Observable - An Introduction

- Observables are push based

- Observables are cold [by default]

- Observables can emit multiple values

- Observables can deliver both synchronous and asynchronous values

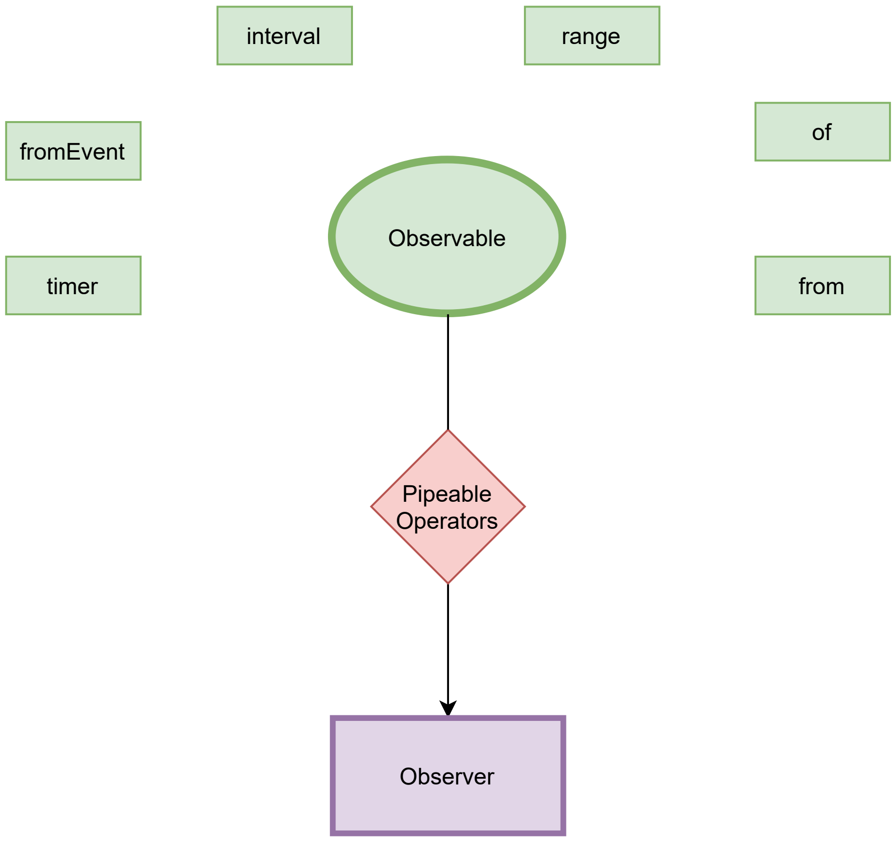
- Observables can be cancelled

Creational Operators

- Stand alone functions to create observables

- Sources can be :
    - **event** : fromEvent(document."click)
    - **request**: of("http://api.github.com/users/octocat")
    - **timer**: interval(1000)
    - **static data** : from ([1,2,3,4,5])
    - combination of other **observable** sources
    - + more...

Creational Operators



Creational Operators

fromEvent	creates observables from DOM events
of	creates observables from static values
from	creates observables from Array, iterators and Promises
interval / timer	Emits item based on a duration

Pipeable Operators

- Operators are the power behind RxJS, letting you more easily compose complex asynchronous code

- Operators can be applied by including them in the pipe() method.

- Operators return a new observable without modifying the input observable.

- A core set of Operators can solve the majority of use case, while others can be pickup up as the situation arises.

