React hands on workshop

By Vijay Shivakumar

Welcome to the React workshop

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www.technicaltrainings.com

What do we need before we begin... ?

Technical Skill : HTML5, CSS3, JavaScript 1.8.5

Hardware and software:

IDE : visual studio code
Browsers : chrome latest
Platform : nodejs latest
Database : mongodb / mlab / firebase
Version Control : git
Network : internet access to download from git and npmjs.org

Objectives

Understand and explore ES6 / ES7
Write Programs using Pure React
Understand JSX usage
Develop programs using React platform
Workflow with Context API
Workflow with Redux
Usage of middleware Saga
Unit testing with Jest

What are we learning in this course ?

ES6+
Functional programming
Arrow functions
Immutable objects
Template strings
Destructuring
Array Methods
Scope Management
History API
CSS / SASS

What is React ?
Tooling and setup for React-CLI
React Components
Understanding JSX
Data binding
Class and Style binding
State
Props and PropTypes
Conditional Rendering
Working with Forms
Events

Context API
Lifecycle Methods
Working with HTTP
Provider API
Redux
React Routing
Lists and Keys
Fragments
Firebase / MongoDB

Your Instructor / About Me

Vijay Shivakumar

Designer | Developer | Trainer

Adobe Certified Expert

Training & Consultation of
Contemporary Web Technologies and Adobe products from past 14 years

Audience / About you

Developer
Designer
Manager
Architect
Technology Enthusiast

Prerequisites / Before we begin

- HTML 5
- CSS3
- ES6
- NodeJS
  - TypeScript
  - WebPack
  - Express
  - Babel
- TDD
- MongoDB

Must Know / Before we begin

HTML 5
CSS3

I assume you know

ES6

- block scope
- de structuring
- arrow function
- default parameters
- spread operator
- array methods
- template strings
- classes
- modules
- interfaces

Must Know / Before we begin

HTML 5
CSS3

I assume you know

We shall learn these

ES6

- block scope
- de structuring
- arrow function
- default parameters
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- array methods
- template strings
- classes
- modules
- interfaces

About React / Why do we need react ?

Client Side Programming LIBRARY

Created and maintained by Facebook developers

Used to build dynamic user interfaces (Frontend)

Everything is a component

Often referred as V in the MVC

What makes React great / Principles of React

DOM Manipulation only with React

Components architecture / Composability

One way data flow (Unidirectional Data Flow)

