

Homework 9: Congress Search iOS App

1. Objectives

- Become familiar with Xcode, IOS App development and Facebook SDK for IOS.
- Build a good-looking IOS app.
- Add social networking features using the Facebook SDK for IOS

2. Background

2.1 Xcode

Xcode is an integrated development environment (IDE) containing a suite of software development tools developed by Apple for developing software for OS X and iOS. First released in 2003, the latest stable release is version 7.3 and is available via the Mac App Store free of charge for OS X El Capitan users.

Features:

- Swift 2/3 support
- Playgrounds
- Interface Builder
- Testing
- User Interface Testing
- Code Coverage

The Official homepage of the Xcode is located at:

<https://developer.apple.com/xcode/>

2.2 IOS

iOS (originally iPhone OS) is a mobile operating system created and developed by Apple Inc. and distributed exclusively for Apple hardware. It is the operating system that presently powers many of the company's mobile devices, including the iPhone, iPad, and iPod touch. It is the second most popular mobile operating system in the world by sales, after Android.

The Official IOS home page is located at:

<http://www.apple.com/ios/>

The Official IOS Developer homepage is located at:

<https://developer.apple.com/ios/>

2.3 Swift

Swift is a general-purpose, multi-paradigm, compiled programming language created for iOS, OS X, watchOS, tvOS and Linux development by Apple Inc. Swift is designed to work with Apple's Cocoa and Cocoa Touch frameworks and the large body of existing Objective-C code written for Apple products. Swift is intended to be more resilient to erroneous code ("safer") than Objective-C and also more concise. It is built with the LLVM compiler framework included in Xcode 6 and later and uses the Objective-C runtime, which allows C, Objective-C, C++ and Swift code to run within a single program.

The Official Swift homepage is located at:

<https://developer.apple.com/swift/>

2.4 Sunlight Congress API

The Sunlight Congress API is a live JSON API for the people and work of Congress, provided by the Sunlight Foundation. With the API you can:

- Look up members of Congress by location or by zip code.
- Obtain the official Twitter, YouTube, and Facebook accounts.
- Look up the daily work of Congress: bills, amendments, nominations.
- Get the live activity of Congress: past and future votes, floor activity, hearings.

In order to make requests to Sunlight Congress API, you need to get an API key:

- Go to <http://sunlightfoundation.com/api/>
- Click on "Get a Key!"
- Fill the sign up form
- You will get a confirm email. Click on the link in the email.

Then login at the Sunlight Foundation website and go to your "Profile Settings". You will see your API key string right above you name. For information about the Sunlight Congress API, please go to:

<https://sunlightlabs.github.io/congress/>

and

<http://tryit.sunlightfoundation.com/congress>

2.5 Amazon Web Services (AWS)

AWS is Amazon's implementation of cloud computing. Included in AWS is Amazon Elastic Compute Cloud (EC2), which delivers scalable, pay-as-you-go compute capacity in the cloud, and AWS Elastic Beanstalk, an even easier way to quickly deploy and manage applications in the AWS cloud. You simply upload your application, and Elastic Beanstalk automatically handles the deployment details of capacity provisioning, load balancing, auto-scaling, and application health

monitoring. Elastic Beanstalk is built using familiar software stacks such as the Apache HTTP Server, PHP, and Python, Passenger for Ruby, IIS 7.5 for .NET, and Apache Tomcat for Java.

The Amazon Web Services homepage is available at: <http://aws.amazon.com/>

2.6 Google App Engine (GAE)

Google App Engine applications are easy to create, easy to maintain, and easy to scale as your traffic and data storage needs change. With App Engine, there are no servers to maintain. You simply upload your application and it's ready to go. App Engine applications automatically scale based on incoming traffic. Load balancing, micro services, authorization, SQL and noSQL databases, memcache, traffic splitting, logging, search, versioning, roll out and roll backs, and security scanning are all supported natively and are highly customizable.

