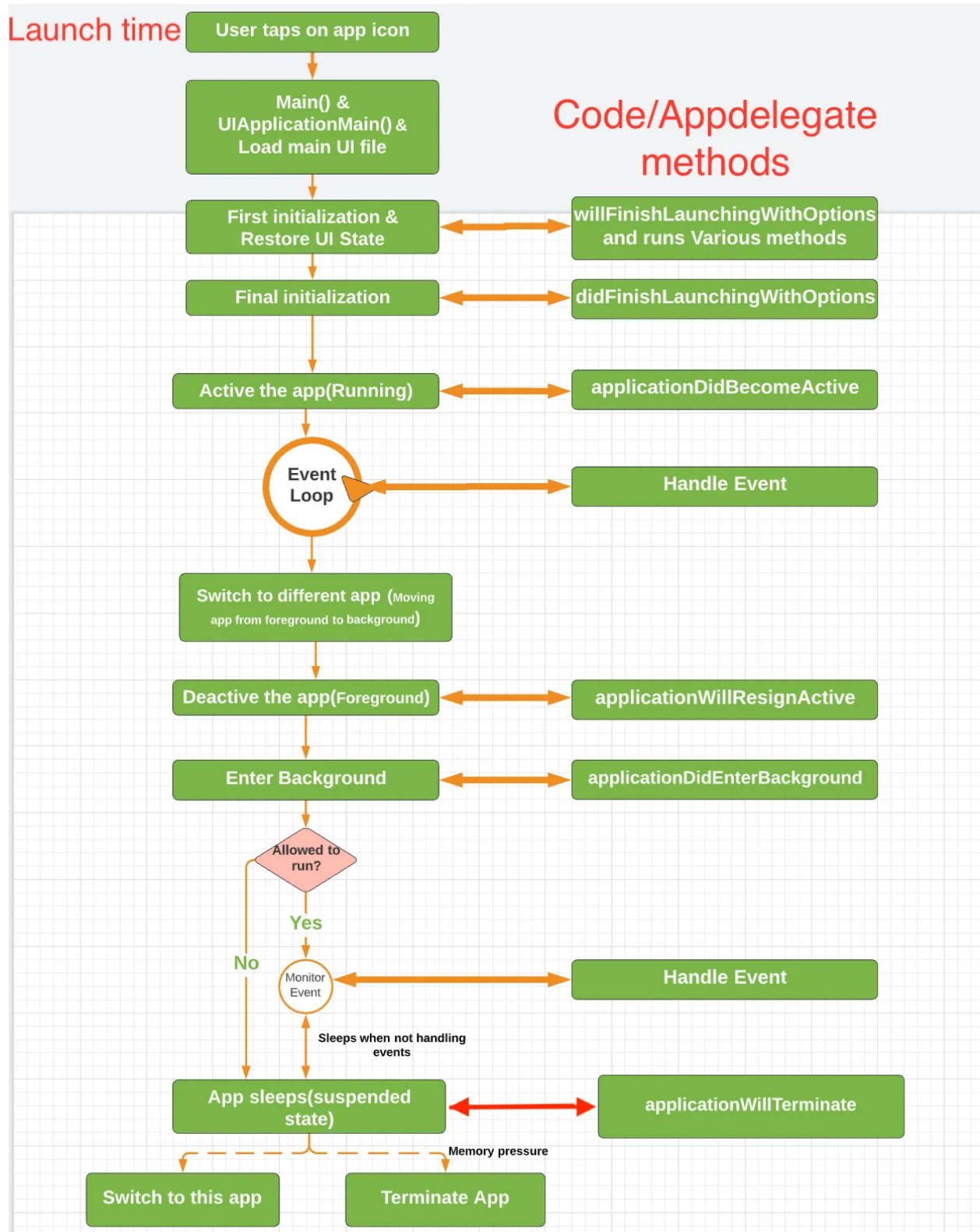


IOS App Life Cycle



General States of Application:

- Inactive — the app process is in foreground but it cannot respond to events.
- Active — the app process is in foreground and can respond to events.
- Background — the app process is in background, and performs some logic.
- Suspended — the app process is in background, but doesn't perform any logic.
- Not running — the app process is not launched, meaning that it is neither in foreground nor background.