A solid UI library

Why React / Advantages of React

Component architecture

Easy to scale existing applications one component at a time

Partial refresh of UI Virtual DOM

Only renders the area that is modified avoiding page refresh

Fast

Client get a faster response from application and they are happy

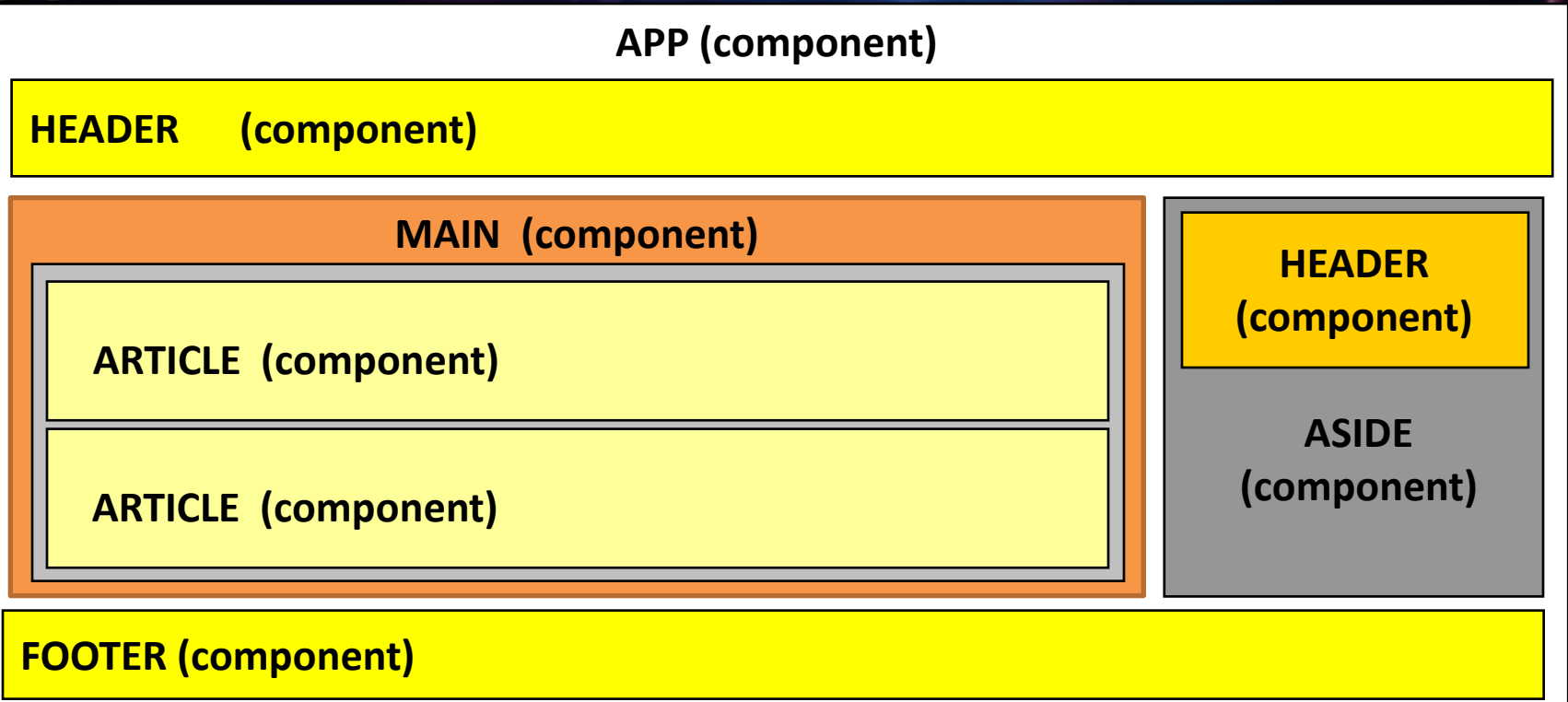
Leverage on ES6 and later

Existing knowledge of JavaScript can be used to scale with react

Benefits / Key take away from this course

- Components
  - Just like functions
  - Reusable and composable
  - Can manage a private state
- Reactive updates
  - Updates with user interaction
  - Take updates to the browser
- Virtual view in memory
  - write HTML in JavaScript
  - Tree reconciliation

React Architecture



JSX / Rules

must return a single root element

className instead of class

htmlFor instead of for

events become camel cased eg : onclick will become onClick

Inline elements too need to be closed

Components

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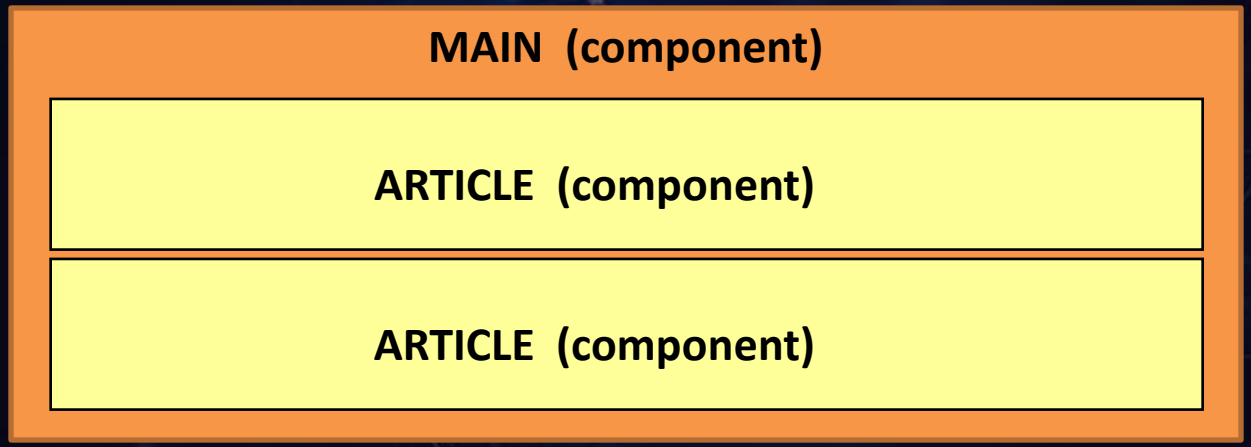
Components / Building blocks of an application

