005",
      "store":"33.81673,-78.68005",
      "source_s":"USA-Amusement & Theme Parks",
      "_version_":1420098404195762176},
    {
      "id":"Coney Island",
      "name":"Coney Island",
      "description":"USA-New York-Brooklyn<br />\n1208 Surf Ave.<br />\n+1 718-372-5159",
      "coordinates_p":"40.57546,-73.98017",
      "store":"40.57546,-73.98017",
      "source_s":"USA-Amusement & Theme Parks",
      "_version_":1420098404315299840},
    {
      "id":"Six Flags Over Georgia",
      "name":"Six Flags Over Georgia",
      "description":"USA-Austell<br />\n7561 Six Flags Pkwy<br />\n+1 770-948-9290",
      "coordinates_p":"33.77091,-84.55220",
      "store":"33.77091,-84.55220",
      "source_s":"USA-Amusement & Theme Parks",
      "_version_":1420098404317396992}]
  }}
```

<http://localhost:8983/solr/collection1/select?q=name:waves&wt=json&indent=on&rows=3>



query field name for Wave

```
{
  "responseHeader":{
    "status":0,
    "QTime":1,
    "params":{
      "indent":"on",
      "wt":"json",
      "q":"name:Waves",
      "rows":"3"}}},
  "response":{"numFound":1,"start":0,"docs":[
    {
      "id":"Myrtle Waves Water Park",
      "name":"Myrtle Waves Water Park",
      "description":"USA-North Myrtle Beach<br />\nUS 17 Bypass at 10th Avenue<br />\n",
      "coordinates_p":"33.81673,-78.68005",
      "store":"33.81673,-78.68005",
      "source_s":"USA-Amusement & Theme Parks",
      "_version_":1420098404195762176}]
  }}
}
```

Solr Admin

Apache Solr

Examples: [Simple](#) [Spatial](#) [Group By](#)

Find:

☐ Boost by Price

Location Filter: Distance (KM):

> [{!bbox}](#)

Field Facets

Query Facets

Range Facets

Pivot Facets

Clusters

Run Solr with java -
Dsolr.clustering.enabled=true -
jar start.jar to see results

2 results found in 8 ms Page 1 of 1

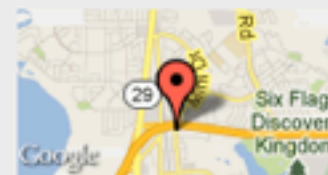
Six Flags Marine World [More Like This](#)

Id: Six Flags Marine World

Price:

Features:

In Stock:

 [Larger Map](#)

Great America [More Like This](#)

Id: Great America

Price:

Features:

