MVC and Interface Builder

IAP 2010
Information-Driven Applications
Application Flow

UIApplication

UIApplication

UIAppDelegate

Main NIB Initialized

- (void)applicationDidFinishLaunching:(UIApplication *)application

Initialize Your Root Controller & Interface

After which point it is..

UI Driven

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So Application Design and UI Design are intimately paired.
Application Flow

- (void)applicationDidFinishLaunching:(UIApplication *)application
{
    [window makeKeyAndVisible];
}

Add things to the window

callbacks

Controller Logic
Exercise 1

App Delegate .h
@interface RPS2AppDelegate : NSObject <UIApplicationDelegate> {
    NSManagedObjectModel *managedObjectModel;
    NSManagedObjectContext *managedObjectContext;
    NSPersistentStoreCoordinator *persistentStoreCoordinator;
    UITableViewController *tableViewController;
    UIWindow *window;
}

App Delegate .m
- (void)applicationDidFinishLaunching:(UIApplication *)application {
    // Override point for customization after app launch
    tableViewController = [[[UITableViewController alloc] initWithStyle:UITableViewStylePlain];
    [window addSubview:tableViewController.view];
    [window makeKeyAndVisible];
}

App Delegate .m -- dealloc method
[tableViewController release];
Model-View-Controller Design
MVC on the iPhone

- You rarely have a View without a ViewController

![Image of iPhone screen with a table view showing contacts]

**UITableView**

**UITableViewController**

**Controller**
MVC on the iPhone

- The view can drive the relationship, asking things of the controller

(Delegate Pattern)

How many sections?

UITableView

LayoutInflater

UIViewController

UITableView

Controller
MVC on the iPhone

- The View asks things of the controller
MVC on the iPhone

• The View asks things of the controller

How many rows in section 1?

UITableView

Controller

UITableView

UITableViewViewController
MVC on the iPhone

- The View asks things of the controller

![Diagram showing MVC on the iPhone with UITableView and UITableViewController]
MVC on the iPhone

• The View asks things of the controller

What is the cell object for row 1:1?

UIViewController

UITableView

UITableView

MVC on the iPhone

- The View asks things of the controller
Or the controller can instruct the view

Controller ➔ Button

Color yourself blue!

MyCustomController ➔ UIButton
Three ways to organize this relationship

1. Use a pre-packaged view and just implement its delegate in the controller

- Tables
- Camera
- Maps
- Address Book
- etc
Three ways to organize this relationship

2. Have the controller programmatically construct a custom view

```swift
overlaySize = CGRectMake(0,
                        self.tableView.height - 22,
                        self.tableView.size.width,
                        22);
TTActivityLabel *banner = [[TTActivityLabel alloc]
                           initWithFrame:CGRectZero
                           style:TTActivityLabelStyleBlackBanner]
banner.text = [ModelBase syncMessage];
[banner sizeToFit];
```

This can consist of a lot of pixel math
Three ways to organize this relationship

3. Create a custom view in InterfaceBuilder and then drive it using the controller
Interface Builder
Exercise 2

Choose a template for your new file:

- Objective-C class
- Objective-C test case class
- UITableViewController subclass

Options:
- UITableViewController subclass
- With XIB for user interface

An Objective-C class which is a subclass of UIViewController, with an optional header file which includes the <UIKit/UIKit.h> header. A XIB file containing a view configured for this View Controller is...
Exercise 2
Exercise 2

Now swap the Table View Controller you used before for the RPSGameViewController you just created
Exercise 3 - Outlets and Actions

@interface RPSGameViewController : UIViewController
{
    IBOutlet UIButton *rockButton;
    IBOutlet UIButton *paperButton;
    IBOutlet UIButton *scissorsButton;
    IBOutlet UILabel *responseLabel;
}

- (IBAction)rockClicked:(id)sender;
- (IBAction)paperClicked:(id)sender;
- (IBAction)scissorsClicked:(id)sender;
@end
Exercise 3 - Outlets and Actions

In interface builder, wire them together

Then Run it

Why does the app crash when you click a button?

Debugging Tips
Exercise 3 - Outlets and Actions

@implementation RPSGameViewController

- (IBAction)rockClicked:(id)sender {
}

- (IBAction)paperClicked:(id)sender {
}

- (IBAction)scissorsClicked:(id)sender {
}

...(implementation continues)...

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Exercise 3 - Outlets and Actions

- (IBAction) rockClicked:(id)sender {
  responseLabel.text = @"The strongest of foes!";
}

- (IBAction) paperClicked:(id)sender {
  responseLabel.text = @"Cunning and underrated!";
}

- (IBAction) scissorsClicked:(id)sender {
  responseLabel.text = @"Deadly and quick!";
}

...(implementation continues)...

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Categories

One last Objective-C Feature
Categories provide a way to extend a class you did (or didn’t!) write

Be careful -- overuse can get you into trouble
@interface NSString

@end

@interface NSString(XMLSerialization)

-(NSData *)toXML

@end

@interface NSString(PigLatin)

-(NSString *)toPigLatin

@end
Ex 4

NSString+RPS.h
@interface NSString (RPS)
-(BOOL)rpsBeats:(NSString *)other;
@end

NSString+RPS.m
-(BOOL)rpsBeats:(NSString *)other {
   if (((self isEqualToString:@"rock") && [other isEqualToString:@"scissors"]) ||
       ([self isEqualToString:@"scissors"] && [other isEqualToString:@"paper"]) ||
       ([self isEqualToString:@"paper"] && [other isEqualToString:@"rock"])) {
      return YES;
   }
   return NO;
}

Main App Delegate
if (@"paper" rpsBeats:@"rock") {
   NSLog(@"All is right in the world!");
}
Lab

Extend your program so it has three labels.

The first button click sets the first label,
The second button click sets the second label,

And then the winner is declared in the third button click