To learn more about GAE support for PHP visit the page:

<https://cloud.google.com/appengine/docs/php/>

3. Prerequisites

This homework requires the use of the following components:

3.1 Download and install Xcode

To develop iOS apps using the latest technologies described in these lessons, you need a Mac computer (OS X 10.10 or later) running the latest version of Xcode. Xcode includes all the features you need to design, develop, and debug an app. Xcode also contains the iOS SDK, which extends Xcode to include the tools, compilers, and frameworks you need specifically for iOS development.

Download the latest version of Xcode on your Mac free from the App Store.

To download the latest version of Xcode

- Open the App Store app on your Mac (by default it's in the Dock).
- In the search field in the top-right corner, type Xcode and press the Return key.
- The Xcode app shows up as the first search result.
- Click Get and then click Install App.
- Enter your Apple ID and password when prompted.
- Xcode is downloaded into your /Applications directory.

You may use any other IDE other than Xcode, but you will be on your own if problems spring up.

3.2 Add your account to Xcode

When you add your Apple ID to the Xcode Accounts preferences, Xcode displays all the teams you belong to. Xcode also shows your role on the team and details about your signing identities

and provisioning profiles that you'll create later in this document. If you don't belong to the Apple Developer Program, a personal team appears.

Here is detailed documentation:

<https://developer.apple.com/library/ios/documentation/IDEs/Conceptual/AppStoreDistributionTutorial/AddingYourAccounttoXcode/AddingYourAccounttoXcode.html>

3.3 Install CocoaPods

CocoaPods is a dependency manager for Swift and Objective-C Cocoa projects. It has over ten thousand libraries and can help you scale your projects elegantly. You can install dependencies using it, we will need to install many third party modules and frameworks using it.

CocoaPods is built with Ruby and is installable with the default Ruby available on OS X. We recommend you use the default ruby. Using the default Ruby install can require you to use sudo when installing gems.

Run the command below in your Mac terminal:

```
$ sudo gem install cocoapods
```

Once you have created your Xcode project, you can start to integrate cocoapods into your project.

Further guides on how to integrate cocoapods are available at: <https://cocoapods.org/>

4. High Level Design

In this exercise, you will develop an iOS Mobile application, which will have following functionality:

There will be a slide out-menu which will provide access to the different screens such as Legislators, Bills, Committees and Favorites. The content displayed in each of these sections will be similar to Homework 8 but we will go into details later on.

Note: Please show a 'loading' screen, while you are fetching data from the AWS/GAE servers to avoid showing a blank screen to the user. Please show the 'loading screen' before any network activity and hide it after rendering the screen with the data. Please refer the video link for more details on the same.

The initial screen will be defaulted to Legislators as shown below.

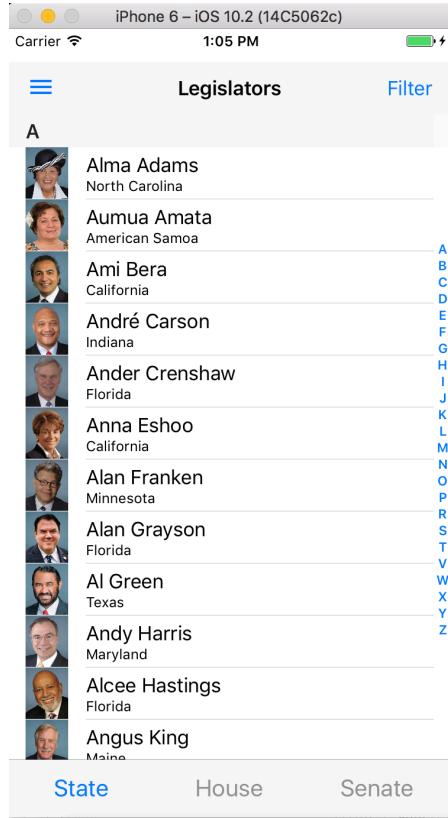


Figure 1. Initial Screen

On successful loading, we would get the legislator details using our PHP script hosted on Amazon Web Services/Google App Engine, which would return the result in JSON format. We would display the legislator details in a UITableView component in the 'By States' tab. Again, the legislator screen is defaulted to the 'State' tab. It has two other tabs 'House' and 'Senate' which displays the legislator details according to their Chamber.

