iOS Dev Accelerator
Week3 Day2

- Custom App URL Schemes
- OAuth
- NSUserDefaults
- App Delegate/Root ViewController
- Big O

Homework Review

Custom URL Scheme

Registering a custom URL scheme

- A custom URL scheme for your app allows your app to be opened by other apps.
- This includes safari, which is how websites offer to open pages in apps, if you have it installed.

Registering a custom URL scheme

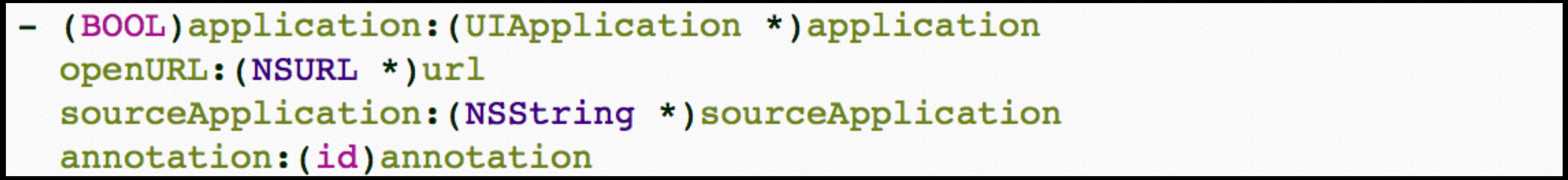
- Go to your info.plist and choose Add Row
- Select URL types from the drop down (its an array with one dictionary)
- In the item 0 dictionary, add an entry for the key ‘URL Identifier’
- This entry will be the name of the custom url scheme you are defining. It is recommended to ensure uniqueness that you use reverse DNS ‘com.yourCompany.yourApp’
- Add another entry from the drop down called ‘URL Schemes’ which is an array
- For Item 0, give it the string you want to be your URL Scheme. For example, if you type MyApp. The custom URL for your app will be MyApp://

Try it out!

- Launch your app after editing your plist with your URL scheme.
- Now launch Safari from your simulator, and enter in your app’s URL into the URL bar.
- Your app should now open.

Parsing information that is passed with URL’s

- Often times, and especially with OAuth, your app’s url will be called with extra parameters. Typically this is a token or flag.
- There is a method you can implement in your app delegate to intercept these URL calls:



```
- (BOOL)application:(UIApplication *)application
  openURL:(NSURL *)url
  sourceApplication:(NSString *)sourceApplication
  annotation:(id)annotation
```

- We will pass the URL they passed back to us to our network controller for parsing

OAuth

OAuth

- OAuth is is an authentication protocol that allows two apps to interact and share resources.
- There are 3 actors in the OAuth workflow:
  - The service provider: Ex: GitHub
  - The consumer: Ex: Our app
  - The user
- The main benefit is that the user never shares his account and password with the consumer app.

OAUTH Workflow

- Step 1: The user shows intent by attempting an action from the consumer app to the service provider (aka GitHub)
- Step 2: Our app (The consumer) redirects the user to the service provider for authentication
- Step 3:The user gives permission to the service provider for all the actions the consumer should be able to do on his/her behalf (ex: posting to their timeline, accessing their twitter photos, etc)
- Step 4:The service provider returns the user to the consumer app, with a request token
- Step 5:The consumer now sends the request token, together with its secret key to the service provider in exchange for an authentication token
- Step 6 (repeating): The user performs actions and passes the authentication token with each call to prove who he is

Callback URL

- The callback URL is just the callback entry point of your app.
- The service provider performs an HTTP redirect to get the user back to the consumer app.
- In addition to the URL of your app, the callback url will have the authorization code appended to it. It is up to your app to parse this out and use it in completing the OAuth workflow.
- All apps can be launched from either another app or from the browser itself.