Composition



Component / Types

Function components are stateless hence less dynamic

Class components are stateful and are dynamic

Redux

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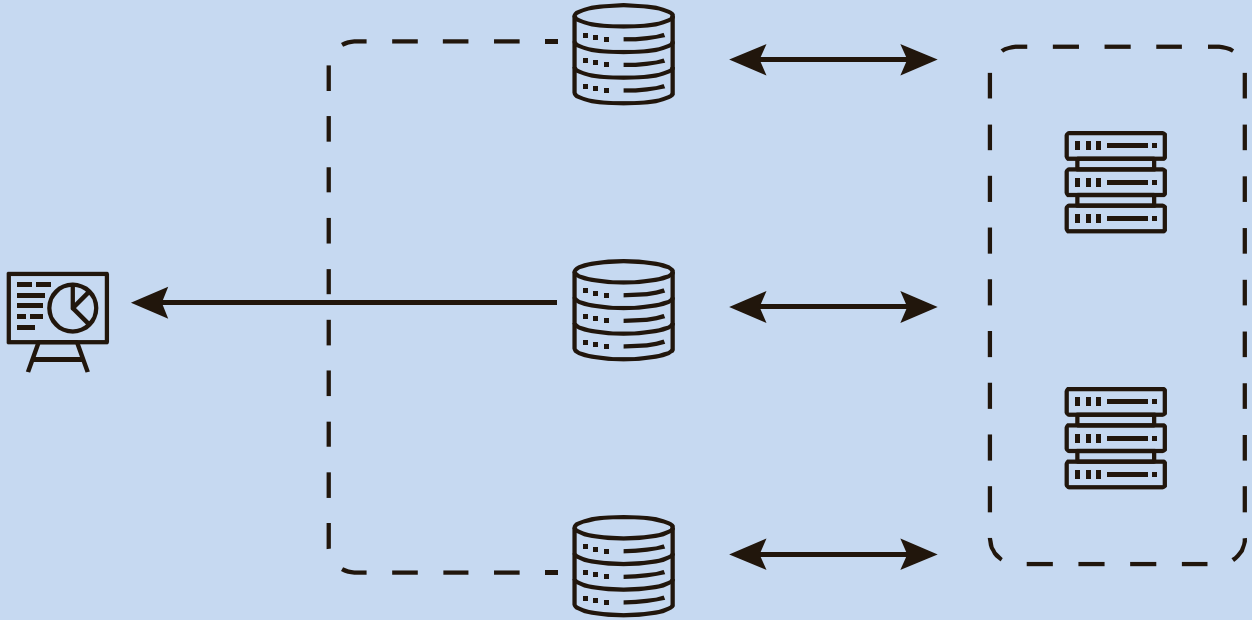
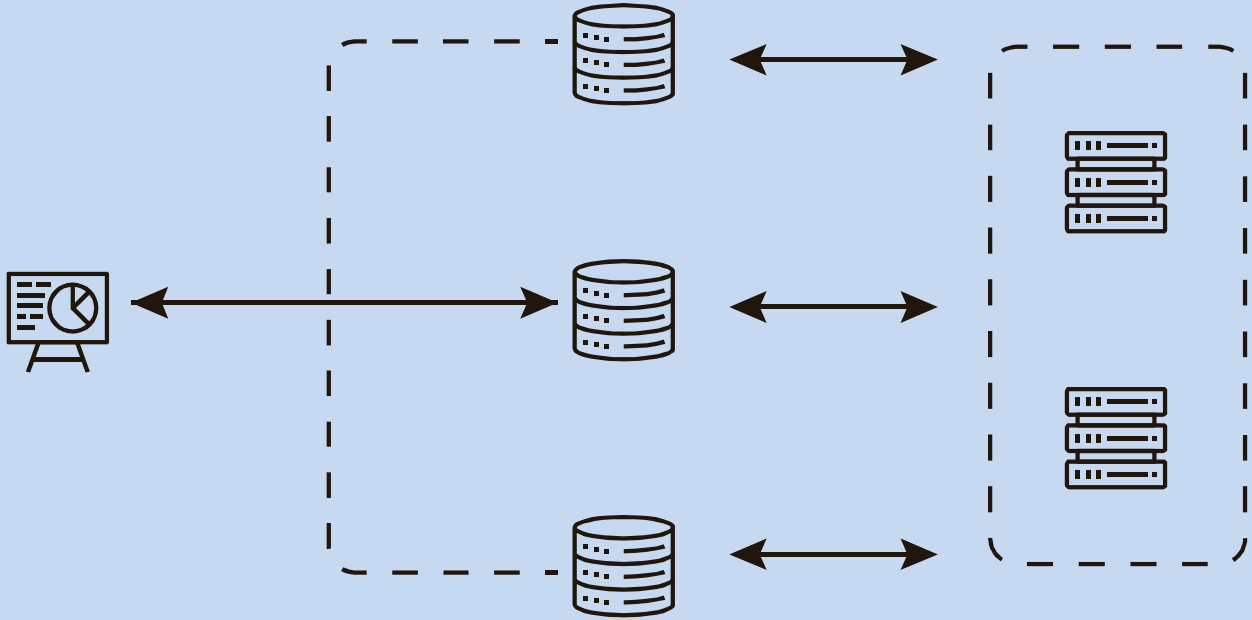
What is Redux ?

- Manages Data Store that can be accessed across you app
- Redux makes state management more predictable by having a single source or truth
- We can set strict rules for how the state can be updated

Why Redux ?



Why Redux ?



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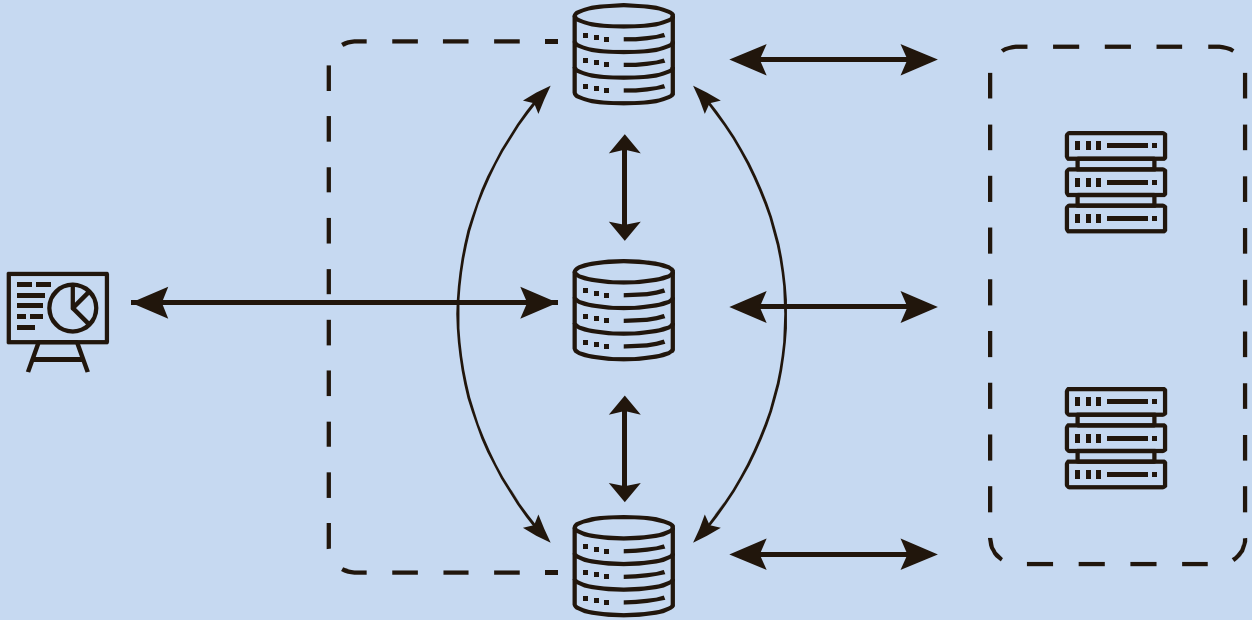