AppDelegate:

Here we add the following methods:

- `application(_:willFinishLaunchingWithOptions:)` — called when the app is launched. At the time the method is called, our app is in inactive state but it has already loaded the main storyboard. In addition, [state restoration](#) (restoring screen hierarchy and UI state from the last time a user used the app)

hasn't been started yet. Has the `userInfo` parameter which we can use to determine the reason why the app was launched. For example, if the app was launched to open a document at specific URL, we might want to prevent state restoration from happening. To learn more about possible launch reasons, visit [the documentation](#).

- `application(_:didFinishLaunchingWithOptions:)` — gets called when our app was launched and the [state of the app was restored if needed](#). However, the UI isn't shown yet. Just like the previous method, also has the `userInfo` parameter. As Apple points out, this is the last opportunity to perform logic relevant to that property.
- `applicationWillEnterForeground(_:)` — called in apps that do not support [scenes](#). Otherwise, it is replaced by its `sceneWillEnterForeground(_:)` covariant, which we will explore in depth when examining the `SceneDelegate` later on. The method gets called when the app is moving to an active state *from the background*.
- `applicationDidBecomeActive(_:)` — called in apps that do not support [scenes](#). Otherwise, it is replaced by its

`sceneDidBecomeActive(_:)` covariant in the `SceneDelegate`. The method is called when the app has entered the active state. At this moment, the UI has been loaded, but not shown yet.

- `applicationWillResignActive(_:)` — called in apps that do not support [scenes](#). Otherwise, it is replaced by its

`sceneWillResignActive(_:)` covariant in the `SceneDelegate`. The method gets called when the app is interrupted by system alerts, phone calls, and so on. We also trigger it when we dismiss the app using the Home button. We can use this method to preserve unsaved data. For example, we might want to save the list of items in the disk so that if the system kills the app, or we force quit it, the next time we launch it we could see all the items displayed again.

- `applicationDidEnterBackground(_:)` — called in apps that do not support [scenes](#). Otherwise, it is replaced by its

`sceneDidEnterBackground(_:)` covariant in the `SceneDelegate`.

The method is called when we move the app to the background. Here, we need to make sure we stop timers, reduce the app's memory usage and if necessary, prepare for state restoration in case the app is terminated. In addition,

after this method returns, UIKit makes a snapshot of the latest UI of the app to display it in the app switcher.

Therefore, we need to hide from the UI user sensitive information, such as passwords.

- `applicationWillTerminate(_:)` — this method is called when the app is about to be terminated and removed from memory. It is always called for the apps that do not support background mode. However, for the apps that do have background capability, the method is *usually* not called since the app moves to the background state. On the other hand, if the system decides to free up its memory and kills the app that is in background, that method will be called.

SceneDelegate:

Here we have these methods:

- `scene(_:willConnectTo:options:)` — called when the app requests the user interface. As explained in [Scenes documentation](#), a scene is contains a window and view controllers. So essentially, this method is called when we add a scene to the application. Most apps have only one scene, so this method will be called once in such cases. Inside the method, we configure the hierarchy and set the root view controller for the window. For example:
- `sceneWillEnterForeground(_:)` — just as its non-scene counterpart `applicationWillEnterForeground(_:)`, the method is called when the app is in foreground-inactive state and is preparing to be shown to the user.
- `sceneDidBecomeActive(_:)` — identically to `applicationDidBecomeActive(_:)`, the method is called when the UI has entered the foreground-active mode and the UI has been loaded, but not yet shown.
- `sceneWillResignActive(_:)` — just as its non-scene covariant `applicationWillResignActive(_:)`, the method is called when the

app is interrupted by a phone call, or a system alert. We also trigger it by tapping on the Home button.

- `sceneDidEnterBackground(_:)` — called when the app is no longer on the screen. As Apple suggests, we can use this method to reduce a scene's memory usage and hide sensitive user information from the screen, since after this method returns, UIKit will create a snapshot of the UI and show it in the app switcher.
- `sceneDidDisconnect(_:)` — called when a user removes the scene from the app by closing it in the app switcher. The system can also disconnect a scene to free memory space if needed.