Stanford CS193p

Developing Applications for iOS Fall 2013-14



Coming Up

Ø Wednesday

Alternate Final Presentation.

If you are using Alternate Presentation time, submit your Keynote by noon tomorrow (Tuesday). Submit the slides using the normal submit script (submit again with code by Sunday). We will have a "live demo testing" opportunity on Wednesday as well, so bring your demo device.

Friday

No Section.

Sunday

Final Project Due (by midnight). Don't forget to submit your Keynote slides along with!

Final

A week from Thursday at 12:15pm to 3:15pm in this room. Presentation is <u>required</u>. Presentation time limit is 2.5 minutes (150 seconds) and must be 1280x720 aspect ratio. Presentation order is random (no exceptions).

Today

Localization

Internationalization really.

Settings

Adding UI to the Settings application.

Demo

Internationalizing Photomania. Adding a Bouncer setting.

Internationalization

Two steps to making international versions of your application 0 Internationalization (i18n) Localization (110n)

Internationalization

This is a process of making strings externally editable (from storyboard or code). It also involves using certain "formatting" classes for things like dates, numbers, etc. You (the developer) get to do this work.

Localization

A process of editing those externalized strings (and then QA'ing the result) for a given language. You usually hire a localization company to do this work.

Internationalization

Storyboards are localized by changing its strings only And we rely on Autolayout to make it all look nice.

First step though: Registering Localizable Languages Go to the Project pane in Xcode (top in Navigator), then Info tab to add Localizations. If you click "Use Base Internationalization" the strings in your storyboards will be extracted into editable .strings files (one for each language).

You must inspect the project itself here, not the Target you build.

"Base" is the "localization" where storyboards live that are localizable using only .strings files (hopefully this is all storyboards).

> Click this + to add more languages that you intend to support.

👌 Photomania 🗘	Info	Build Settings	
Deployment Target			
iOS Deployment Target 7.0	•		
Configurations			
Name		Based on Configuration File	
Debug		No Configurations Set	
▶ Release		No Configurations Set	
+ -			
Use Release ‡ for con	nmand-line b	uilds	
Localizations			
anguage		Resources	
ase		2 Files Localized	
nglish		2 Files Localized	

Localizing Storyboards

Storyboards in Navigator will now have localizations Send the .strings files out to localizers to translate the strings. Localizers appreciate a demo of your application in your Base language. Or at least send them the storyboards so they can get context.

Navigator

File Inspector

Loc	alization		
-	📑 Base		
	English	Localizable Strings	ŧ
-	French	Localizable Strings	ŧ
1.5			Status Status

Fall 2013

Internationalization

What about strings not in storyboards?

i.e., literal strings @"string" Replace them with a variant of NSLocalizedString ... NSString *NSLocalizedStringWithDefaultValue(NSString *key, NSString *table, NSString *bundle, NSString *defaultValue, NSString *comment); // comment is for localizers

Also NSLocalizedStringFromTableInBundle() (defaultValue is the key) and NSLocalizedStringFromTable() (defaultValue is the key and uses mainBundle) and NSLocalizedString() (defaultValue is key; mainBundle; table Localizable.strings) Example: Change @"hello" to NSLocalizedString(@"hello", @"Greeting at start of application.")

What these macros do ...

They send this method to [NSBundle mainBundle] (or the specified bundle if macro takes one) ...

- (NSString *)localizedStringForKey:(NSString *)key

value:(NSString *)defaultValue // if nil, will be key table:(NSString *)tableName; // if nil: Localizable.strings

Stanford CS193

Localization

Generating .strings files with genstrings

Once you have used NSLocalizedString and its variants to eliminate literal strings ... You can use the command line utility genstrings to generate .strings files from .m files. > cd <directory where all your .m files are>

> genstrings *.m

Example: NSLocalizedString(@"hello", @"Greeting at start of application.") ... would generate an entry in Localizable.strings which looks like this ... /* Greeting at start of application. */ "hello" = "hello";

Drag the .strings into Xcode and then inspect to Localize 0 Hit the button "Localize" in the File Inspector on the strings file or storyboard. You can then pick languages for which there is a localization set up for your application. (As per the first slide on this topic.) Localization E.g., French localizers would change entry to "hello" = "bonjour". Base

Localization

Localize...

Fall 2013

Bundles

Resources are drawn from a "bundle" using the user's locale Inside a bundle, there will be ".lproj" directories (e.g. en.lproj, fr.lproj, etc.). Inside these .lproj directories, there will be .strings files, images, sounds, etc. When you get a path to a file from a bundle, it tries top-level first, then searches .lprojs (depending on the language the user has chosen for his system in Settings app).