The slide-out menu should open upon tapping the hamburger icon. Please refer the below screenshot for the menu design. The menu would close on tapping outside the ‘menu section’ on the right.



5. Implementation

5.1 Legislator Section

You must replicate the Legislators Screen, as shown in Figure 1.

The interface consists of the following:

- A ‘UITableView’ component displaying the list of legislators
- A ‘UITabBarController’ component for showing the tabs at the bottom of the page, along with managing the screen for the selected tab.
- A ‘UINavigationBar’ component to show the navigation bar that has the hamburger menu, title and also allows filtering the legislators by state

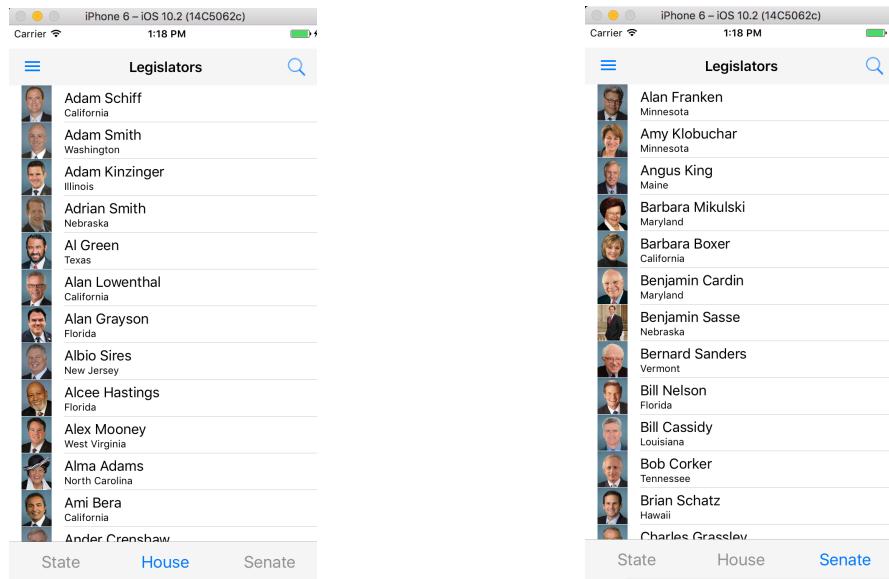
Every element in the list view should contain:

Field	Description
Thumbnail	Photo of the legislator (Can be retrieved based on the bio-guide id from https://theunitedstates.io/images/congress/original/bioguide_id.jpg)
Legislator Name	The full name of the legislator
State	The state to which the legislator belongs to – Should be full name of state and not the abbreviated form of the state name

Each row in the list view should be clickable which will take you to the legislator details screen (explained later). Below is an explanation of the required details in every tab.

- ‘**By States’**: Ordered list of legislators **based on first name of the legislator**. Please ensure the order of the legislator is in the ascending order (A to Z). **Index should be created based on first name**.
- ‘**House’**: Order legislators **based on their first name** in ascending order, as mentioned above. This tab should contain only **legislators from chamber ‘house’**. **This tab should support filtering of the legislator based on the first name**.
- ‘**Senate’**: Order legislators **based on their first name** in ascending order, as mentioned above. This tab should contain only **legislators from chamber ‘senate’**. **This tab should support filtering of the legislator based on the first name**.