Demo

NSUserDefaults

- “NSUserDefaults allows an app to customize its behavior based on user preferences”
- Think of it as an automatically persisting dictionary or plist that is easily modified in code.
- Use the standardUserDefaults class method to return the shared defaults object.
- Setting values inside of it is as easy as these methods:
  - setBool:ForKey:
  - setObject:ForKey:
  - setInteger:ForKey:
- Call synchronize() after saving key in defaults.

Demo

AppDelegate & RootViewController

Application Delegate Protocol

- The AppDelegate object in your app is simply a regular object that conforms to the UIApplicationDelegateProtocol
- This protocol defines methods that are called by the singleton UIApplication object in response to important event in the lifetime of your app (going from foreground to background, receiving a local notification, etc)
- When you app launches, UIKit automatically creates an instance of the app delegate class provided by Xcode when you initially created your project.
- The App delegate is effectively the root object of your app.

Application Delegate Protocol

- Crucial Roles:
  - It contains your apps startup code
  - It responds to changes in your app’s states (foreground to background, etc)
  - It responds to notifications originating from outside your app, like remote notifications, low memory warnings, download completions, etc
  - You can store your app’s central data objects or any content that does not have an owning view controller

Application did finish launching with options

- This method is called after your app has finished its initialization process, but before the user sees any view controllers.
- This is a great spot to change the root view controller of the app based on some preferences or saved data
- For our app, if you already have the oauth token saved to user defaults, go straight to the main menu view controller. If not, go to the login view controller.

UIWindow

- UIWindow is a class that manages and coordinates the views an app displays on the device screen
- UIWindow is a subclass of UIView
- Windows have 2 main jobs, provide area for displaying other views, and distribute events to the views
- Windows have Z axis, which dictates which windows overlap other windows. For example an alert view is the highest z window.
- Only window at a time is allowed to receive keyboard and touch related events. This window is called the keyWindow.

Working with UIWindow

- Most apps don't need any code directly manipulating window objects.
- If you do, its most commonly because you simply want to change the root view controller of your app.
- UIWindow has a rootViewController property, which you can set to change the root view controller.
- To access the window that is displaying the scenes of your app, you access the window property of the app delegate

