App Lifecycle States and Management

Platform of Choice: React Native (iOS)

1. **Various States that an App Can Enter**
    - Not Running (Initial State): The app is not started or has been terminated by the system or the user. It is not currently occupying any system memory.
    - Inactive: The app is in the foreground but is not receiving any user input events (e.g. when a phone call is received). This state usually occurs for a brief moment during state transitions.
    - Active: The app is running in the foreground and receiving user input. This is the normal operational state of the app.
    - Background: The app is no longer visible to the user but is still executing code. Background apps often complete tasks that were started in the foreground.
    - Suspended: The app is in the background but is not executing any code. The system moves apps to this state automatically to save resources. Suspended apps remain in memory and can be quickly brought back to the foreground.
    - Terminated: The app has been removed from memory by the system or the user. It is not running any code.

2. **States to Consider for Your App**

- State: Active
    - Why Consider It:
        - This is the primary state where the app interacts with the user.
        - Ensuring the user experience is smooth and uninterrupted is crucial.
    - Actions to Take:
        - Fetch or update live data.
        - Resume any paused processes or tasks.
        - Ensure UI responsiveness for an optimal user experience.
- State: Inactive
    - Why Consider It:
        - Handle state transitions smoothly, as the app may move to the background or become active again without user interaction (e.g., during an incoming call).
    - Actions to Take:
        - Pause ongoing animations, live updates, or other active processes.
        - Prepare for a possible transition to the background state.
- State: Background
    - Why Consider It:
        - The user has switched to another app, but some tasks still need to be completed.
    - Actions to Take:
        - Complete pending tasks like saving user data, syncing, or finishing file uploads.

        - Reduce resource consumption to prevent the app from being terminated by the system.
        - Handle push notifications or location updates if supported.
- State: Suspended
    - Why Consider It:
        - The app is not actively executing code and can be terminated if the system requires resources
    - Actions to Take:
        - Save the state of the app to persistent storage before entering this state.
        - Ensure all critical user data is saved, allowing the app to resume properly.
- State: Not Running (Initial or Terminated)
    - Why Consider It:
        - When the app starts, ensure a clean startup and resume any saved state if the app was terminated.
    - Actions to Take:
        - Load saved data to resume the previous state.
        - Handle onboarding or authentication flow if required.

References

- React Native. (n.d.). AppState. Retrieved from https://reactnative.dev/docs/appstate
- React Native. (n.d.). App Lifecycle and Background Tasks. https://reactnative.dev/docs/running-on-device#background-tasks
- Apple. (n.d.). App Life Cycle. Retrieved from (https://developer.apple.com/documentation/uikit/app_and_environment/managing_your_app_s_life_cycle
- Apple. (n.d.). App States and Transitions. Retrieved from https://developer.apple.com/documentation/uikit/core_app/managing_your_app_s_life_cycle/app_states_and_transitions
- Apple. (n.d.). Handling Active State. Retrieved from https://developer.apple.com/library/archive/documentation/General/Conceptual/ConcurrencyProgrammingGuide/OperationQueues/OperationQueues.html
- StackOverflow. (2014). Inactive State Example. Retrieved from https://stackoverflow.com/questions/24281101/ios-apps-inactive-state
- Apple. (n.d.). Background Execution. Retrieved from https://developer.apple.com/library/archive/documentation/iPhone/Conceptual/iPhoneOSProgrammingGuide/BackgroundExecution/BackgroundExecution.html
- Apple. (n.d.). State Transitions on iOS. Retrieved from https://developer.apple.com/documentation/uikit/app_and_environment/managing_your_app_s_life_cycle/app_states_and_transitions
- Apple. (n.d.). App Termination. https://developer.apple.com/documentation/uikit/app_and_environment/managing_your_app_s_life_cycle/app_termination