Homework 3: National Parks App

Due: Tuesday, September 23, 2025, 11:59 PM

Submit via the class TEAMS site.

Grading: 30 points total + up to 5 points Extra Credit.

Goal

In this assignment, you will build a National Parks Catalog app. The app displays a grid of national parks, allows navigation to park details, and lets users mark favorites. This exercise builds on the SwiftUI skills you practiced with lists and introduces grids, tab bars, and navigation stacks.

You will practice:

- Modeling app data with Codable and a data store (ObservableObject).
- Displaying items in a LazyVGrid.
- Using TabView with multiple tabs.
- Implementing detail navigation with NavigationStack.
- Toggling state (isFavorite) and showing derived collections.
- Designing an About screen with text and icons.
- Writing clean, maintainable code (clear file structure, consistent styling).

Tasks (30 Points Total)

Part A. Project Setup (1 pts)

Create a new iOS App project (SwiftUI). Name it NationalParksCatalog.

Part B. Data Model (3 pts)

Implement CatalogItem with properties: id, title, subtitle, details, imageName, isFavorite (default false). Provide decoding from bundled parks.json.

Part C. Grid View (5 pts)

Implement CatalogGridView using LazyVGrid with at least 2 adaptive columns. Each cell shows an image, park title, and subtitle.

Part D. Detail View (5 pts)

Tapping a grid cell navigates to a detail screen. Detail screen shows larger image, title, subtitle, and description. Include a button to add/remove the park from favorites.

Part E. Favorites Tab (6 pts)

Provide a separate Favorites tab in the TabView. Display only parks marked as favorites. Show an empty state when no favorites are saved.

Part F. About Tab (3 pts)

Add an About tab that contains: an icon (e.g., SF Symbol), a description of the app's purpose, and attribution text.

Part G. User Experience (4 pts)

Navigation title: Parks in catalog, Favorites in favorites. Tab bar items with labels + SF Symbols. Reasonable text styles and spacing. Handle longer names gracefully (two-line titles in grid).

Part H. Code Quality (3 pts)

Organize into Models/, Views/, and Data/. Use descriptive names. Small, clear functions. Add comments where logic may not be obvious.

Deliverables

- A working Xcode project that compiles and runs in the iOS simulator.
- Submit the complete zipped folder, named according to the rules described in the homework section on MS Teams.

Extra Credit (+5 pts max)

Choose one (or both, still max +5):
- (+3) Add search or filter functionality in the catalog.
- (+5) Persist favorites across launches using AppStorage.

Grading Rubric

Task	Points
Part A. Project Setup	1

Part B. Data Model	3
Part C. Grid View	5
Part D. Detail View	5
Part E. Favorites Tab	6
Part F. About Tab	3
Part G. User Experience	4
Part H. Code Quality	3
Total	30
Extra Credit	+5

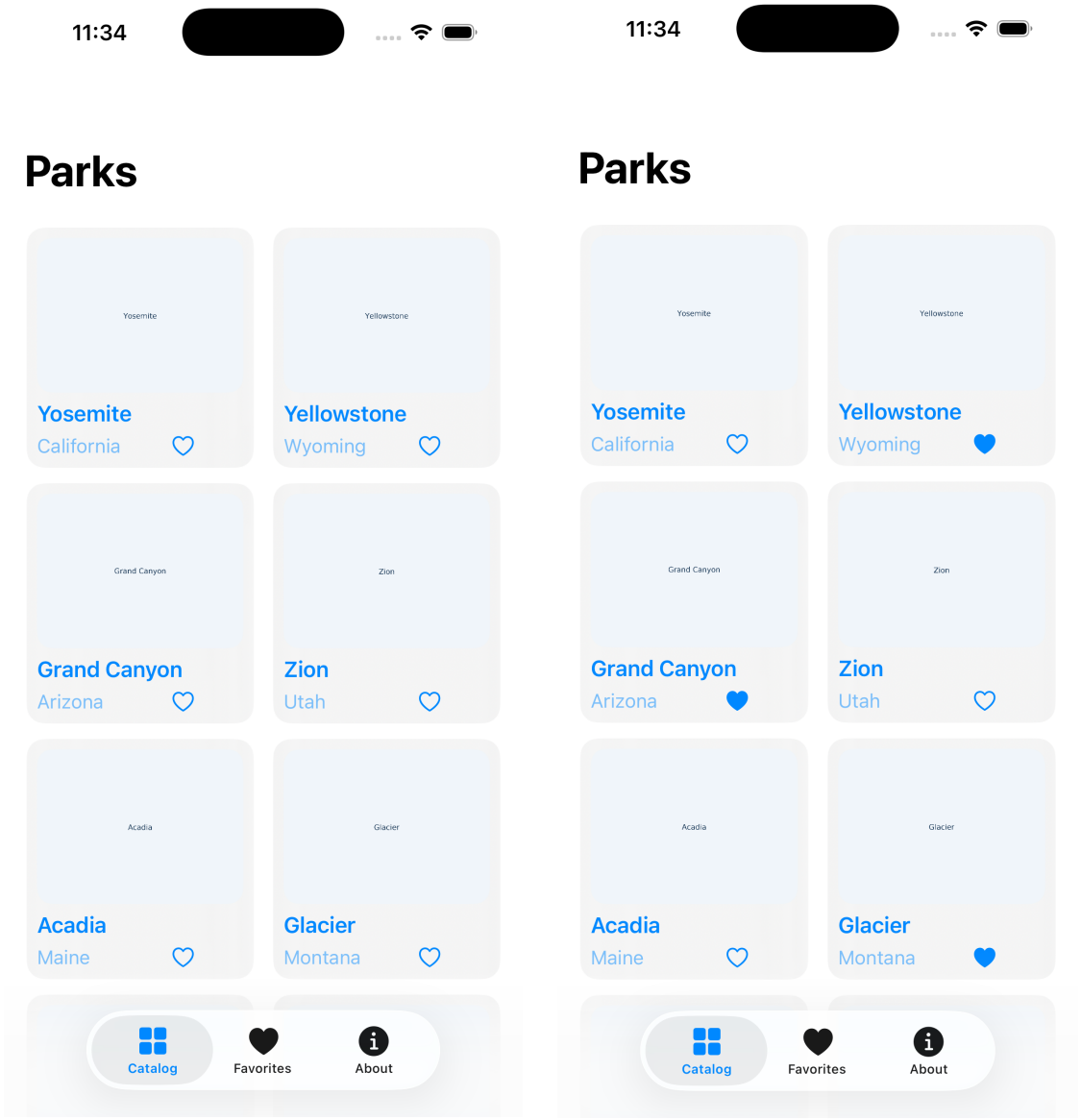
Expected Behavior (Snapshots)