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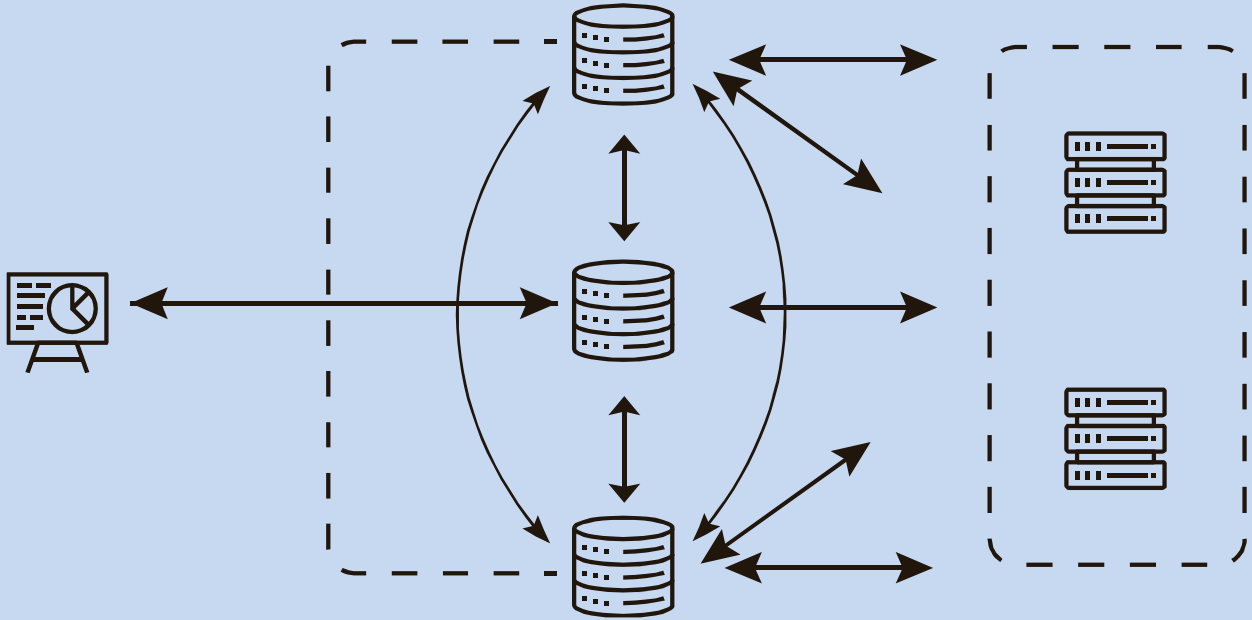
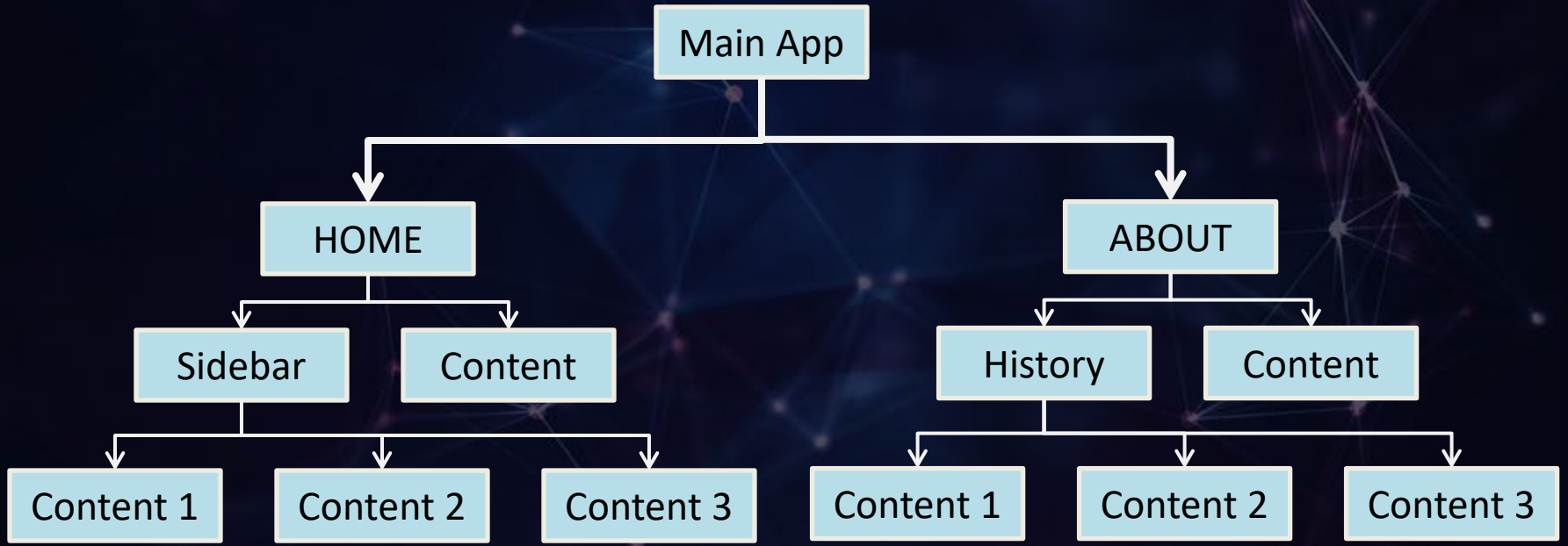