In Stock:

 [Larger Map](#)

2 results found. Page 1 of 1

Options: [enable debug](#) [enable annotation](#) [XML](#)
Generated by [VelocityResponseWriter](#)
Documentation: [Solr Home Page](#), [Solr Wiki](#)
Disclaimer: The locations displayed in this demonstration are purely fictional. It is more than likely that no store with the items listed actually exists at that location!

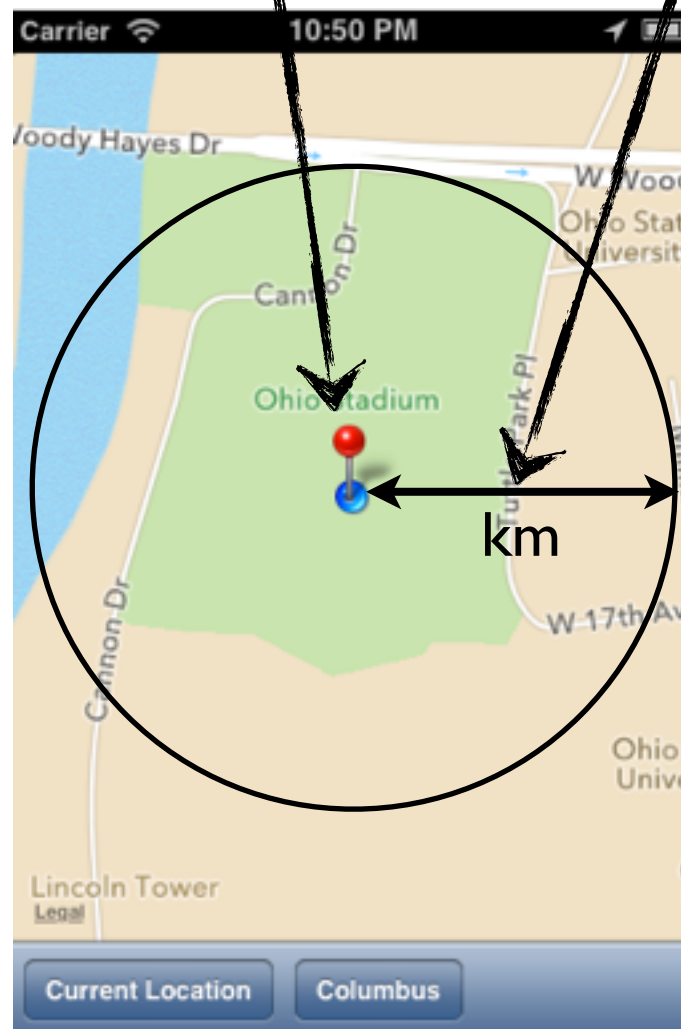
distance filters

-  point distance
-  bounding lat and long

point distance

/select?q=*&fq={!geofilt}&pt=37.7752,-122.4232&d=100&sfield=coordinates_p&wt=json

point distance filter



{

"id": "Myrtle Waves Water Park",
"name": "Myrtle Waves Water Park",
"description": "USA-North Myrtle Beach",
"coordinates_p": "33.81673,-78.68005",
"store": "33.81673,-78.68005",
"source_s": "USA-Amusement & Theme Park"

}

bounding latitude and longitude

/select?q=*&fq={!bbox}&pt=37.7752,-122.4232&d=100&sfield=coordinates_p&wt=json

↑
bounding filter



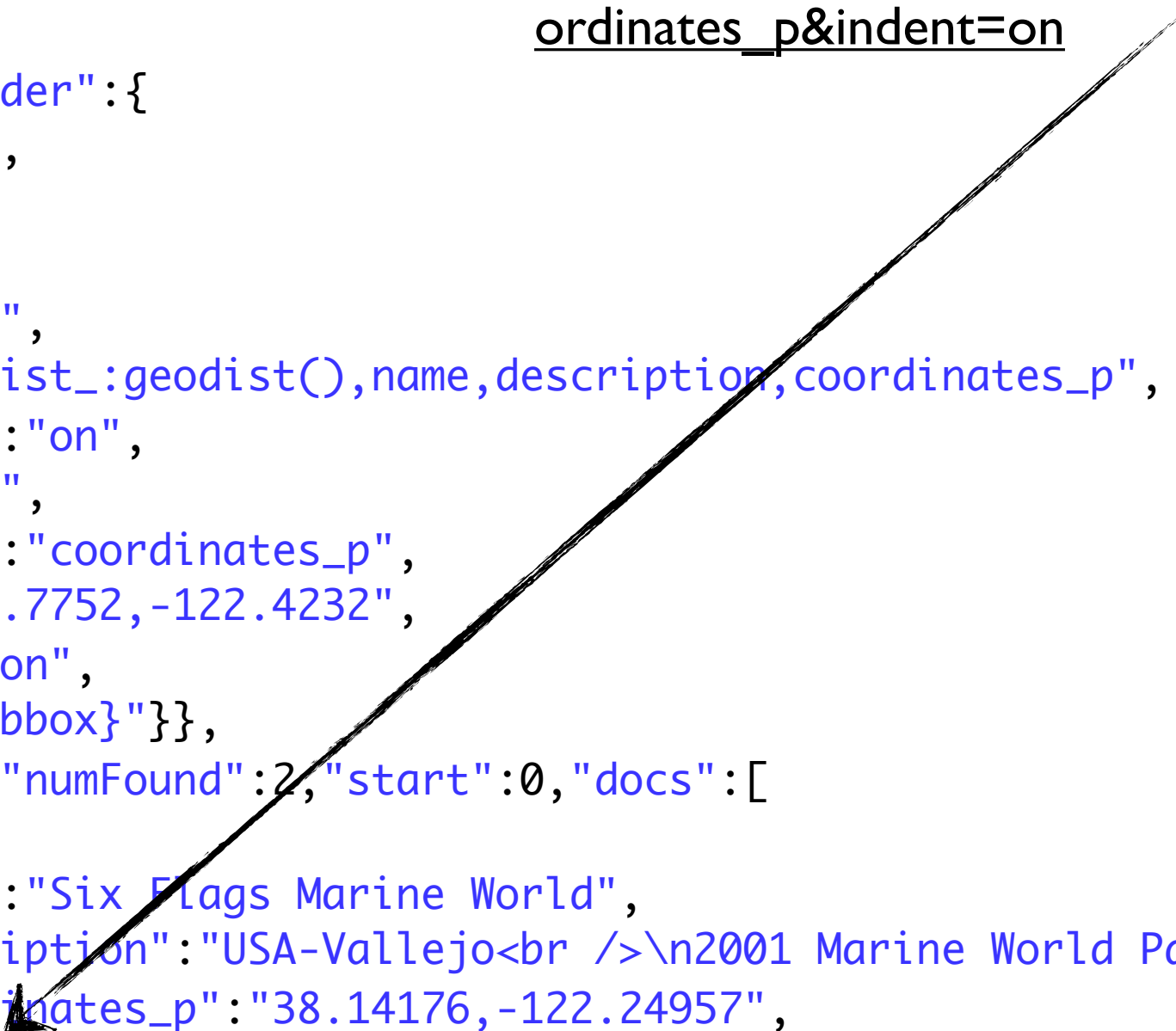
```
{  
  "id": "Myrtle Waves Water Park",  
  "name": "Myrtle Waves Water Park",  
  "description": "USA-North Myrtle Beach",  
  "coordinates_p": "33.81673,-78.68005",  
  "store": "33.81673,-78.68005",  
  "source_s": "USA-Amusement & Theme Par",  
}
```

calculate distance

/select?q=*&fq={!bbox}

&pt=37.7752,-122.4232&d=100&sfield=coordinates_p&wt=json&fl=_dist_:geodist(),name,description,co

```
{  
  ordinates_p&indent=on  
  "responseHeader":{  
    "status":0,  
    "QTime":0,  
    "params":{  
      "d":"100",  
      "fl": "_dist_:geodist(),name,description,coordinates_p",  
      "indent":"on",  
      "q":"*:*",  
      "sfield":"coordinates_p",  
      "pt":"37.7752,-122.4232",  
      "wt":"json",  
      "fq":"{!bbox}"}}},  
  "response":{"numFound":2,"start":0,"docs":[  
    {  
      "name":"Six Flags Marine World",  
      "description":"USA-Vallejo<br />\n2001 Marine World Parkway<br />\n+1 707-643-6722",  
      "coordinates_p":"38.14176,-122.24957",  
      "_dist_":43.50948310887128},  
    {  