- Catalog Grid: Parks displayed in uniform cards with image + name.
- Detail Screen: Large image, title, subtitle, description, and “Add to Favorites” button.
- Favorites Tab: Shows saved parks; empty state message when none.
- About Tab: Text and icon describing the app.

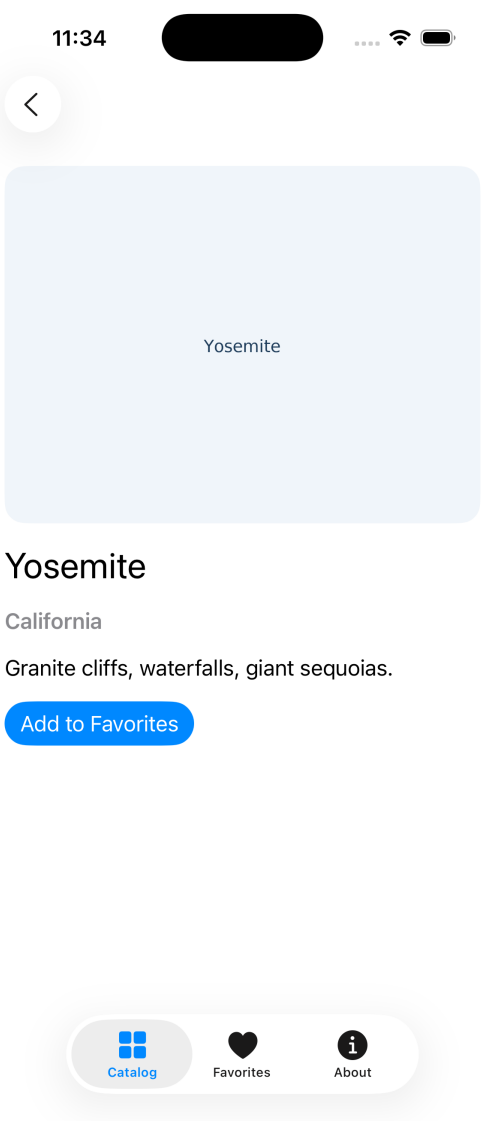
Expected Behavior (Snapshots)

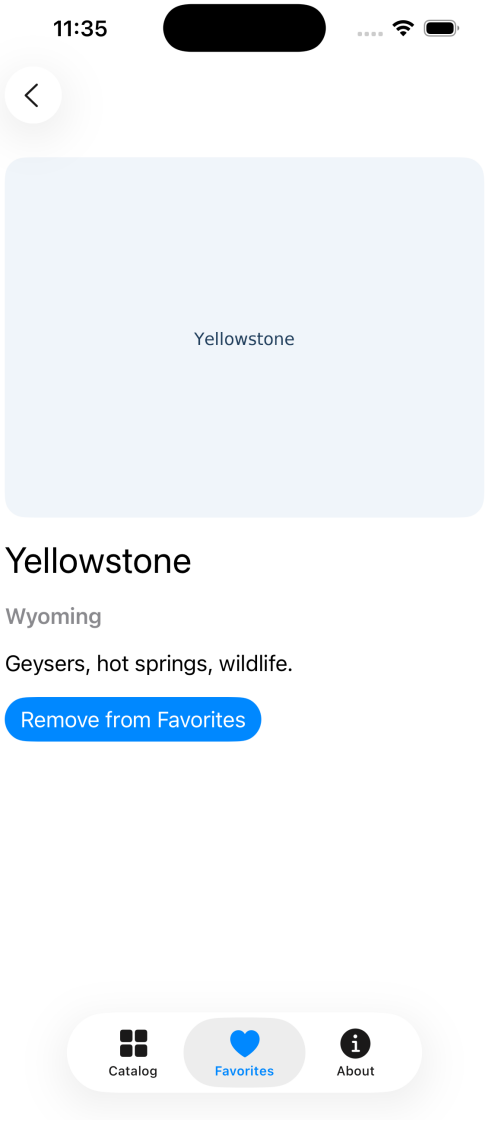
Here are image sequences showing expected UI behavior (DON’T FORGET TO ADD CUSTOM IMAGES FOR EACH PARK. SNAPSHOTS ARE ONLY FOR EXAMPLE VIEWS.):

Catalog View



Card Details





Favorites / About Views