Bundles can be associated with a framework or an application

Using NSBundle API to get a resource (e.g. an image or sound) NSBundle *bundle = [NSBundle bundleForClass:[self class]]; NSString *path = [bundle pathForResource:@"speedlimit" ofType:@"jpg"]; bundleForClass: knows whether that class came from a framework or just with the application.

> Stanford CS193p Fall 2013

an searches . (projs ettings app). In application age or sound)

Localization

Debugging

Set the NSUserDefault NSShowNonLocalizedStrings to YES and a message will be logged to the console whenever these NSLocalizedString methods cannot find a string.

Build Clean

If changes you make to .strings files don't seem to be appearing when you run ... try Build Clean. Usually this is not necessary, but it's something to try if things get out of sync.

Locales

Formats

Dates and numbers are written in different formats in different locales.

Second Locale

Locale is different from language.

The NSLocale class encapsulates the locale the user has chosen in Settings.

- It knows all about date and number formats (independent of the language that is currently set).
- + (NSLocale *)currentLocale;

+ (NSLocale *)autoupdatingCurrentLocale; // watch NSCurrentLocaleDidChangeNotification Usually you don't need to access this directly because you'll use a formatter which is looking at it.

ings. age that is currently set).

NSNumberFormatter

- Lots going on here. Check out the documentation. But we'll look at two simple cases ...
- Displaying numbers 0

Shouldn't really use [NSString stringWithFormat:@"%g"] for user-visible floats. Instead use this NSNumberFormatter class method ...

+ (NSString *)localizedStringFromNumber:(NSNumber *)number

numberStyle:(NSNumberFormatterStyle)style

Example styles: NSNumberFormatterDecimalStyle or CurrencyStyle or even SpellOutStyle

Parsing numbers

Don't use intValue to parse a number typed in by the user, use ... NSNumberFormatter *formatter = [[NSNumberFormatter alloc] init]; [formatter setNumberStyle:NSNumberFormatterDecimalStyle]; NSNumber *parsedNumber = [formatter numberFromString:userInputtedString]; Note that this will return nil if a number of the proper format is not found. That can be valuable to differentiate from the user entering "zero" for example.

NSDateFormatter

Dates are rather complicated to display properly
 If you are presenting dates to the user, familiarize yourself with these concepts ...
 Calendars. Not all locales use the Gregorian calendar that we do. NSCalendar.
 Date Components, e.g., what is a "month" (calendar dependent)? NSDateComponents.
 And if you have in mind something like MM/DD/YYYY, check out this method first ...
 + (NSString *)dateFormatFromTemplate: (NSString *)template
 options: (NSUInteger)options
 locale: (NSLocale *)locale;

Simple date formatting

At least use this NSDateFormatter class method ...

+ (NSString *)localizedStringFromDate:(NSDate *)date

dateStyle:(NSDateFormatterStyle)dateStyle

timeStyle:(NSDateFormatterStyle)timeStyle;

Example styles: NSDateFormatterShortStyle or MediumStyle or LongStyle or FullStyle

teStyle meStyle; yle or FullStyle

NSString

Searching in strings

Do not use plain rangeOfString: if you are looking around in user-inputted strings. Instead, use this ...

+ (NSRange)rangeOfString:(NSString *)useEnteredSubstring

options: (NSStringCompareOptions) options // e.g. case-insensitively range:(NSRange)rangeToSearchIn

locale:(NSLocale *)locale;

... especially if you are searching case-insensitively, since this concept is locale-specific.

Fall 201.

UIImage

The method imageNamed: does the right thing! It searches inside the .lproj's to find images.

Demo

Photomania Let's internationalize it.

A little bit of UI for your application in the Settings application You should use this sparingly (if at all).

It's appropriate only for very rarely used settings or default behavior. You don't want to make your users ever have to go here for normal use of your application. The settings appear in your application via NSUserDefaults. You specify the UI and the associated defaults in a property list file.

Carrier *	Ŷ	-	
	Settings		
\bigcirc	General	>	
	Privacy	>	
	iCloud	>	
	Maps	>	
	Safari	>	
*	Photos & Camera	>	
\$	Game Center	>	
y	Twitter	>	
f	Facebook	>	
••	Flickr	>	

Carrier 🗟	•	Carrier 🗢	-
Settings Maps		Settings	Safari
DISTANCES		GENERAL	
In Miles	71	Search Engine	Google >
In Kilometers		Passwords & A	sutoFill >
MAP LABELS		Favorites	Favorites >
Always in English		Open Links	In New Page >
		Block Pop-ups	
PREFERRED DIRECTIONS			
Driving		PRIVACY & SECU	IRITY
Walking		Do Not Track	\bigcirc
		Block Cookies	From third parties >
		Smart Search F	Field >
		Fraudulent Wel	bsite Warning

Fall 2013

Choose New File... from the File menu, then pick Settings Bundle from the Resource grouping.

