



# Extending the Reach of Your iOS App

## Lecture 13: Working with URL Schemes and App Extensions

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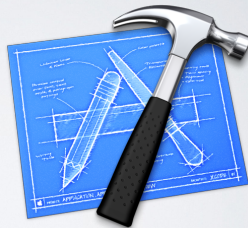
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## TOPICS

- Motivation
- URL Schemes
- App Extensions



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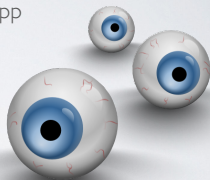
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## EXTENDING OUR REACH...

- By default, our apps only have user eyeballs when the user launches the app and it has the foreground.
- The average user's launch screen is littered with a plethora of launch icons...
- How can we create additional opportunities for our app to garner user eyeballs?



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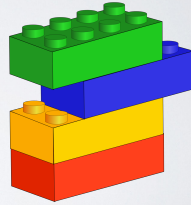
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## STANDING ON SHOULDERS...

- Intentionally avoid reinventing the wheel ...
- ... by utilizing the haystack of functionality already on the user's device.
- Ride on the success of somebody else's more popular app?



## URL SCHEMES

- URL Schemes let our app send actionable data to other apps via a custom URL.
- For example, if I was writing an app for my restaurant and I take reservations via a reservation portal that had a popular app with a custom URL scheme, I could invoke that app from my restaurant app to make a reservations.

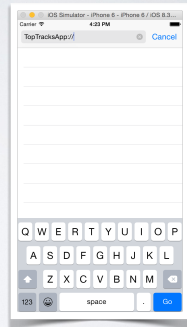
## SUPPORTING A CUSTOM URL SCHEME

- In my Info.plist I need to make an URL Type entry:

▼ URL types	↕	Array	(1 item)
▼ Item 0	↕	Dictionary	(2 items)
URL identifier	↕	String	edu.gvsu.cis.masl.TopTracksDemo
▼ URL Schemes	↕	Array	(1 item)
Item 0	⊕ ⊖	String	⚡ TopTracksApp

## INVOKING A CUSTOM URL

- Enter the custom URL into mobile Safari:

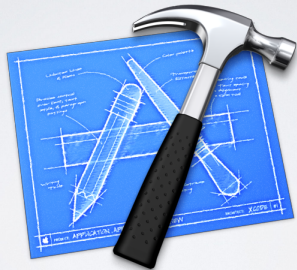


## INVOKING A CUSTOM URL

- From any app!

```
@IBAction func customLaunch(sender: UIButton) {  
    let url = NSURL(string: "customurldemo://")  
    UIApplication.sharedApplication().openURL(url!)  
}
```

## APP EXTENSION DEMO



## APP EXTENSIONS IN IOS

- “an **app extension** lets you extend custom functionality and content beyond your app and make it available to users while they're using other apps or the system”



<https://developer.apple.com/library/ios/documentation/General/Conceptual/ExtensibilityPG/>

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## TYPES OF EXTENSIONS

- Today
- Share
- Action
- Photo Editing
- Document Provider
- Custom Keyboard
- Apple Watch



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## DEPLOYING EXTENSIONS

- Delivered to App Store as part of an app bundle. e.g., cannot be deployed stand-alone.
- The app that bundles the extension is referred to as the **container app**.
- The app that invokes the extension is referred to as the **host app**.
- An app can bundle more than one extension.

