Overview

- Part 1: Introduction to UITableView
- Part 2: Introduction to Fetching Content from the Web
- Part 3: Flickr TableView

Submission

Lab evaluation form
Online Lab feedback form

Note: If you are unable to complete the lab during this week's lab period, please be ready to demonstrate before the beginning of the next lab.

Part 1: Introduction to UITableView

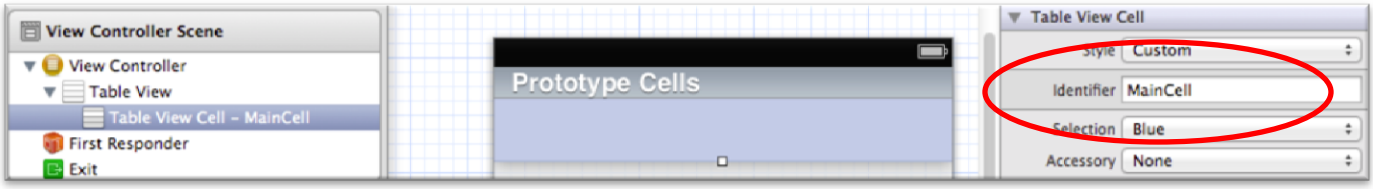
UITableView is a great way to organize lists of content. A typical UITableView consists of one or more sections, which consist of UITableViewCell cells (a cell is a row in the table).
Step 1) Create a new project called **Table** from the Single View application template.
Step 2) In Xcode, declare in the header file that your view controller implements the delegate protocol for UITableViewDelegate and UITableViewDataSource by changing the superclass you inherit to UITableViewController.

```
@interface ViewController : UITableViewController
```

UITableViewController is a wrapper on the UIViewController class that includes the two delegate protocols.

Step 2) Open the view controller's .xib file or the .storyboard.
In Interface Builder:

1) Add a UITableViewController onto the scene.
2) Edit the class of the UITableViewController to use your own custom view controller class
3) Ensure that your view controller is both the **delegate** and **datasource** of the UITableView. You can check by right-clicking on the Table View.
4) Ensure that the Table View cell has a Reuse Identifier; i.e. "MainCell" (pictured)



5) Save the .xib or storyboard.

You have now made your view controller the delegate and data source for the table view.

Step 4) Implement methods from the UITableViewDelegate and UITableViewDataSource protocols. Most methods of the protocols have a default implementation. Some interesting methods for you to consider are:

numberOfSectionsInTableView:
tableView:numberOfRowsInSection:
tableView:titleForHeaderInSection:
tableView:didSelectRowAtIndexPath:

Most of these methods are very simple to implement, requiring you to return a NSInteger or an NSString *. The most complicated to implement is tableView:cellForRowAtIndexPath:, but a sample implementation has been provided below:

This is the iOS 5+ version using Storyboards and ARC:

```
- (UITableViewCell *)tableView:(UITableView *)tableView cellForRowAtIndexPath:(NSIndexPath *)indexPath {
    UITableViewCell *cell = [tableView dequeueReusableCellWithIdentifier:@"MainCell"];

    cell.textLabel.text = @"My Cell";
    //set other properties of cell

    return cell;
}
```

If you're using storyboards, the @"MainCell" reuse identifier should be set on your Storyboard (pictured). Drag a UITableViewCell onto the table view, open the attributes inspector, and give the cell a reuse identifier or the code will not work.

Notice how memory is saved by reusing the same instance of UITableViewCell. In cases where most cells in your table are similar, you'll want to follow the technique of the example. The caller will call the tableView:cellForRowAtIndexPath: method for every visible cell when it needs to draw that cell. For the first call, we get the reusable cell and set its text. After we pass back the cell to the caller, the caller will render the cell. For subsequent calls, we reuse the same cell (and reuse the same memory) and simply change the text.

Step 5) Implement a simple application that contains **at least 2 sections and at least 4 rows** in a table view. You may use the following example:

Section 0: "Countries to Visit"
- Row 0: "England"
- Row 1: "France"
- Row 2: "Italy"

Section 1: "American Destinations"
- Row 0: "Hawaii"
- Row 1: "Disney World"

Step 6) You can wait to demo your code until you are finished with Part 3. The sections of the lab build upon each other.