Filtering Operators

take	Emits a set number of values from stream
takeWhile	Completes a stream when a condition is met
takeUntil	Completes a stream based on another stream
distinct	Ignores NON unique values
filter	Ignores NOT needed values
reduce	Accumulates data over time
scan	Managing state changed incrementally

Rate Limiting Operators

debounceTime	Takes the latest value after a pause
throttleTime	Ignores values between windows/gap
sampleTime	Sample a stream on a uniform duration
auditTime	Audit a stream after a duration once event occurs

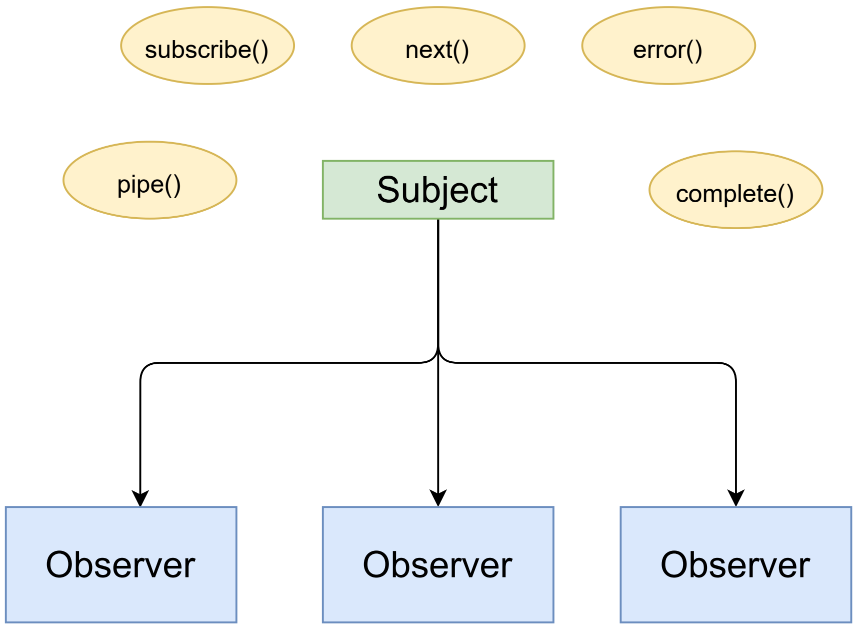
Transforming Operators

mergeMap	Flattening inner observable as they occurs
switchMap	Switch to a new observable on emissions
concatMap	Subscribe to observables in order
exhaustMap	ignore emissions when an inner observable is active

