

iOS: MapKit and Movies

Tommy MacWilliam

Harvard University

April 12, 2011

Announcements

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

- ▶ Lectures: <http://cs76.net/Lectures>
- ▶ Sections: <http://cs76.net/Sections>

Today

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

- ▶ MapKit
- ▶ Annotations
- ▶ Core Location
- ▶ Movies

MapKit

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

- ▶ MapKit: Google Maps for iOS
 - ▶ without MD5 fingerprints!
- ▶ can show Map, Satellite, Hybrid views
 - ▶ scrollable and zoomable

MapKit

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

- ▶ defined in `MapKit/MapKit.h`
 - ▶ don't forget to import!
- ▶ also need `MapKit.framework`
 - ▶ Targets → Build Phases → Link Binary With Libraries
→ + → `Mapkit.framework`

MapKit

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

▶ example time!

Spans

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

- ▶ defines how much area will be shown on the map
- ▶ `MKCoordinateSpan`: struct, not a pointer!
 - ▶ `latitudeDelta`, `longitudeDelta`: how much area will be covered

Location Coordinates

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

- ▶ defines a point on the map
- ▶ `CLLocationCoordinate2D`: struct, **not a pointer!**
 - ▶ latitude, longitude: **coordinates of point**

Coordinate Region

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

- ▶ defines an area to be displayed on map
- ▶ `MKCoordinateRegion`: struct, not a pointer!
 - ▶ `span`: `MKCoordinateSpan` (which has latitude/longitude deltas)
 - ▶ `center`: `CLLocationCoordinate2D` (which has latitude/longitude coordinates)
- ▶ finally, `setRegion` on the `MapView`

Setting Map Center

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

▶ example time!

Annotations

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

- ▶ pushpins on map with popover
- ▶ `MKPointAnnotation` serves as model, defines
 - ▶ `coordinate`: location of annotation (`CLLocationCoordinate2D` again)
 - ▶ `title`: main popover text
 - ▶ `subtitle`: secondary popover text
- ▶ `addAnnotation` on `MapView` to display

Using Annotations

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

▶ example time!

Custom Annotation Models

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

- ▶ **create new class implementing** `MKAnnotation`
 - ▶ **must expose** `coordinate`, `title`, `subtitle`
 - ▶ **can also do whatever else you want!**
- ▶ **same** `addAnnotation` **on** `MapView`

Custom Annotation Views

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

- ▶ **same exact paradigm as** `UITableViewCell`s
- ▶ `MKMapViewDelegate` **declares methods pertaining to annotation creation**
 - ▶ implement methods in some controller
 - ▶ connect `MapKit` delegate to controller

Custom Annotation Views

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

- ▶ `mapView:viewForAnnotation:` **analogous to**
`tableView:cellForRowAtIndexPath`
 - ▶ **called to display each annotation**
 - ▶ **still want to recycle (using an identifier) with**
`dequeueReusableCellWithIdentifier`

Custom Annotation Views

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

- ▶ `MKPinAnnotationView` instead of `UITableViewCell`
 - ▶ `annotation` property describes associated annotation
- ▶ `pinColor`: color of pin head
- ▶ `animatesDrop`: whether or not to animate pin
- ▶ `canShowCallout`: whether or not to show callout when tapped
- ▶ `rightCalloutAccessoryView`: optional accessory view for callout (e.g. detail disclosure button)

Delegate Methods

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

- ▶ `mapView:annotationView:calloutAccessoryControlTapped:` **user tapped accessory view**
- ▶ `mapView:regionWillChangeAnimated:` **user scrolled map**
- ▶ `mapView:didDeselectAnnotationView:` **user de-selected annotation**

Custom Annotations

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

▶ example time!

Really Custom Annotations

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

- ▶ `MKAnnotationView` is more generic than `MKPinAnnotationView`
 - ▶ `image: UIImage` to display instead of pin

Overlay Models

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

- ▶ can also draw arbitrary lines and shapes
- ▶ `MKPolyline`: line between `CLLocationCoordinate2Ds`
- ▶ `MKCircle`: circle with radius and center at `CLLocationCoordinate2D`
- ▶ `MKPolygon`: shape with points at `CLLocationCoordinate2Ds`

Overlay Views

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

- ▶ `mapView:viewForOverlay:` **just like**
`mapView:viewForAnnotation:`
 - ▶ design consistency FTW
 - ▶ called to display each overlay
- ▶ overlays have different types! (notice the `id`)
 - ▶ `isKindOfClass` to check type of overlay (`class` static method)

Really Custom Map

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

▶ example time!

Core Location

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

- ▶ event-based framework for getting user's current location
- ▶ defined in `CoreLocation/CoreLocation.h`
 - ▶ don't forget to `#import!`
- ▶ also need `CoreLocation.framework`

Core Location

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

- ▶ **configure through CLLocationManager**
 - ▶ `startUpdatingLocation`: **start issuing GPS requests**
 - ▶ `stopUpdatingLocation`: **stop issuing GPS requests (remember to conserve device power!)**
 - ▶ `distanceFilter`: **minimum distance device must move before updating**
 - ▶ `desiredAccuracy`: **accuracy of GPS data**

Core Location

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

- ▶ CLLocationManagerDelegate **defines callback methods**
 - ▶ locationManager:didUpdateToLocation:fromLocation: **new GPS data available**
- ▶ CLLocation **has** coordinate **property** with latitude **and** longitude

Core Location

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

▶ example time!

Movies

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

- ▶ `MediaPlayer` framework used for video playback
- ▶ defined in `MediaPlayer/MediaPlayer.h`
- ▶ also need `MediaPlayer.framework`

MPMoviePlayerController

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

- ▶ video playback controlled via `MPMoviePlayerController`
- ▶ be sure to set `frame`, or size will be 0!
 - ▶ `CGRectMake` or `self.view.frame`
- ▶ add movie player view as subview
- ▶ `play!`

NSNotificationCenter

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

- ▶ `NSNotificationCenter` used to broadcast information
- ▶ objects register to receive notifications
 - ▶ define callback to fire when notification received
- ▶ other objects can `postNotificationName`
- ▶ like delegation, but many objects can respond to same notification

MPMoviePlayerController Notifications

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

- ▶ `MPMoviePlayerContentPreloadDidFinishNotification`: **initial buffering complete**
- ▶ `MPMoviePlayerPlaybackDidFinishNotification`: **playback complete**
- ▶ `MPMoviePlayerPlaybackStateDidChangeNotification`:
play/pause/rewind/fast-forward
- ▶ `MPMoviePlayerScalingModeDidChangeNotification`: **user toggled fullscreen**

MPMoviePlayerController

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

▶ example time!

Or if You're Lazy

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

- ▶ **remember** `UIWebView`?
- ▶ `loadRequest` **doesn't just load HTML!**

UIWebView, Revisited

iOS: MapKit
and Movies

Tommy
MacWilliam

MapKit

Annotations

Core Location

Movies

▶ example time!