RxSwift Classroom FrenchKit 2017

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Agenda

— Setup
— Taming `flatMap()`
— Learning to `share()`
— Introducing `RxFeedback`

Prepare for the class

— Clone `https://github.com/FrenchKit/RxSwiftClassroom`

— Open `Playground/RxClassroom.xcworkspace`

— Build `RxSwift-macOS` scheme

Taming flatMap

Taming flatMap

Use `flatMap` whenever `map`ing to a single value is not enough

Most crucial and useful operator to know inside out

1. Regular flatMap

Turn input into a network request

2. Errors

Beware errors emitted by inner sequences

3. Errors, the right way

Catching errors inside `flatMap` prevents breaking the overall sequence

4. Using flatMapLatest

When you only want to see the freshest results

Learning to share

Expensive observables

— Computation (i.e. preparing thumbnails)
— Network requests
— Side effects

Forms of share

- `share()`
- `shareReplay(_:)`
- `shareReplayLatestWhileConnected()`
- `share(replay:scope:)`

Standard share()

— Subscribes to inner observable with first observer

— Unsubscribes when no more observers

— ⚠️ Side effect: zero observers = next observer restarts inner subscription

`shareReplay`

— Replays the last N emitted elements

— Event if # subscribers fell to zero

👉 Experiment with the playground!

`shareReplayLatestWhileConnected`

— Replays the last emitted element

— Clears buffer when no more subscribers

`share(replay:scope:)`

- Most flexible variant
- Control whether buffering 'sticks' when subscribers drop to zero

Introducing RxFeedback

Introducing RxFeedback

https://github.com/kzaher/RxFeedback

```
pod 'RxFeedback'
```

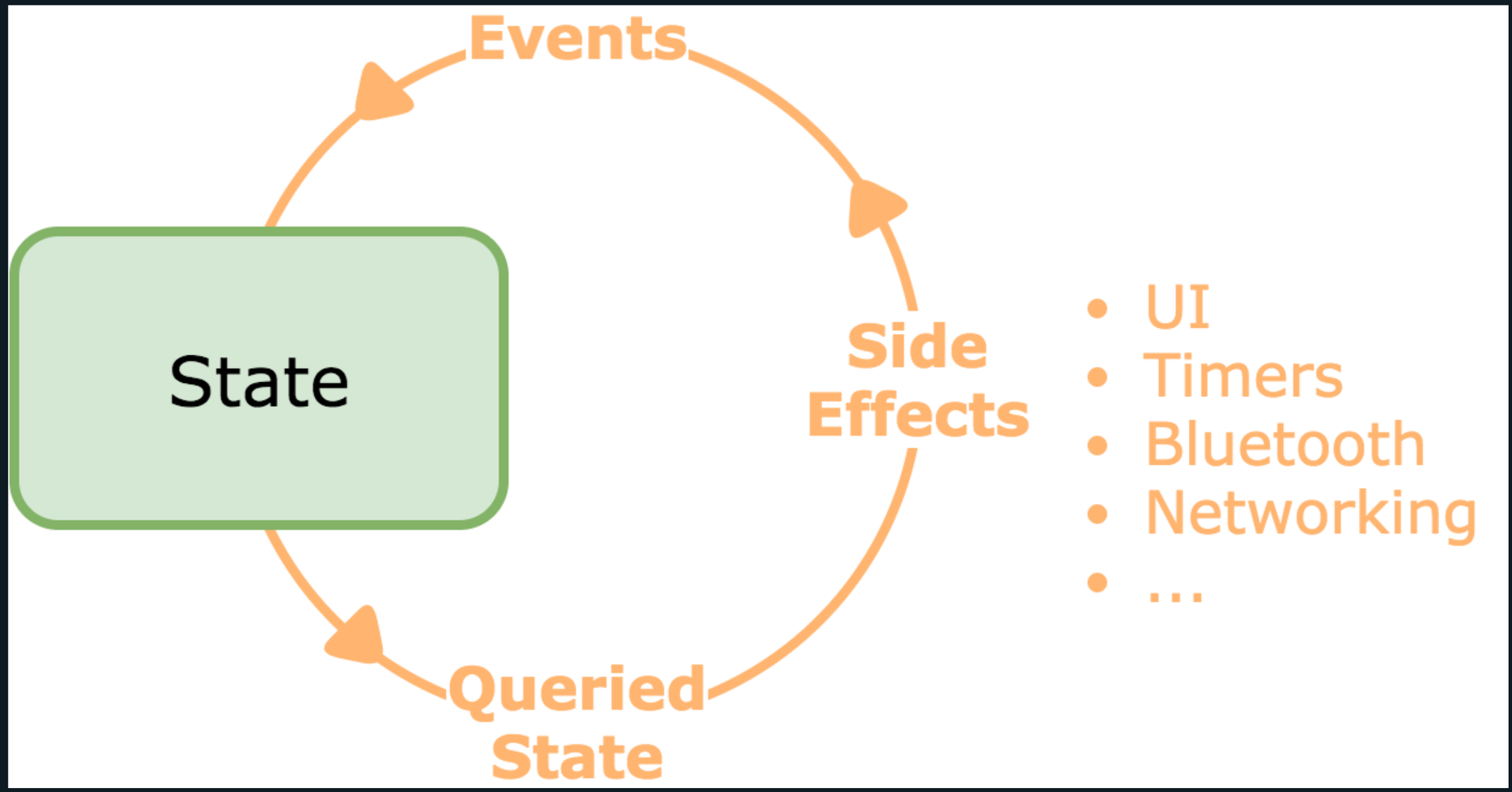
State machines

— Describe states of a system
— Transition description semantics
— How do you describe feedback?

Feedback?

— A new state triggers a set of inputs
— Inputs produce events, sooner of later
— Events can be turned into a new state

RxFeedback: all-in-one solution



RxFeedback: all-in-one solution

— Describes the entire system: reducer, inputs, events
— Flexible inputs adjusting for each state
— Model circular dependencies

Example project

— Simple media player to cycle between images

— A few states, easy to understand

👉 open `RxFeedbackDemo` project

👉 run app

States & events

— I named events 'commands', better suited to this project

👉 examine `PlaybackStates.swift`
👉 examine `PlaybackCommand.swift`

RxFeedback: a single operator (mostly)

— `Observable.system`
— Describes a complete system
— Event reducer
— Scheduler
— Feedback loops

Reducer

— Barbaric name for a simple concept
— Reduces a command to a new state
— Try resist performing side effects here

Reducer

— `reducePlaybackStateFromCommand` function

— simple switch-case clearly describes what happens

Scheduler

— Use an asynchronous scheduler
— Prevents issue when doing immediate transitions
— RxFeedback does it for you, mostly

Feedback loops

— One or more closures, called only once
— Observe a sequence of states
— Produce a sequence of comments

Feedback loops

— `generateCommandsFromPlaybackStates`
— Observe the sequence of states
— On change, produce either `empty()` (empty sequence)
— … or a timer that triggers to play the next image

Feedback loops

— `flatMapLatest` 💪

UI binding

— `bindUI`

— 😱

— Convoluted but not that complicated

UI binding

— "observers" update UI from state
— "emitters" produce commands from user input
— commands go feed the beast

Putting it all together

— Initial state goes into feedback loop
— Our example does nothing
— "Play" button triggers initial `playing` state
— `playing` initiates timer
— `playing` enables `pause` button
— It all goes on from

Final words

Discussion / Q&A

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Co-author, RxSwift book from Ray Wenderlich
https://store.raywenderlich.com/products/rxswift