Part 2: Introduction to Fetching Content from the Web

In this section, you will use Flickr's API to fetch an image from a web-request and display the image on in the simulator.

http://www.flickr.com/services/api/

Step 1) Reuse your project from Part 1.

Note: JSON (JavaScript Object Notation) is a widely used standard for serializing objects used in web development.

Step 2) Review the following code and answer the questions in the Evaluation Form.

```
#define SEARCH_STRING @"lolcat"
#define NUM_RESULTS 50

- (void) viewDidLoad {
    // Allocate arrays
    self.photoNames = [[NSMutableArray alloc] init];
    self.photoURLs  = [[NSMutableArray alloc] init];

    // Form URL for API query to Flickr
    NSString *flickrAPIKey = @"78bd5fd661d75a1703ae1c533a30fae1";
    NSString *apiCall      =
@"http://api.flickr.com/services/rest/?method=flickr.photos.search&api_key=%@&tags=%@&per_page=%i&format=json&nojsoncallback=1";

    NSString *urlString    = [NSString stringWithFormat:apiCall, flickrAPIKey, SEARCH_STRING, NUM_RESULTS];
    NSURL    *url          = [NSURL URLWithString:urlString];

    // Get result of Web query
    NSData *data = [NSData dataWithContentsOfURL:url];

    // Convert JSON into objects
    // NSJSONReadingOptions options = NSJSONReadingAllowFragments | NSJSONReadingMutableContainers | NSJSONReadingMutableLeaves;
    NSJSONReadingOptions options = 0;
    NSDictionary *results = [NSJSONSerialization JSONObjectWithData:data options:options error:nil];

    // Combine the information from the query to get the photo names & URLS
    NSArray *photos = [[results objectForKey:@"photos"] objectForKey:@"photo"];
    for (NSDictionary *photo in photos) {
        // Get the title for each photo
        NSString *title = [photo objectForKey:@"title"];
        [self.photoNames addObject:(title.length > 0 ? title : @"Untitled")];

        // Construct the URL for each photo
        NSString *photoURLString = [NSString stringWithFormat:@"http://farm%@.static.flickr.com/%@/%@_%@_s.jpg",
                                    [photo objectForKey:@"farm"],
                                    [photo objectForKey:@"server"],
                                    [photo objectForKey:@"id"],
                                    [photo objectForKey:@"secret"]];
        [self.photoURLs addObject:[NSURL URLWithString:photoURLString]];
    }
}
```

Note: You may want to type the URL into a web browser to see what is returned. Using GET variables (or POST variables) to pass a server-side script information is a common practice in web development.

http://api.flickr.com/services/rest/?method=flickr.photos.search&api_key=78bd5fd661d75a1703ae1c533a30fae1&tags=iastate&per_page=10&format=json&nojsoncallback=1

Information about GET variables:

http://www.myurl.com/test.php?var1=value1&var2=value2&var3=value3

A ? mark delimits the URL from the GET variables. The variables themselves are delimited by &. Each variable has a name and a value, separated by an =. In a simple PHP script, the code can access these variables through the globally defined _GET dictionary. For example, if test.php were:

<? echo _GET['var1']; ?>

Than going to the sample URL would return a webpage that contains one word: value1.

Part 3: Flickr TableView

Using the provided skeleton code from Part 2, you will update your applications from Part 1 to display photos retrieved from your Flickr API fetch.

Step 1) Answer the questions for Part 3 on the Evaluation Form. You can explore the documentation by Ctrl-clicking (right clicking) on keywords in Xcode or by going to developer.apple.com.
Step 2) Alter your code from Part 1 to display the photos returned from the web request.
The following convenience methods of the NSData and UIImage classes will be helpful:
+ (NSData *) dataWithContentsOfURL:(NSURL *)url;
+ (UIImage *) imageWithData:(NSData *)data;

Step 4) When your app has images displayed in each row of the TableView, demo your app to the TA.