      "name":"Great America",  
      "description":"USA-Santa Clara<br />\n2401 Agnew Rd<br />\n",  
      "coordinates_p":"37.39057,-121.96905",  
      "_dist_":58.57220580622602}]  
  }  
}
```



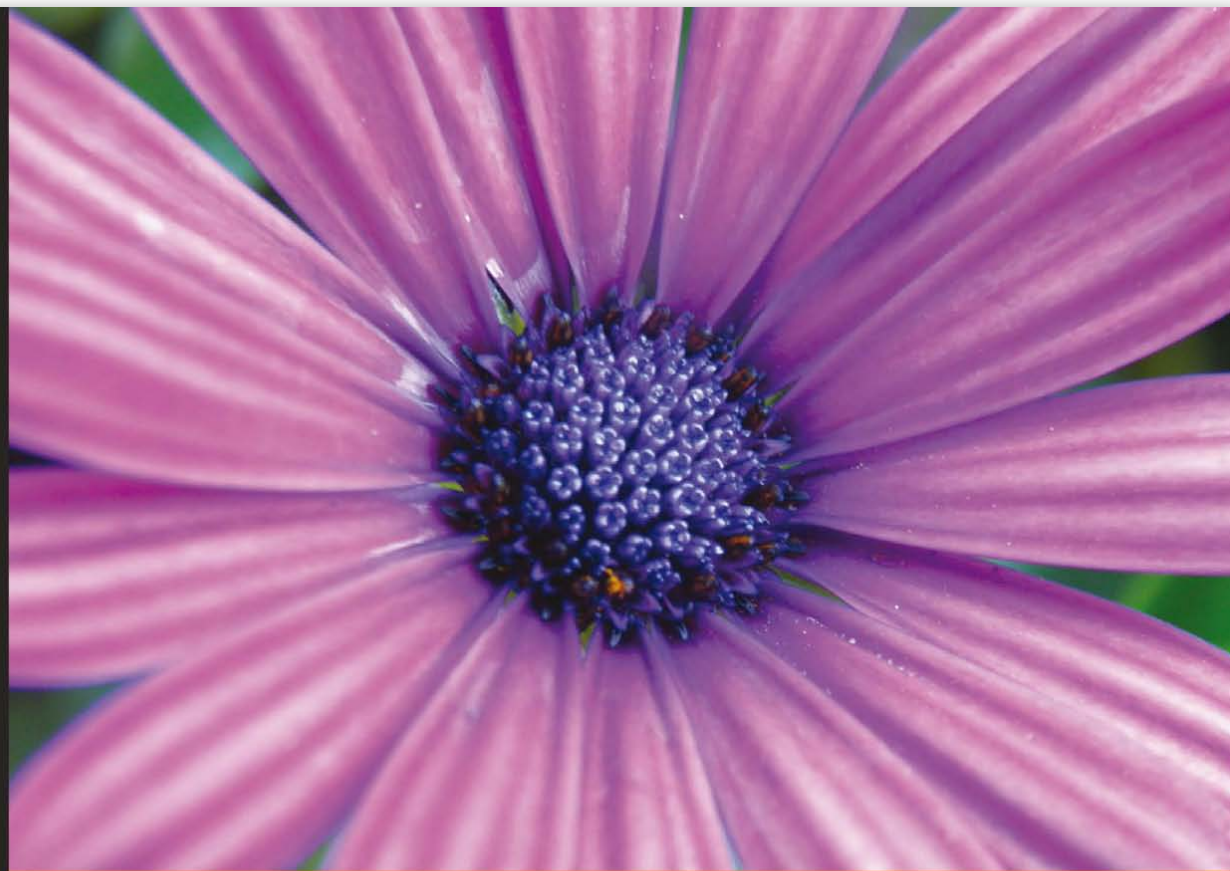
[http://localhost:8983/solr/collection1/select?q=*&fq={!bbox}](http://localhost:8983/solr/collection1/select?q=*&fq={!bbox}&pt=37.7752,-122.4232&d=1000&sfield=coordinates_p&wt=json&fl=_dist_:geodist(),name,description,coordinates_p&indent=on&sort=geodist()+asc)

[&pt=37.7752,-122.4232&d=1000&sfield=coordinates_p&wt=json&fl=_dist_:geodist\(\),name,description,coordinates_p&indent=on&sort=geodist\(\)+asc](http://localhost:8983/solr/collection1/select?q=*&fq={!bbox}&pt=37.7752,-122.4232&d=1000&sfield=coordinates_p&wt=json&fl=_dist_:geodist(),name,description,coordinates_p&indent=on&sort=geodist()+asc)



sort by distance

```
{
  "responseHeader": {
    "status": 0,
    "QTime": 14,
    "params": { "d": "1000", "fl": "_dist_:geodist(),name,description,coordinates_p", "sort": "geodist() asc",
    "indent": "on", "q": "*:~*", "sfield": "coordinates_p", "pt": "37.7752,-122.4232",
    "wt": "json",
    "fq": "{!bbox}" } },
  "response": { "numFound": 23, "start": 0, "docs": [
    {
      "name": "Six Flags Marine World",
      "description": "USA-Vallejo<br />\n2001 Marine World Parkway<br />\n+1 707-643-6722",
      "coordinates_p": "38.14176,-122.24957",
      "_dist_": 43.50948310887128},
    {
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      "description": "USA-Santa Clara<br />\n2401 Agnew Rd<br />\n",
      "coordinates_p": "37.39057,-121.96905",
      "_dist_": 58.57220580622602},
    {
      "name": "Universal Studios Hollywood",
      "description": "USA-Universal City<br />\n100 Universal City Plaza<br />\n+1 800-959-9688",
      "coordinates_p": "34.13673,-118.35590",
      "_dist_": 545.5031109696113},
    {
      "name": "Santa Monica Pier",
      "description": "USA-Santa Monica<br />\n200 Santa Monica Pier<br />\n+1 310-458-8900",