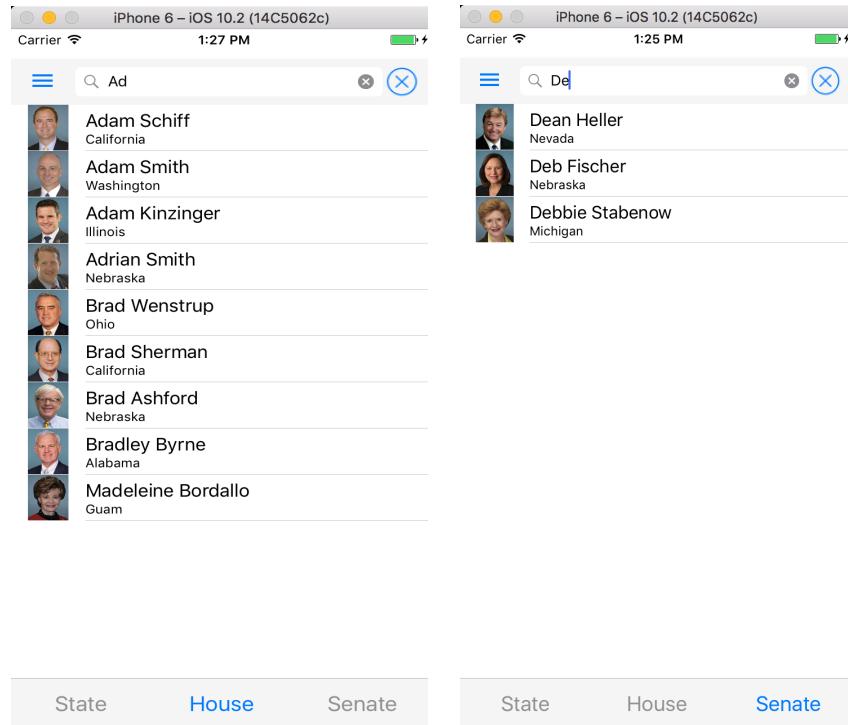
Below are screenshots for the House and Senate tabs respectively.



Note: Please ensure that the filtering for the ‘House’ and ‘Senate’ tab should be case-insensitive. That implies that the ‘ad’ should fetch ‘Adam’ and ‘Brad’ both.

Further, note that the screen shows a filtering button, in the form of a ‘Bar Button Item’. Clicking the button would expose a ‘UI Search Bar’ in place of the title, for the user to enter values. Furthermore, the button would change into a cancel icon. Clicking the cancel button to take the screen to the original state.

Please find the ‘search mode’ for both the ‘House’ and ‘Senate’ tab below:



5.1.1 Legislator Details:

On tapping a specific row in the Legislator Section, the Legislator details should be displayed in a new screen as shown below. Please refer the given screenshot for more information. The picture of the legislator is shown on the top, center aligned in the screen. The details of the legislator would be followed below the picture in a tabular fashion.