A sort of "example" settings bundle will be created for you. You can edit it by clicking here. Check the documentation for all the possibilities.

It is possible to have multip

	• • •	Bouncer.xcodepro	oj — 🗋 Ro
	🕨 🔲 🛛 🕂 Bouncer) 🍞 iPad		
		🔛 🛛 🔺 🕨 🖂 Bouncer 🤇 🚞 Bouncer	> 🔿 Setting
ampla"	Bouncer	Key	Type
umple	2 targets, iOS SDK 7.0	▼ iPhone Settings Schema	Dictiona
will be	The Bouncer	▼ Preference Items	🕈 Array
e will de	h BouncerViewController.h	Item 0 (Group – Group)	Dictiona
You can	m BouncerViewController.m	Title	String
. Tou can	Images.xcassets	Туре	String
na hana	V O Settings.bundle	Item 1 (Text Field - Name)	Dictiona
ng nere.	v en.lproj	Autocapitalization Style	String
	Root.strings	Autocorrection Style	String
mentation	Root.plist	Default Value	String
	Supporting Files	Text Field Is Secure	Boolean
Sibilities.	BouncerTests	Identifier	String
	Frameworks	Keyboard Type	String
	Products	Title	String
		Туре	String
		Item 2 (Toggle Switch - Enabled)	Dictiona
		Default Value	Boolean
		Identifier	\$ String
		Title	\$ String
		Туре	String
		V Item 3 (Slider)	Diction
		Default Value	\$ Number
		Identifier	\$ String
ible to have multiple	"pages" of settings.	Maximum Value	\$ Number
See documentation for details		Max Value Image Filename	\$ String
See documentation i	or derdits.	Minimum Value	\$ Number
		Min Value Image Filename	\$ String
		Туре	\$ String
	+ 0 0 0	Strings Filename	String

Root.p	olist			N ₂₁
	No Issues			
ngs.bur	ndle 〉 📄 Root.plist 〉 No Sel	ection		
-	Value			
nary	(2 items)			
	(4 items)			
nary	(2 items)			
1	Group			
1	Group			\$
nary	(8 items)			
1	None			\$
1	No Autocorrection			\$
1				
an	NO			\$
1	name_preference			
1	Alphabet			\$
1	Name			
1	Text Field			\$
nary	(4 items)			
an	YES			\$
1	enabled_preference			
1	Enabled			
1	Toggle Switch			\$
onary	(7 items)			
ber	0.5			
1	slider_preference			
per	1			
1				
ber	0			
1				
1	Slider			\$
1	Root			

Carrier ຈ	
Settings	Bouncer
GROUP	
Name	
Enabled	
-	

The sample from the previous slide would result in a Settings UI like this.

Note the en.lproj. Yes, settings are localizable, but it's not very well supported in Xcode.

Root.plist	12
No Issues	
110 1350 53	
ings.bundle 👌 🚞 en.lproj 👌 💾 Ro	oot.strings > No Selection
title is specified in a	your preferences schema The
circe is sheering rul)	four preferences schemar the

age has a strings file for ch Settings page trings is the name of the gs file to localize the t page of the settings).

Unfortunately, localization of settings is a bit of a pain 0 You have to find the Settings.bundle in your Finder and create .lproj directories yourself.

		00
00	Bouncer 🖉	
		FAVORITES
CS193p	Base.iproj Bouncer-Info.plist Open Bouncer-Prefix.pc Open With BouncerAppDeleg Show Package Contents	Documents Downloads AirDrop Applications
Downloads AirDrop	BouncerAppDeleg BouncerViewContr Move to Trash	All My Files
Applications	Get Info Get Info Get Info Compress "Settings.bundle" Burn "Settings.bundle" to Disc Duplicate Make Alias Quick Look "Settings.bundle"	Copy and past
	Share Reveal in Finder (or	(like fr.lproj other .strin

Each .lproj directory should contain a .strings file for each screen in your settings.

e en.lproj to other languages), then edit the Root.strings gs files) inside for each language.

Fall 2013

Demo

ø Bouncer

Allow setting the Elasticity from Settings.

Coming Up

Ø Wednesday

Alternate Final Presentation.

If you are using Alternate Presentation time, submit your Keynote by noon tomorrow (Tuesday). Submit the slides using the normal submit script (submit again with code by Sunday). We will have a "live demo testing" opportunity on Wednesday as well, so bring your demo device.

Friday

No Section.

Sunday

Final Project Due (by midnight). Don't forget to submit your Keynote slides along with!

Final

A week from Thursday at 12:15pm to 3:15pm in this room. Presentation is <u>required</u>. Presentation time limit is 2.5 minutes (150 seconds) and must be 1280x720 aspect ratio. Presentation order is random (no exceptions).