Intro to iOS Development

Lecture 9

Persistence in iOS

Yana Sang

Persistence

How do we achieve persistence in iOS?

- **UserDefaults** **(formerly NSUserDefaults)**
- **Codable** **(formerly NSCoding)**
- CoreData
- CloudKit
- UIDocument

When do we use

UserDefaults?

- Achieve lightweight persistence
- Small amounts of data to store (<1MB)
  - User preferences
  - How app should behave at start up, hence “**Defaults**”

What can we store with

UserDefaults?

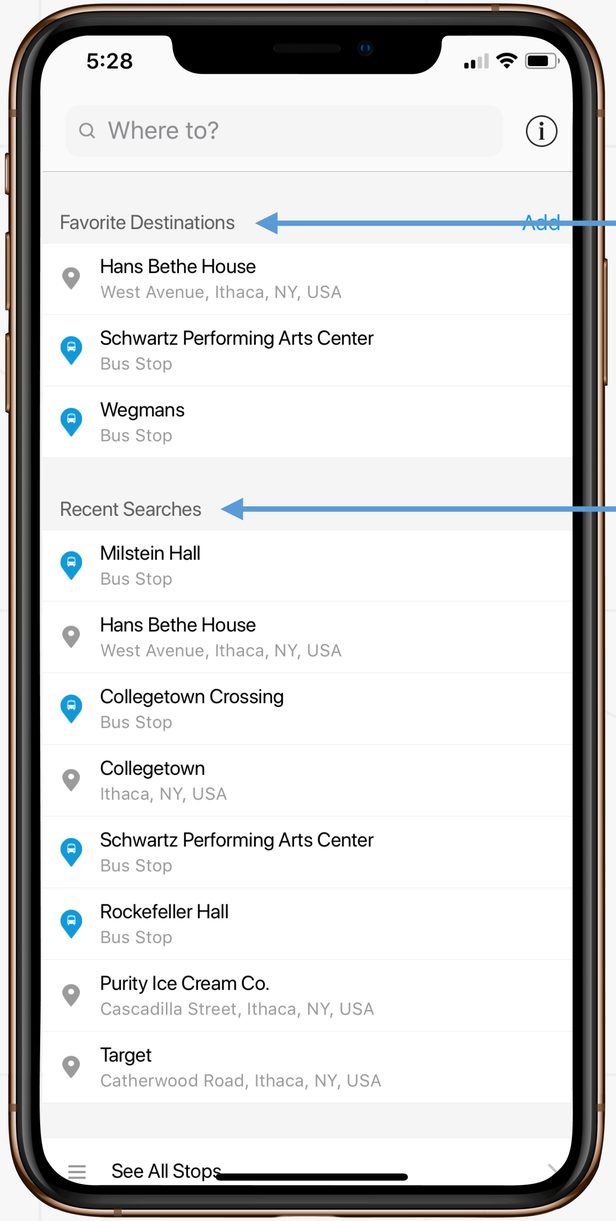
- Data stored *for as long as the app is installed*
- UserDefaults can store...
  - Basic data types:

    `Bool` `Float` `Double` `Int` `String`
  - and more complex types:

    `Data` `Date`

    arrays & dictionaries

UserDefaults Examples



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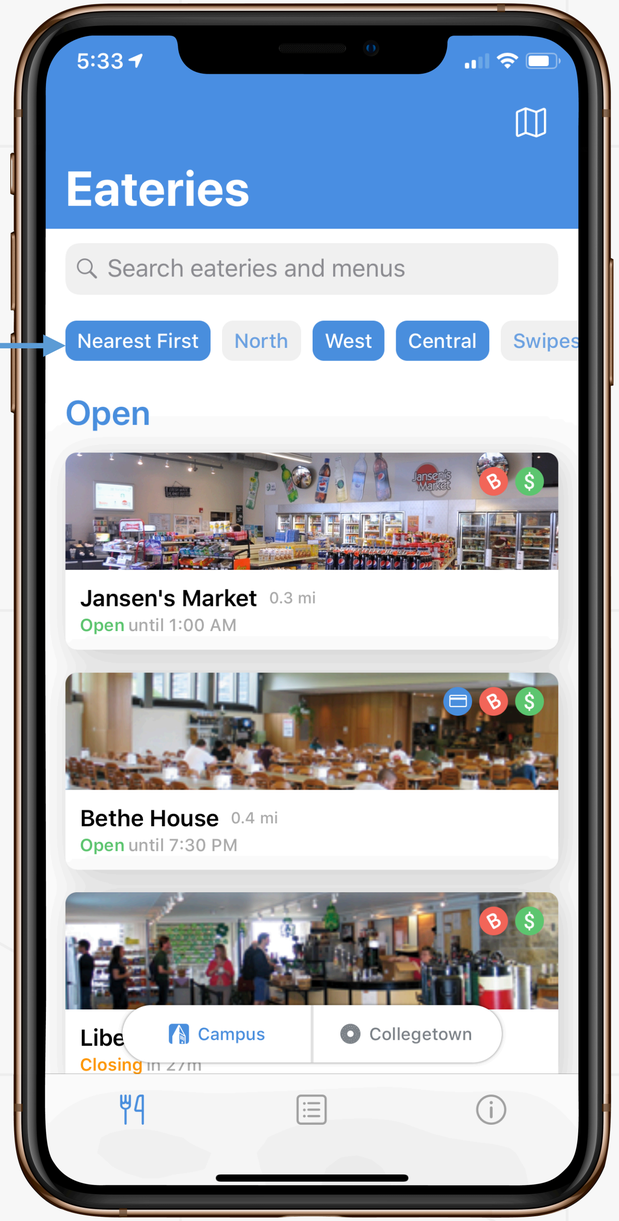