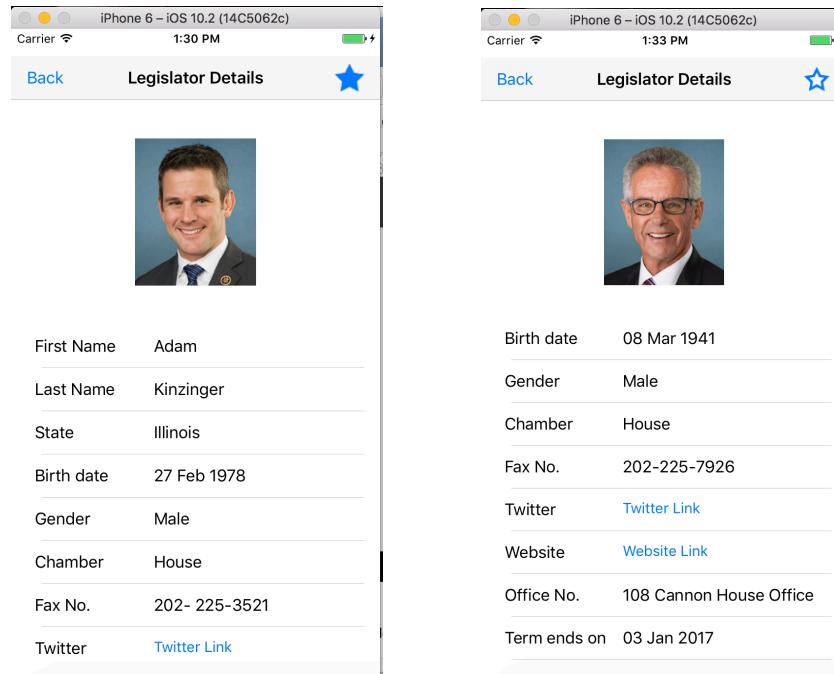
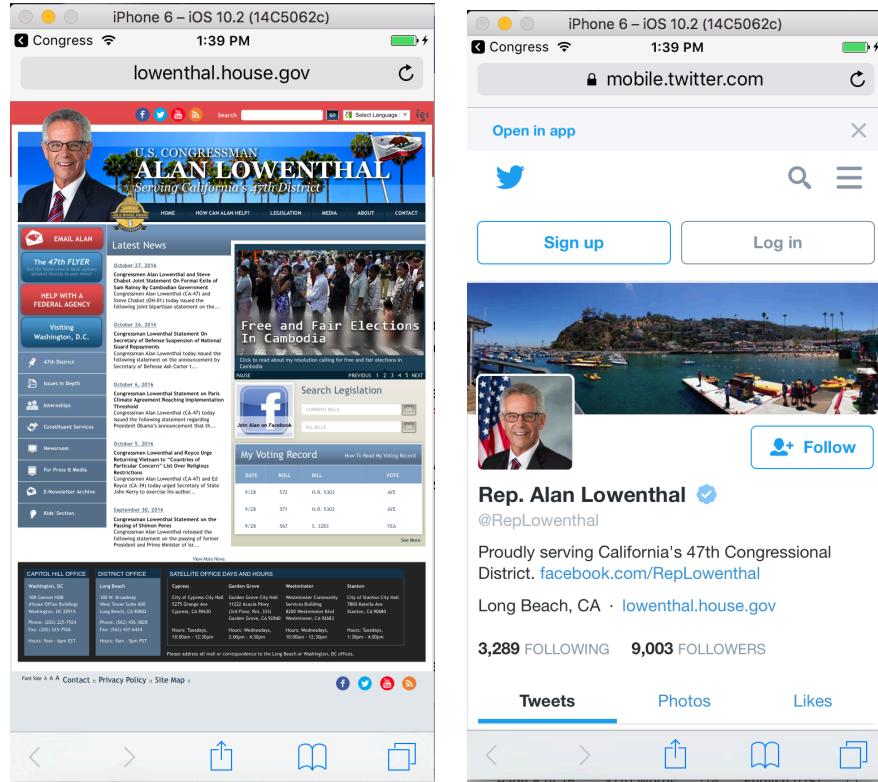


Figure 2: Legislator Details

Favorite Icon: If the legislator has been marked as ‘Favorite’, then the icon shows the same. A filled star represents a favorited legislator.

Also, please ensure that the links are clickable and open the link in the default browser. Please refer the following screenshot for reference.

Note: If the legislator does not have a value for any of the ‘fields’, please display a ‘N.A’ for the field. Also, please ensure that the back button, should take to appropriate tab, and not the default tab (first tab).



Please note that the picture of the legislator is shown outside the table, at the top of the screen. You should use the base link: <https://theunitedstates.io/images/congress/original> and the “bioguide_id” to create the image URL.

Table Field	Description
First Name	Displays the first name of the legislator.
Last Name	Displays the last name of the legislator.
State	Displays the state that the legislator represents, in full state name.
Gender	Displays the gender of the legislator, as Male or Female
Birth date	Displays the birthdate of the legislator. Please refer the screenshot for the format of the dates.
Chamber	Displays the chamber of the legislator as Senate or House

Fax	The fax number
Twitter Link	The twitter URL for the legislator, if available. Otherwise show 'N.A.'
Website Link	The website URL for the legislator, if available. Otherwise show 'N.A.'
Office	The office address for the legislator
End Term	The end term of the legislator. Please refer the screenshot for the format of the dates.

Note: If any of the values are not present, your application should display "N.A". It should not crash or show blank.

5.2 Bills Section

You must replicate the Bills Screen, as shown in Figure 3 below. The tab names remain the same as in Homework 8 and all the bills should be loaded.

