iOS: Writing Apps like a Boss

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Today

- Objective-C
- XCode
- Single-Page Apps
- Navigation

Objective-C

- like C, but with more features!

- no more malloc

- larger standard library

Object-Oriented Programming

- structs that can have functions as members

- inheritance from other classes

- data encapsulation: good design!

Object-Oriented Programming

- declare classes with `@interface`

- define classes with `@implementation`

- declare members with `@property`

Message Passing

- `-(void)init;`

- `-(void)initWithInt:(int)i;`

- `-(void)initWithInt:(int)i andFloat:(float)f;`

Message Passing

- `NSObject* o = [[NSObject alloc] init];`

- `[o foo];`

- `[o bar:5];`

- `[o baz:5 qux:1.0];`

Strings

- NSString* s = @"cs50"

- [s length]

- [s characterAtIndex:0]

Arrays

- `NSMutableArray* a = [[NSMutableArray alloc] init];`

- `[a addObject:@"cs50"];`

- `[a removeObjectAtIndex:0];`

Objective-C Example

View Controllers

- class representing one screen

- properties for views (aka controls)

- methods for actions

- `self`: current instance of class

Building Interfaces

- drag and drop views from object library

- IBOutlet: wire up views to properties

- IBAction: wire up events to methods

Wiring IBOutlets

- Ctrl-Click "View Controller"

- Drag to view

- Select property to wire to

Wiring IBActions

- Ctrl-Click view

- Drag to "View Controller"

- Select action to wire to

Creating new Classes

- Ctrl-click project folder on left

- "New File" > "Objective-C class"

Hello, iOS

Like a boss.

Tags

- what if we don't want a property for every view?

- tag: unique numerical identifier

- `[self.view viewWithTag:0]`

Tic Tac Toe

Like a boss.

Protocols

```objc
@protocol SomeProtocol
-(void)foo;
-(int)bar:(int)baz;
@end


@interface ViewController :
    UIViewController <SomeProtocol>
```

Delegates

- designate a class to handle actions

- class implements a protocol promising it can handle actions

- instantiate the class

TextFieldDelegate

Table Views

- how many sections are in the table?

  - `tableView:numberOfSectionsInTableView:`

- how many rows are in this section?

  - `tableView:numberOfRowsInSection:`

- what does this cell look like?

  - `tableView:cellForRowAtIndexPath:`

Table View Cells

- cells are cached and reused for performance

- types of cells have unique string identifiers

- `dequeueReusableCellWithIdentifier:`

Cell Properties

- `textLabel`

- `accessoryType`

- ...

Hello, Table Views

Storyboarding

- Drag view controller from object library

- Object Inspector > Custom Class

- Choose class name from drop-down

Segues

- connections between view controllers

- Ctrl-click view that will trigger action

- Drag to view controller to transition to

prepareForSegue

- segues have unique identifiers
- cast `destinationViewController`
- set properties of new view controller

Property Lists

- easy data storage

- key/value pairs with arrays, dictionaries, etc. as values

- just like JSON, but XML under the hood

MLB Mobile

Documentation

- https://developer.apple.com/library/ios/navigation/

- http://bit.ly/ybWlmh

- http://bit.ly/zWrRPl

- http://cs164.net

- http://cs76.net

Questions?