      "coordinates_p": "34.01036,-118.49612",
      "_dist_": 547.9619130243483},
    {
      "name": "Raging Waters",
      "description": "USA-San Dimas<br />\n111 Raging Waters Drive<br />\n+1 909-802-2200",
      "coordinates_p": "34.08565,-117.81186",
      "_dist_": 583.5368017552456},
    {
      "name": "Knott's Berry Farm/Soak City",
      "description": "USA-Buena Park<br />\n8039 Beach Blvd.<br />\n+1 714-220-5200",
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      "_dist_": 591.5876572669723},
    {
      "name": "Disneyland",
      "description": "USA-Anaheim<br />\n700 W Ball Rd<br />\n+1 714-781-4565",
      "coordinates_p": "33.81786,-117.91846",
      "_dist_": 598.7100877016033}
```



Community Experience Distilled

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David Smiley

Eric Pugh

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Lucene IN ACTION

SECOND EDITION

Michael McCandless
Erik Hatcher
Otis Gospodnetić

FOREWORD BY DOUG CUTTING

 MANNING



<http://wiki.apache.org/solr/SpatialSearch>

Columbus History Map Source

The screenshot shows the GitHub interface for the repository `cjudd / ColumbusHistoryMap_iOS`. The repository is on the `master` branch. The commit history table is as follows:

name	age	message	history
Classes/	about 22 hours ago	Added original ColumbusHistoryMap code. [cjudd]	
ColumbusHistoryMap.xcodeproj/	about 22 hours ago	Removed specific user setting folder. [cjudd]	
ColumbusHistoryMap-Info.plist	about 22 hours ago	Added original ColumbusHistoryMap code. [cjudd]	
ColumbusHistoryMapViewController.xib	about 22 hours ago	Added original ColumbusHistoryMap code. [cjudd]	
ColumbusHistoryMap_Prefix.pch	about 22 hours ago	Added original ColumbusHistoryMap code. [cjudd]	
MainWindow.xib	about 22 hours ago	Added original ColumbusHistoryMap code. [cjudd]	
README	about 23 hours ago	initial commit [cjudd]	
history.png	about 22 hours ago	Added original ColumbusHistoryMap code. [cjudd]	
libisimulate.a	about 22 hours ago	Added original ColumbusHistoryMap code. [cjudd]	