The two tabs in this page are:

- '**Active Bills**': Displays the active bills. Sort by the bill name in the ascending order.
- '**New Bills**': Displays new bills which are not active yet. Sort by the bill name in the ascending order.

There is no index for this screen and again use the 'UITableView' component, and selection of any row would show the details for the bill.

Please note that the filtering feature remains the same, as mentioned in the legislator section. You need to filter the bills on their 'office_title' field.

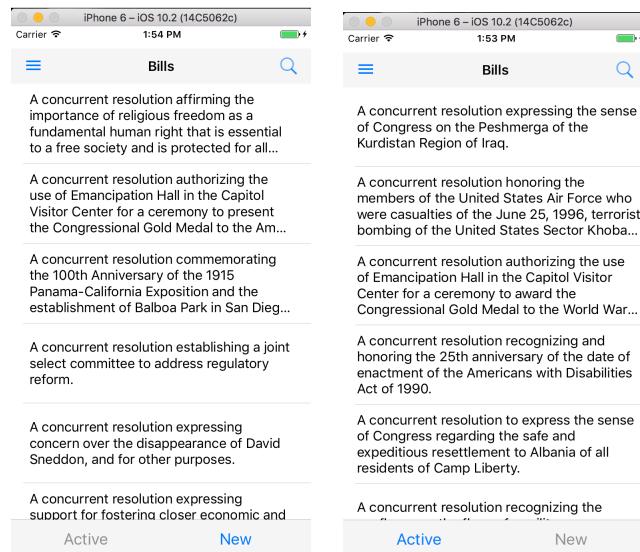


Figure 3: Bills Section

5.3 Bill Details

On clicking a specific bill in the Bills Section, the Bill details should be displayed in a new screen as shown below.

The bill detail should show the favorite button to mark it as favorite, in a similar way as we did for the legislators.

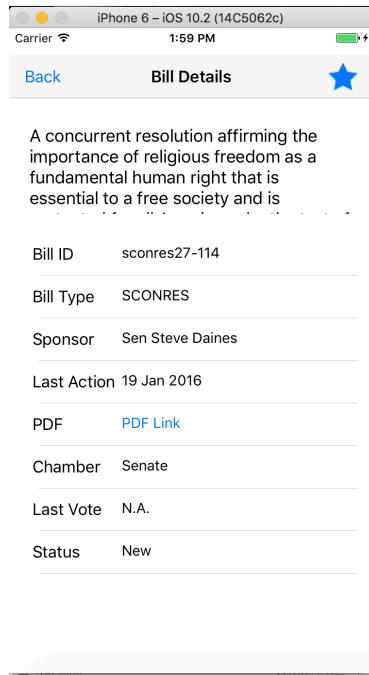


Figure 4: Bill Details

Please have a 'UITextView' for showing the complete 'official title' in a scrollable view. Further, use a 'UITableView' to show the rest of bill details as mentioned below:

Table Field	Description
Bill ID	ID of the Bill
Bill Type	Type of the Bill
Sponsor	Sponsor of the Bill. Format should be: Title, First Name, Last Name
Last Action	The date on which the bill was last worked on. Please refer the screenshot for the format of the dates.
PDF	The link to the pdf version of the bill.
Chamber	The chamber where the bill was introduced.
Sponsor	Sponsor of the Bill. Format should be: Title, First Name, Last Name
Status	The status should be "Active" or "New", depends on the "active" field in JSON response.

Table Field	Description
Bill ID	ID of the Bill
Bill Type	Type of the Bill
Sponsor	Sponsor of the Bill. Format should be: Title, First Name, Last Name
Last Action	The date on which the bill was last worked on. Please refer the screenshot for the format of the dates.
PDF	The link to the pdf version of the bill.
Chamber	The chamber where the bill was introduced.
Sponsor	Sponsor of the Bill. Format should be: Title, First Name, Last Name
Status	The status should be "Active" or "New", depends on the "active" field in JSON response.

Please note that the URL should be clickable, and should open the PDF version of the selected bill in the default browser.