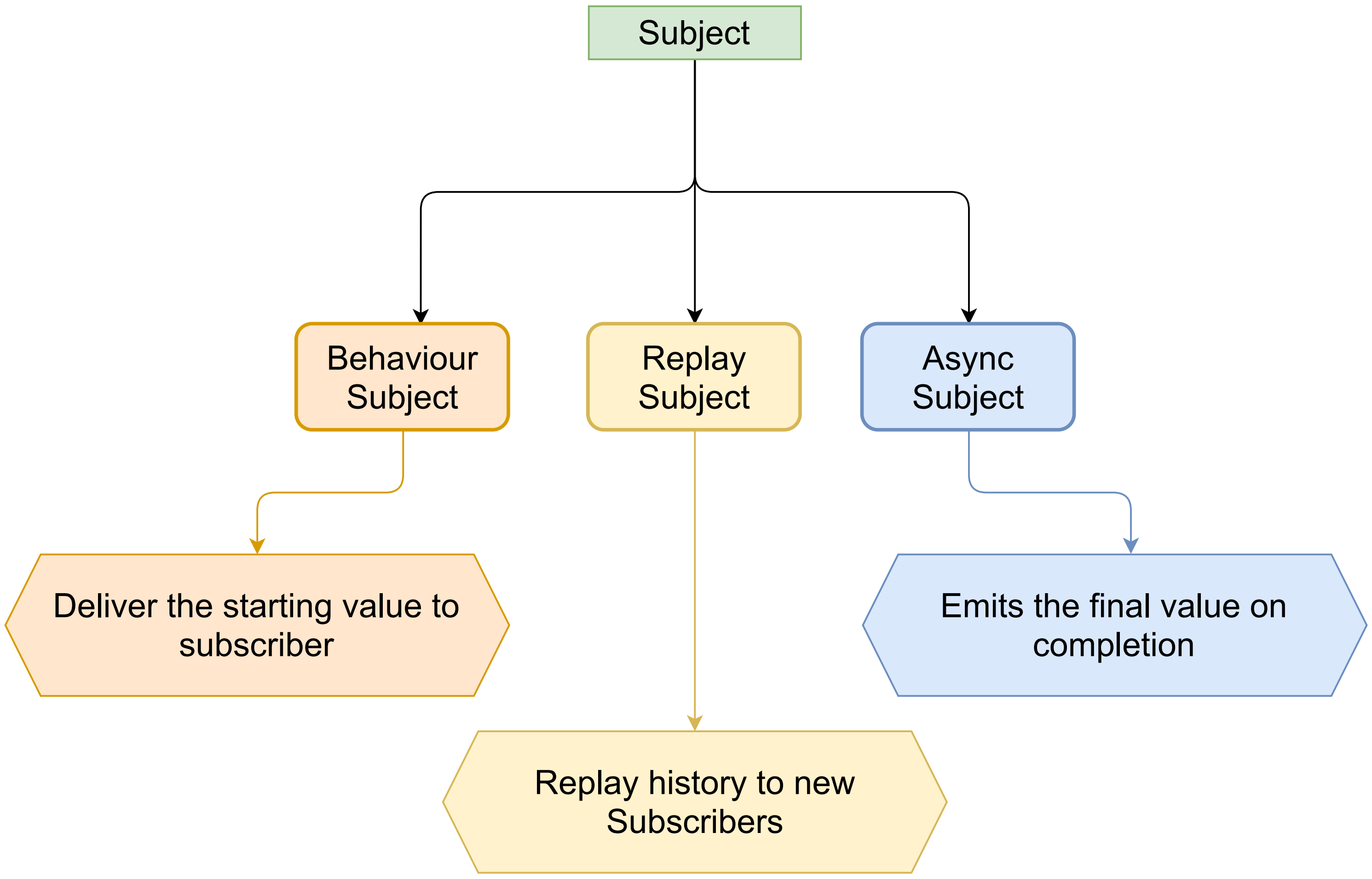
Combination Operators

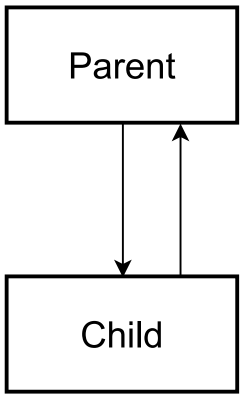
startWith / endWith	Add values to the stream at start / end
concat	Queue observable emissions
merge	Combines multiple active observables
combineLatest	Receives the latest values from multiple observables on emissions
forkJoin	Receives the latest values from multiple observables on completion

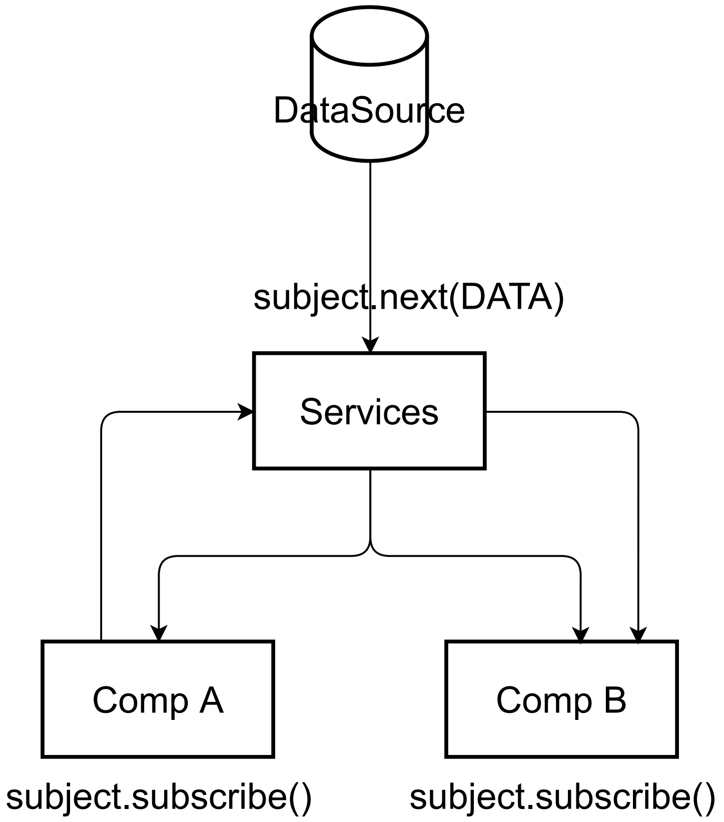
Subjects are both - observable and observer