Data flow issues



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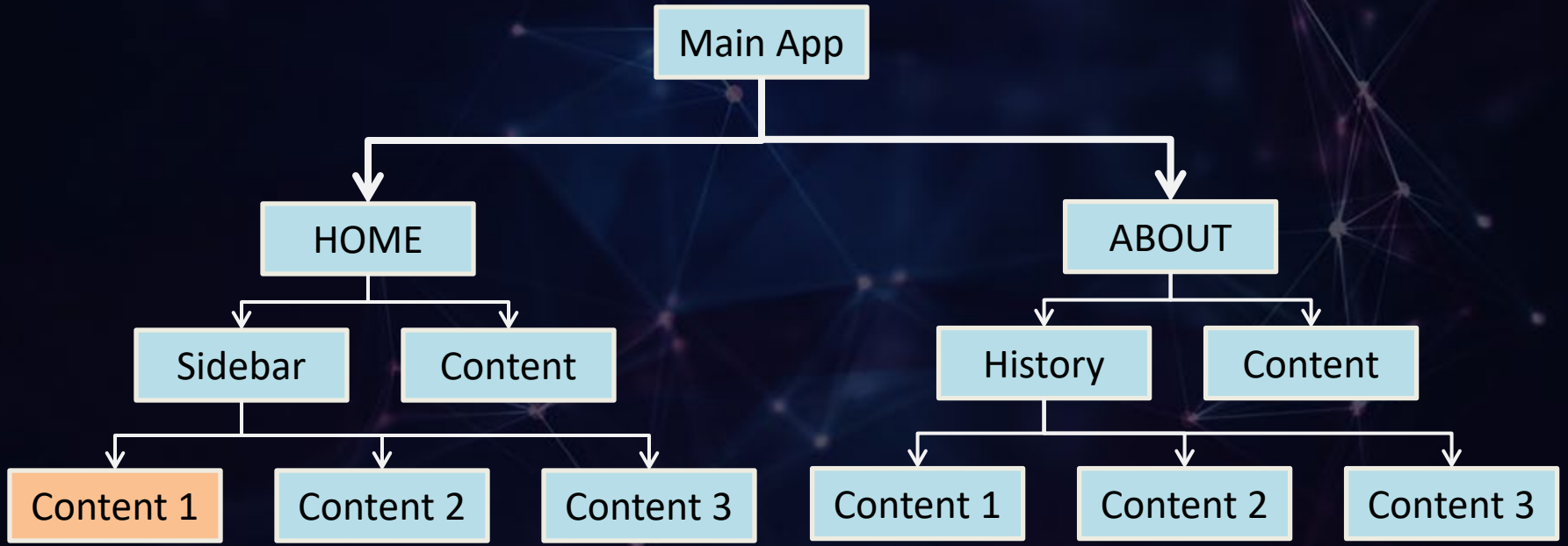

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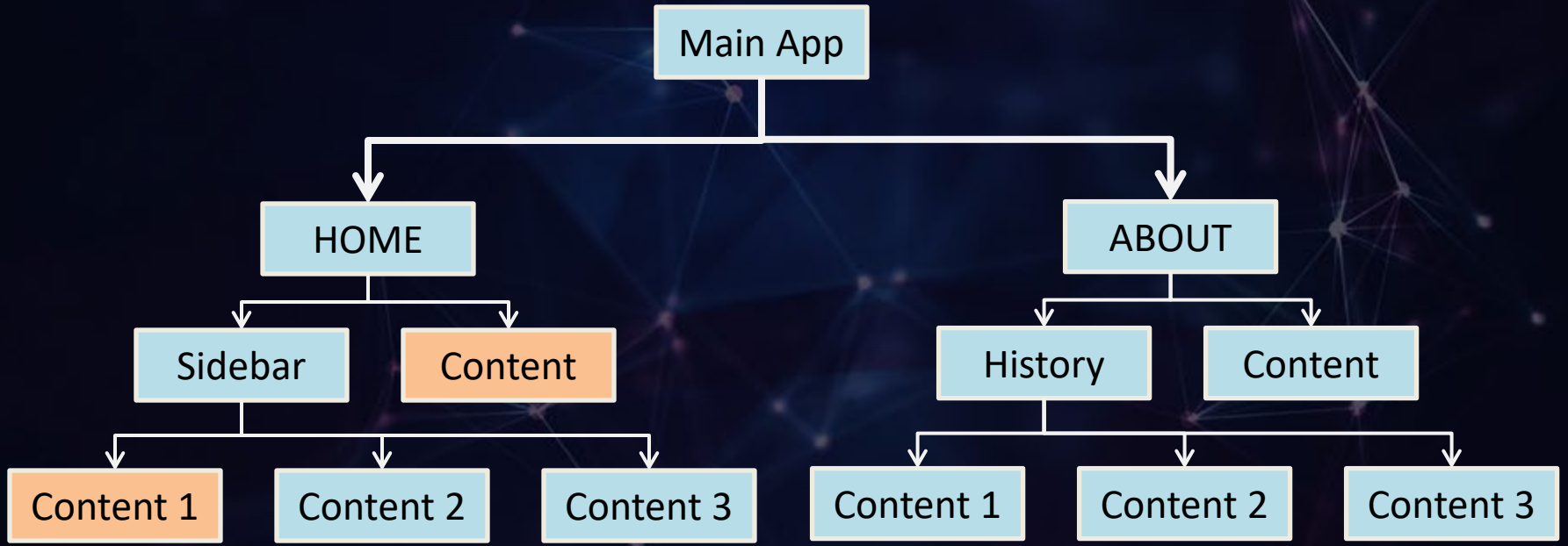