Note: If any of the values are not present, your application should display “N.A” or “None”. It should not crash or show blank. Also, please ensure that the back button, should take to appropriate tab, and not the default tab (first tab).

5.4 Committees Section

You must replicate the Committees Screen, as shown in Figure 5 below. The tab names remain the same as in Homework 8 and all the committees should be loaded.

The three tabs in this page are:

- ‘**House**’: Displays the house committees in ascending order of committee names.
- ‘**Senate**’: Displays the senate committees in ascending order of committee names.
- ‘**Joint**’: Displays the joint committees in ascending order of committee names.

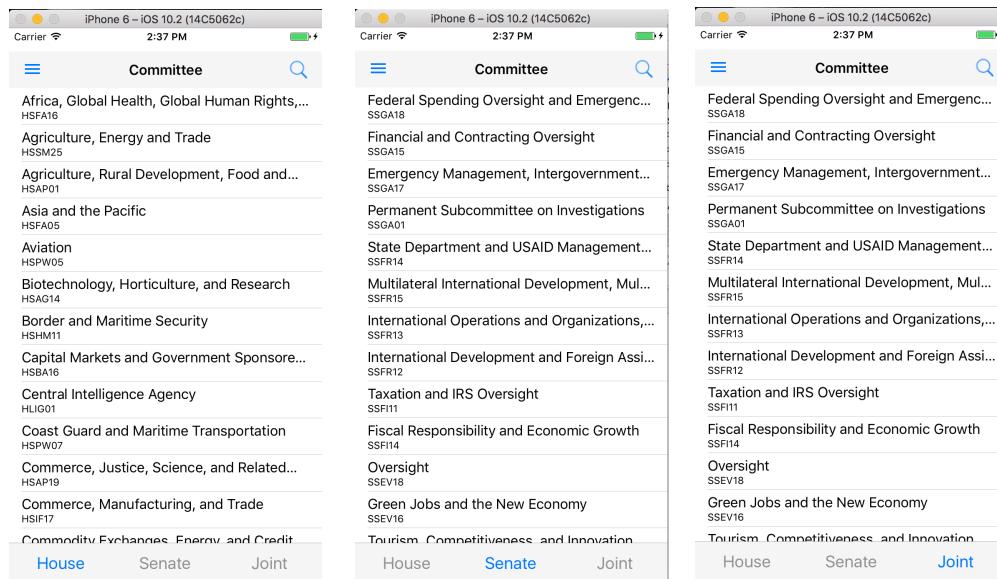


Figure 5: Committees Section

Every entry in the committee list should contain the following:

Field	Description
Committee Name	Displays the name of the committee
Committee ID	Displays the committee ID

Please note that the filtering ability remains the same as in the legislator section and bill section. You should be able to filter the committee based on their names. Please refer the legislator section for more details.

5.5 Committee Details

On selecting a specific committee from either of the tabs, you should be directed to a new screen showing the details for the committee in consideration.

Please refer the below screenshot for the same.

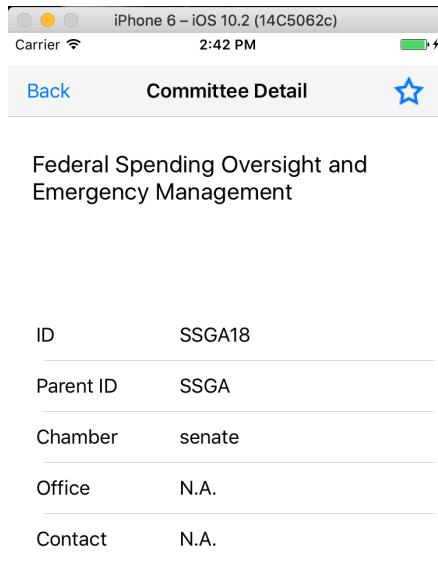


Figure 6: Committee Details

Please have a 'UITextView' for showing the complete 'name' in a scrollable view. Further, use a 'UITableView' to show the rest of committee details as mentioned below:

Table Field	Description
Committee ID	ID of the Committee
Parent Committee	Parent Committee of the Committee. If not available, display N.A.
Chamber	Chamber of the Committee. Start with the image of the Chamber. Then the name of the chamber.