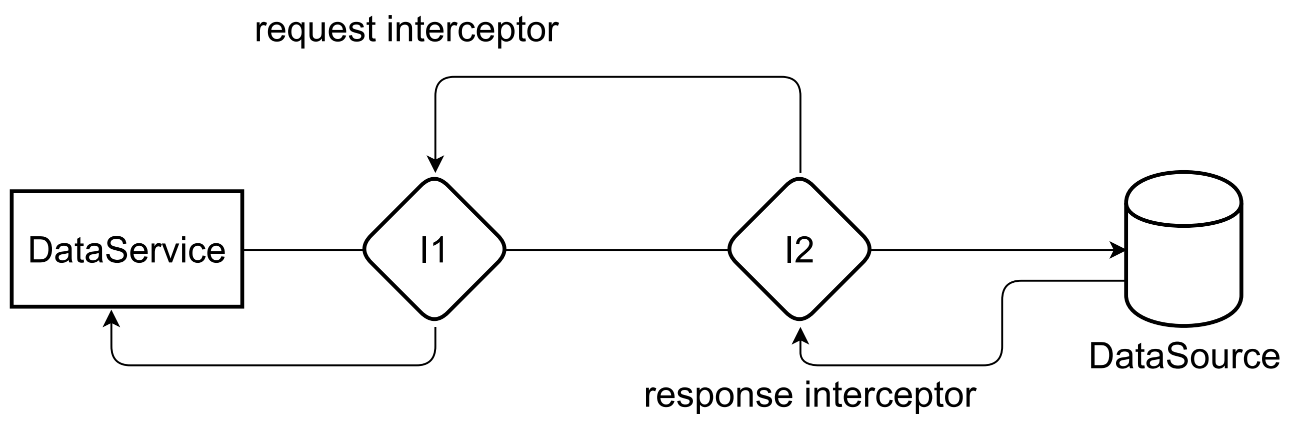


Types of Subject


Subject
Behaviour Subject
Replay Subject
Async Subject
Deliver the starting value to subscriber
Replay history to new Subscribers
Emits the final value on completion


Parent
Child


DataSource
subject.next(DATA)
Services
Comp A
Comp B
subject.subscribe()
subject.subscribe()


request interceptor
DataService
I1
I2
DataSource
response interceptor

-SRP

What is Redux?

- for State Management
- Pattern for maintaining state
- Building blocks - Store, Reducers, Actions, Effects
- Predictable state container
- JavaScript Library,
- Use redux with any JS framework / library
- React : react-redux
- Vue - Vuex
- Angular - @ngrx/store, @ngrx/effects
- State - Data at that moment

Do I need Redux? Why Redux?

- Keeping the data in top level component is good enough? - No

- Maintaining State in Angular Services being complex? - Yes

- Is your data changing very frequently? - Yes

....Go For Redux

Redux Building Blocks -

- Action : can be triggered by any Event (click, XHR, user interaction etc), carries the payload/data, defines what happened in your app, "type" Property.
Object { type : "", payload : "" }

- Store : stores the data/State to maintain, container for state.