main.m	about 22 hours ago	Added original ColumbusHistoryMap code. [cjudd]	

https://github.com/cjudd/ColumbusHistoryMap_iOS

MapKit, Solr and RestKit

The screenshot shows the GitHub interface for the repository 'cjudd / solrmap'. The repository is public and has 0 pull requests, 0 issues, 0 stars, and 0 forks. The 'Code' tab is selected, showing the repository description: 'Example iOS application using MapKit, Solr and RestKit'. Below the description are buttons for 'Clone in Mac', 'ZIP', 'HTTP', 'SSH', and 'Git Read-Only'. The SSH URL is 'git@github.com:cjudd/solrmap.git'. The repository has 1 branch (master) and 5 commits. The 'Files' tab is selected, showing a list of files and their commit history. The files are: SolrMap.xcodeproj, SolrMap.xcworkspace, SolrMap, solr, .gitignore, and Podfile. The commit history shows that the files were added by 'cjudd' at various times, with the latest commit being '86aba787c5'.

PUBLIC **cjudd / solrmap** Pull Request Unwatch Star 0 Fork 0

Code Network Pull Requests 0 Issues 0 Wiki Graphs Settings

Example iOS application using MapKit, Solr and RestKit

Clone in Mac ZIP HTTP SSH Git Read-Only git@github.com:cjudd/solrmap.git Read+Write access

branch: master Files Commits Branches 1 Tags

solrmap / 5 commits

Added solr files

cjudd authored 5 minutes ago latest commit 86aba787c5

SolrMap.xcodeproj	2 hours ago	Added framework and RestKit dependencies [cjudd]
SolrMap.xcworkspace	2 hours ago	Added framework and RestKit dependencies [cjudd]
SolrMap	2 hours ago	Configured UI and added Rest calls. [cjudd]
solr	5 minutes ago	Added solr files [cjudd]
.gitignore	2 hours ago	Added framework and RestKit dependencies [cjudd]
Podfile	2 hours ago	Added framework and RestKit dependencies [cjudd]

We recommend adding a README to this repository. Visit [github/markup](https://github.com/markup) for details on what formats we support.

<https://github.com/cjudd/solrmap>



Christopher M. Judd



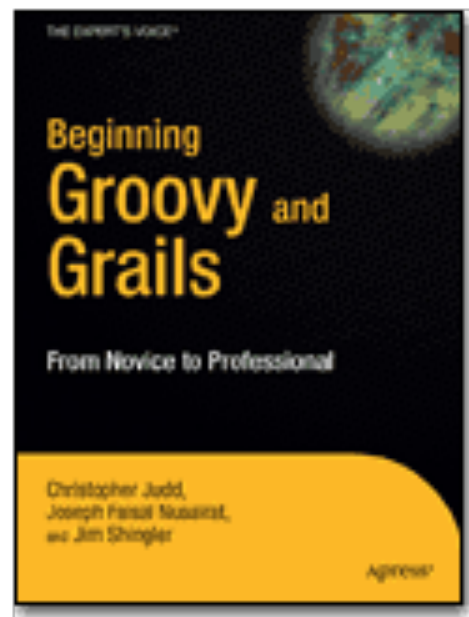
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