Using `UserDefaults`

- Setting Up `UserDefaults` and default values
- Storing Data
- Retrieving Data
- Using Custom Classes

Setting Up UserDefaults

In AppDelegate.swift:

```
let userDefaults = UserDefaults.standard

userDefaults.register(defaults: [
    "booleanKey" : false,
    "stringKey" : "default string",
    "integerArrayKey" : [Int]()
])
```

Default value for the key **booleanKey** is **false**

Storing Data in `UserDefaults`

Example with `Strings`:

```
userDefaults.set("Yana", forKey: "name")
```

Example with `Ints`:

```
userDefaults.set(19, forKey: "age")
```

Retrieving Data from `UserDefaults`

Example with `Strings`:

```
if let name = userDefaults.string(forKey: "name") { ...
// name = "Yana"
```

Example with `Ints`:

```
if let age = userDefaults.integer(forKey: "age") { ...
// age = 19
```

There's also a generic `userDefaults.value(forKey: "key")` that returns the data in type **Any**

Using Custom Classes with `UserDefaults`

Class must conform to:

- **Codable** (or NSCoding)
- **NSObject**

```
class Song: NSObject, Codable {
                    ...
}
```

Using Custom Classes with `UserDefaults`

```
userDefaults.register(defaults: ["songArray" : [Data]()])
```

Encoding from [Song] to Data to Store:

```
let encoder = JSONEncoder()

if let encodedObject = try? encoder.encode(songs) {
      userDefaults.set(encodedObject, forKey: "songArray")
}
```

Decoding from Data to [Song] to Retrieve:

```
let decoder = JSONDecoder()

if let storedSongs = userDefaults.data(forKey: "songArray") {
      songs = try? decoder.decode([Song].self, from: storedFavorites)
}
```

Demo: Xcode

Conclusion + Wrap-up

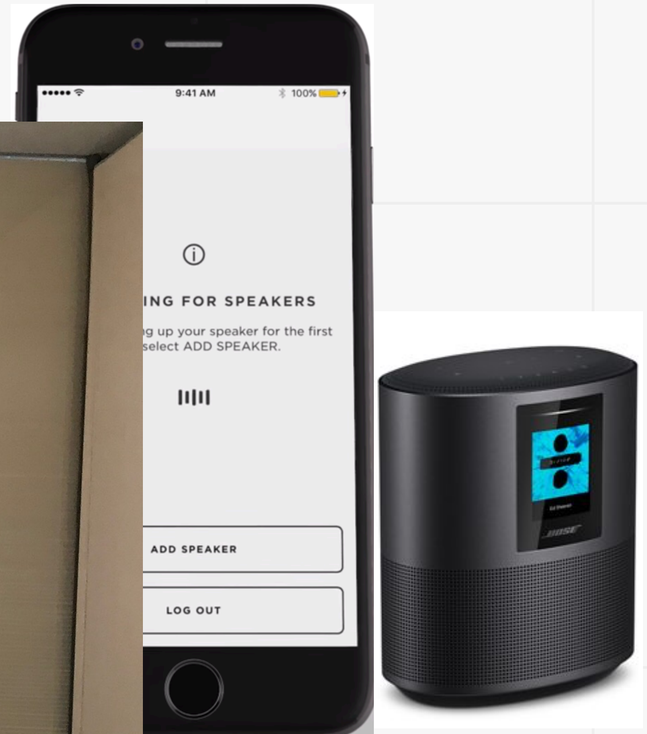
What’s next?

- Continue developing iOS apps!
- Join a app development related team on campus:
  - AppDev, Cornell Sun, Cornell DTI, ECaFT
- Join an app development startup
- Take another AppDev class!

iOS Development Internships

- Doing iOS development at a company is slightly different than working on your own app
- Prototyping vs. building a new feature
- Interviews are focused more on iOS concepts vs. just coding ability

Mindy Lou, Photos Backend Intern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Thank you!
Questions?

Action Items

- Continue work on Hack Challenge
  - Final due 5/5 11:59pm
  - **Hack Challenge closing ceremony: attendance is MANDATORY**
  - Remember to submit your resume!
- Course survey (Google Form) - **fill out before 5/5**
  - **If half the class fills it out, everyone gets FIVE points extra credit**