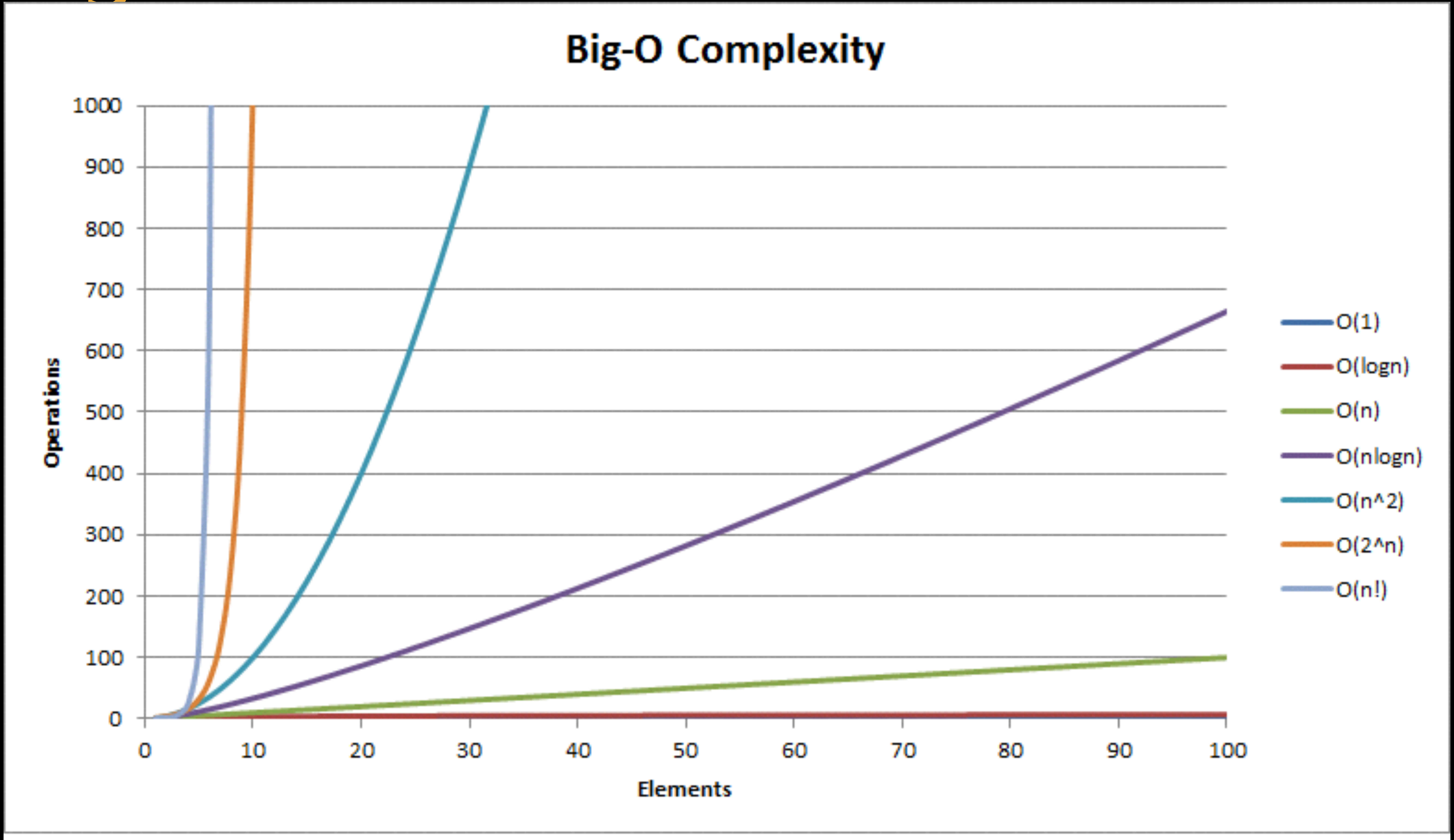
Demo

Big O

Big O notation

- In computer science, big o notation is used to measure the efficiency of algorithms.
- The O stands for order, because because the growth rate of an algorithm is also refereed to as the order of the algorithm.
- In most big o notations, you will see the variable N. N refers to the size of the data set on which the algorithm is being performed. So if we are searching through an array of 10 strings, N == 10.
- Big-O usually refers to the worst case scenario.

Big O notation



O(1) - Constant Time

- The running time of any ‘simple’ operation is considered constant time, or O(1). Things like setting properties, checking bools, simple math equations are constant time.
- A constant time efficiency is awesome!

O(N) - Linear

- An example of a O(N) algorithm is a for loop.
- The loop executes N times. Lets say you are looping through an array of 10 Ints looking for a specific value. So N is 10 here. At worst case, the value you are looking for is at the end of the array, and it took you N (or 10) operations to find it.
- The operation inside of the for loop is a constant time value check. So you might think the Big-O notation of this algorithm is O(N) * O(1). But when you are working with Big-O, you can drop constant times since they are trivial, so the Big-O of a regular for loop is just O(N)

O(N^2$_{2}$)

- O(N^2) refers to any algorithm whose Big-O is the square of the input data set.
- An example of this would be a nested for loop.
- Lets say we are searching for duplicates in an array of Strings. For each string in the array, we search through every other string and check if the values are the same. So if we have 7 Strings, this operation will run 49 times, or 7x7, or 7^2.

O(log N)

- A good rule of thumb: if your algorithm cuts the data set in half for each step of the algo, you are probably working in O(log N).
- Looking at our graph, we can see algorithms with this notation peaks at the beginning and then quickly levels out as the data size increases.
- O(log N) is great! Even when you double your N, the worst case time to run the algorithm only increases by a small amount. The classic example of this is a Binary Search Tree.