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## HOW THEY WORK

- Every invoked instance of an extensions runs in its own process.
- An extension cannot communicate with its container app.
- An extension cannot enable communication between its container app and host app.
- Indirect communication is possible via `openURL()` or a shared data container (e.g. `NSUserDefaults`)

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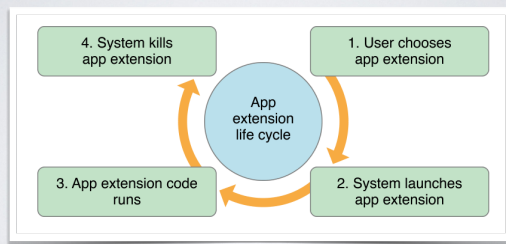
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## EXTENSION LIFECYCLE



[https://developer.apple.com/library/ios/documentation/General/Conceptual/ExtensibilityPG/ExtensionOverview.html#//apple\\_ref/doc/uid/TP40014214-CH2-SW2](https://developer.apple.com/library/ios/documentation/General/Conceptual/ExtensibilityPG/ExtensionOverview.html#//apple_ref/doc/uid/TP40014214-CH2-SW2)

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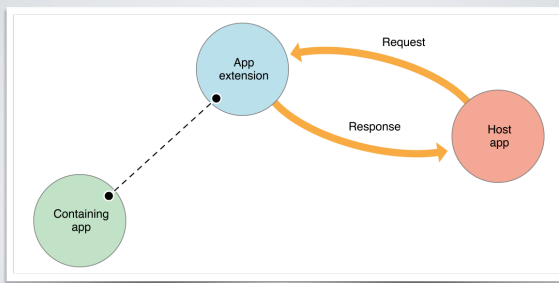
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## COMMUNICATION WITH HOST APP ONLY



[https://developer.apple.com/library/ios/documentation/General/Conceptual/ExtensibilityPG/ExtensionOverview.html#//apple\\_ref/doc/uid/TP40014214-CH2-SW2](https://developer.apple.com/library/ios/documentation/General/Conceptual/ExtensibilityPG/ExtensionOverview.html#//apple_ref/doc/uid/TP40014214-CH2-SW2)

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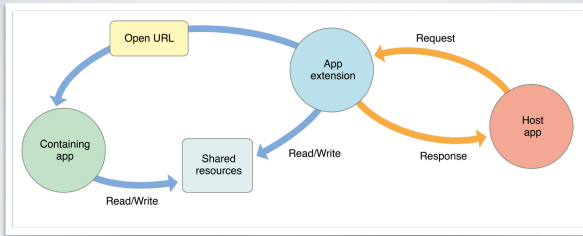
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## INDIRECT COM WITH CONTAINING APP



[https://developer.apple.com/library/ios/documentation/General/Conceptual/ExtensibilityPG/ExtensionOverview.html#//apple\\_ref/doc/uid/TP40014214-CH2-SW2](https://developer.apple.com/library/ios/documentation/General/Conceptual/ExtensibilityPG/ExtensionOverview.html#//apple_ref/doc/uid/TP40014214-CH2-SW2)

## API LIMITATIONS

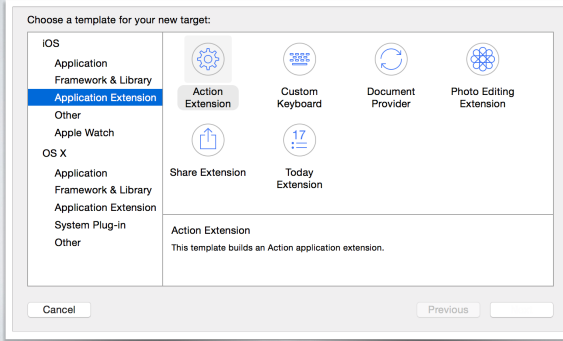
- app extensions cannot:
  - accessed a sharedApplication object.
  - use APIs explicitly marked unavailable
  - access camera or mic
  - perform long running tasks
  - receive data via AirDrop

## CREATING AN APP EXTENSION

- Assuming the Xcode project for the containing app exists:
  - Step 1: decide what extension point type makes sense
  - Step 2: add a new target to the project, and select iOS / Application Extension.
  - Step 3: implement the extension.



In containing app Xcode project goto File -> New -> Target



## READING ASSIGNMENT

- Apple's App Extension Programming Guide



<https://developer.apple.com/library/ios/documentation/General/Conceptual/ExtensibilityPG/ExtensionCreation.html>

## APP EXTENSION DEMO