Office	Office of the Committee. If not available, display N.A.
Contact	Contact number of the Committee. If not available, display N.A.

Note: If any of the values are not present, your application should display “N.A”. It should not crash or show blank. Also, please ensure that the back button, should take to appropriate tab, and not the default tab (first tab).

5.6 Favorites Section

You must replicate the Favorites Screen, as shown in Figure 5 below. The tab names remain the same as in Homework 8 and **should remain empty initially, due to lack of favorite data**.

When the **user marks a particular item as favorite, it should appear in the corresponding tab for Legislators, Bills or Committees**. Further, when the **user unmarks** the same item from favorites, **the item should disappear**. This is the traditional favorite/un-favorite functionality.

When an item is marked as favorite, the unfilled star which we have described in the different sections should change to filled star to indicate that it has been marked. Similarly, when a favorite item is unmarked, the filled star should revert to the original unfilled star.

Kindly refer the below screenshots for favorite legislators, bills and committees, respectively.

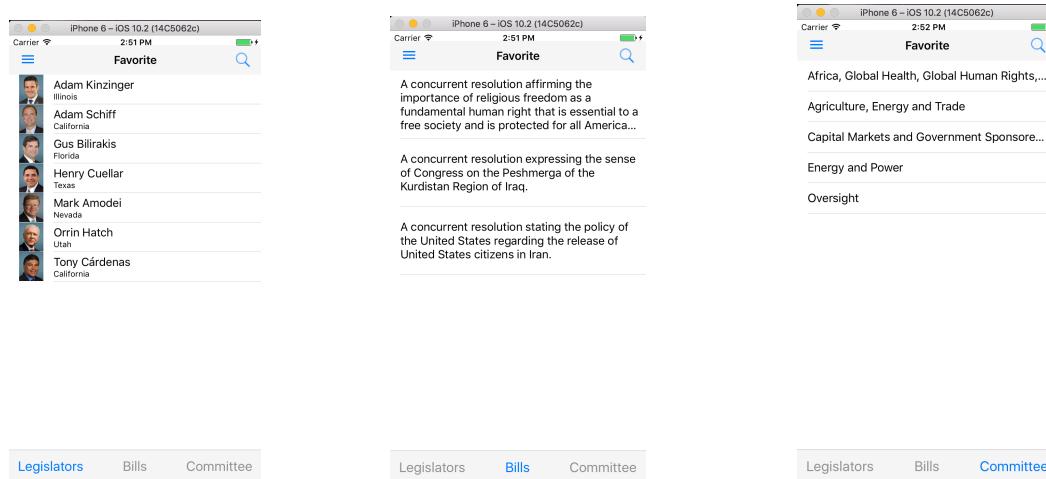


Figure 8. Favorites

Note: The selection of any of the favorite legislator, bill or committee would show the detail. The details for Legislators, bills and committees are same as the previous sections in terms of what should be displayed.

5.7 About

You will also have to implement an additional menu item in the slide out menu that links to a screen which displays information about you.

The about page should look as below:

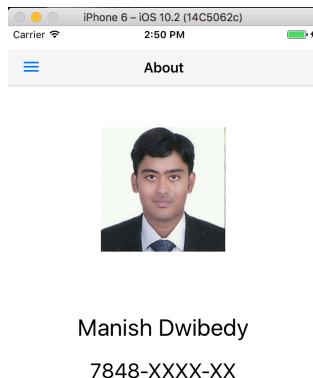


Figure 9. About

6. Implementation Hints

See the HW9 IOS Clues file.

7. Material You Need to Submit

Unlike other exercises, you will have to “demo” your submission “in person” during a special grading session. Details and logistics for the demo will be provided in class, in the Announcement page and in Piazza.

You should also ZIP your project source directory and SUBMIT the resulting ZIP file. Make sure that the source path does not include the .app file in the product folder.