- State : Simple JS Object, Single source of Truth,

- Reducers : pure functions, no side-effects

(state, action) => state

Redux 3 Principles-

- Single Source of Truth

- State is immutable : not changeable, Never change the existing state

- State should be updated by Pure Functions (Reducers)

const add = (a, b) => a + b;

XHR Call, Date.now(), Math.random() - side effects

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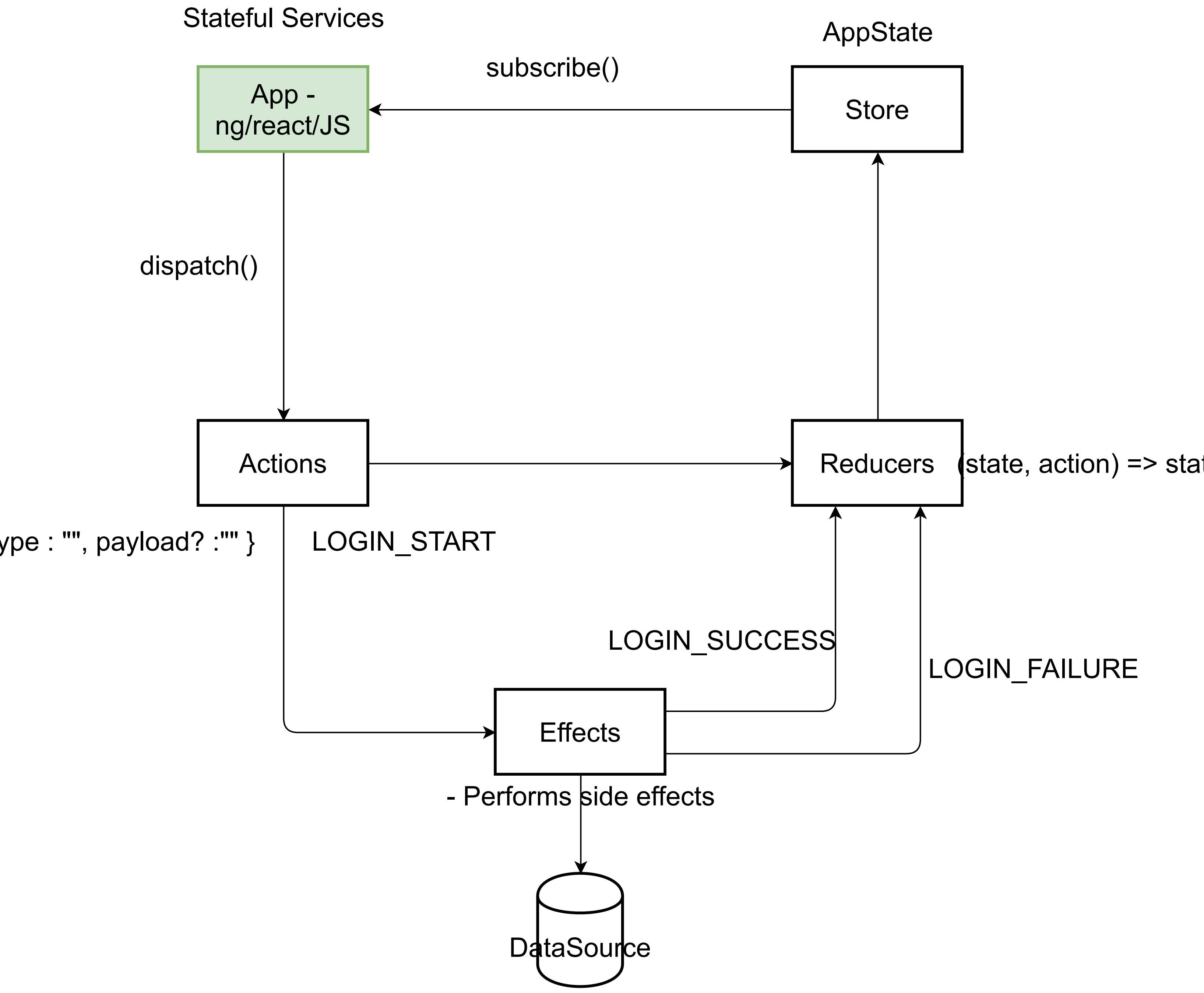
Redux Data Flow - Uni-directional Data Flow

- Services should be reactive and stateless



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