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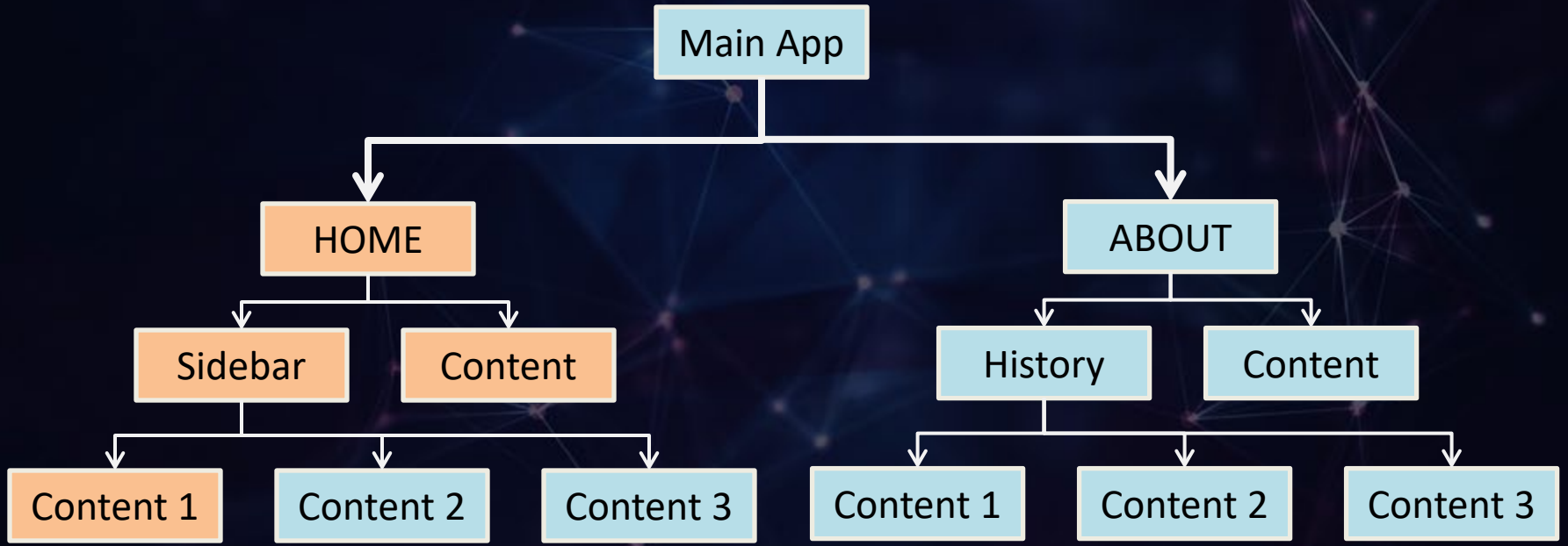

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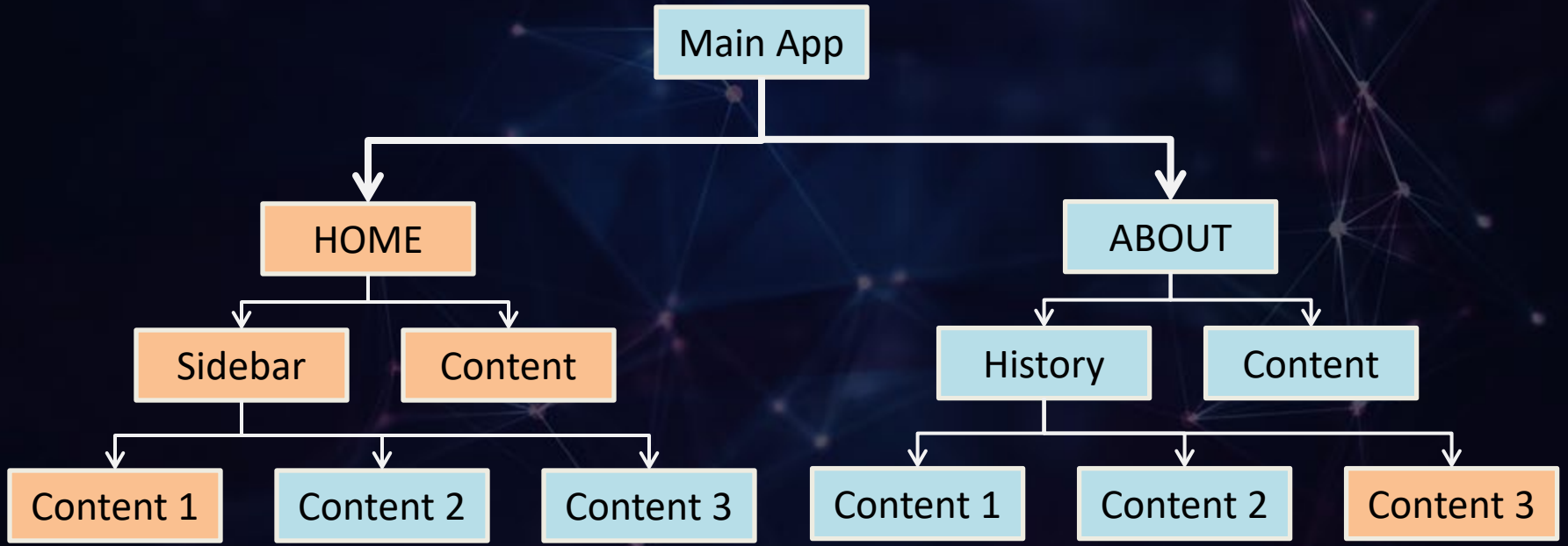

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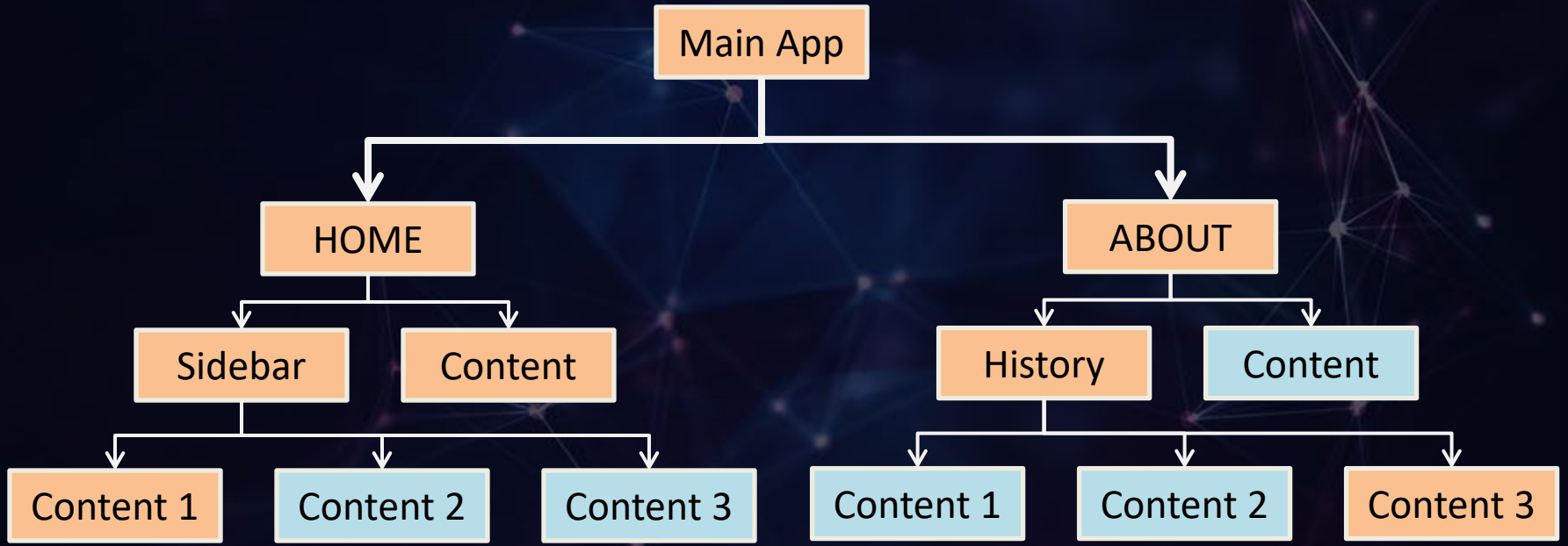

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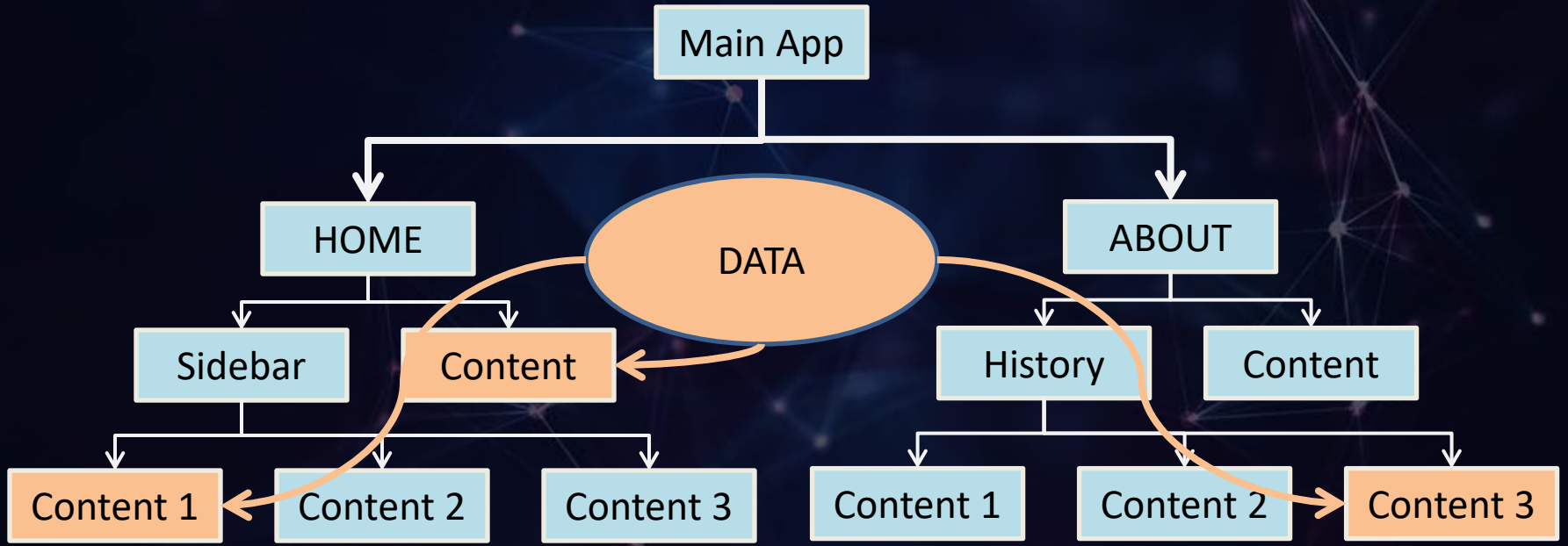
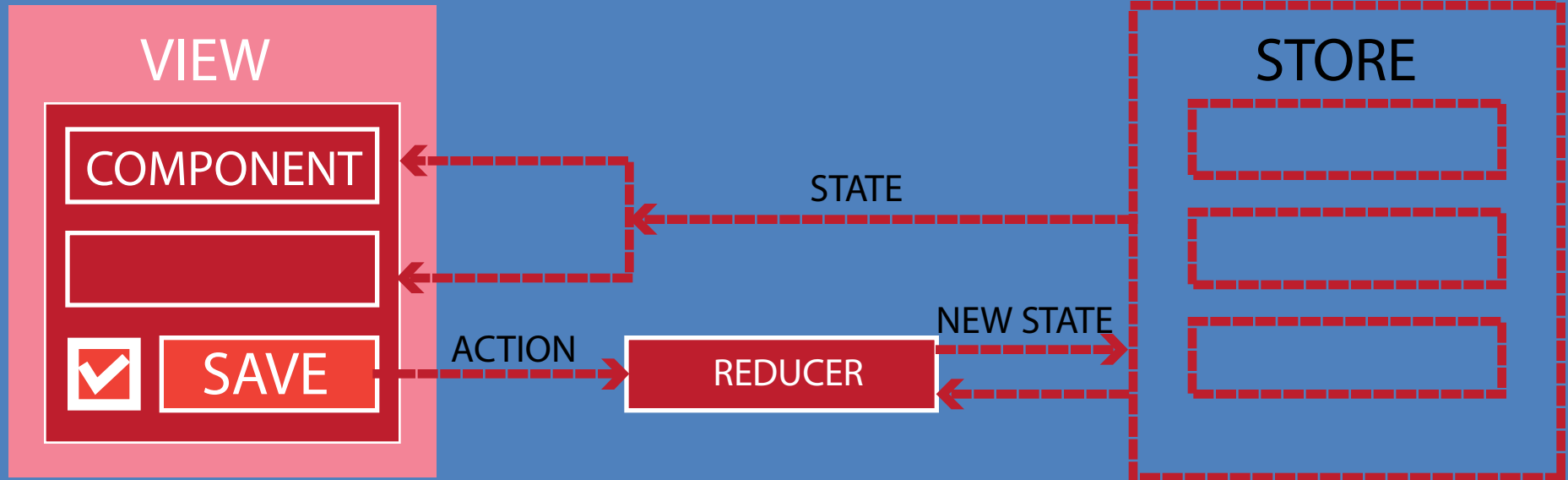


Redux Architecture



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Sagas

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Introduction - Redux Saga

A Redux Middleware : Saga will be added in redux to cause an effect

Consumes Action : Saga consumes an action and in-turn may cause actions or side effects (async operations)

Runs continuously : Maintains continuous running process called sagas

What is Saga ?

A long running background process

Responsible for application's side effects

Ability to reverse the changes if failed

Leverages on ES6 generators and yield

It's a process manager Sagas manages one or more saga like starting or stopping them

Summery : Sagas listen to actions and dispatch other actions using effects which can modify external resources like databases file-system etc.

Why Saga ?

- Helps in making side effects easy
  - API calls, database transactions
- Real world use cases
  - forking process (stop a process so another can run), yielding thread
- Better than Thunk
  - Thunk encourage putting lot of code in action creators and at times it becomes a mess

(disadvantage of saga is its learning curve)

Thunk and Saga Comparision

Thunk was developed by Redux developers	Developed by 3rd Party developers
Works in JavaScript	Works only on browsers that support ES5 with Yield
Issues between thunks when managing side effects between them	Uses plain actions to coordinate sagas

Testing

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