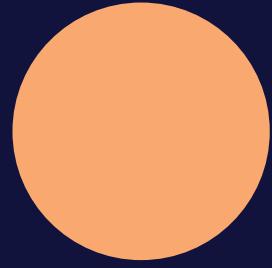


PRACTICAL REACT WITH TYPESCRIPT

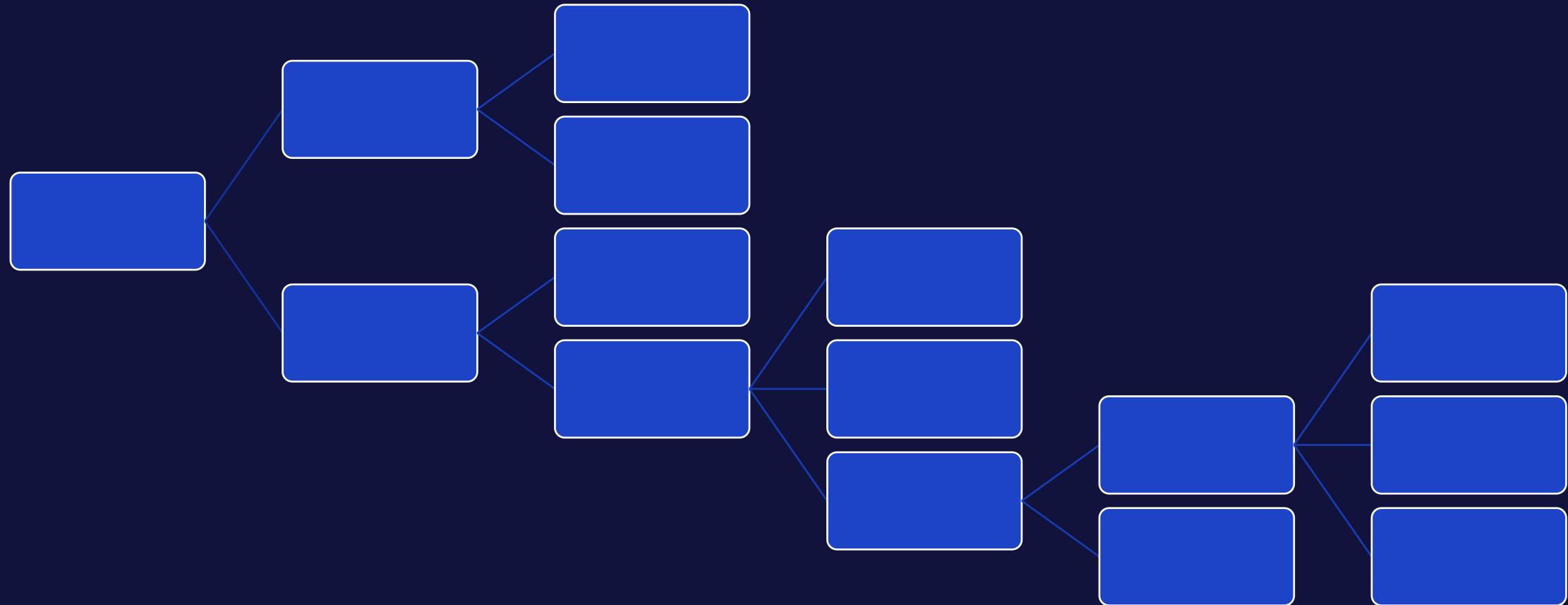
bouvet



Setup

Agenda

Anatomy of React



<> TextField



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<> BooleanField

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<> Reusable fields



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Anatomy of a component

```
export interface TextFieldProps {  
  label: string  
}
```

props

```
export const TextField = ({ label }: TextFieldProps) => {  
  const id = useId()  
  const [value, setValue] = useState("")  
  
  return (  
    <div>  
      <label htmlFor={id}>{label}</label>  
      <input id={id} type="text" value={value} onChange={(evt) => setValue(evt.target.value)} />  
      <p>{value}</p>  
    </div>  
  )  
}
```

component

```
export interface TextFieldProps {  
  label: string  
}  
  
export const TextField = ({ label }: TextFieldProps) => {  
  const id = useId()  
  const [value, setValue] = useState("")  
  
  return (  
    <div>  
      <label
```

Anatomy of a component

```
export interface TextFieldProps {  
  label: string  
}  
use*                                     hooks  
  
export const textField = ({ label }: TextFieldProps) => {  
  const id = useId()  
  const [value, setValue] = useState("")  
  
  return (  
    <div>  
      <label htmlFor={id}>{label}</label>  
      <input id={id} type="text" value={value} onChange={(evt) => setValue(evt.target.value)} />  
      <p>{value}</p>  
    </div>  
  )  
}
```

Anatomy of a component

```
export interface TextFieldProps {  
  label: string  
}  
export default function TextField({label, id}: TextFieldProps) => {  
  const [value, setValue] = useState("")  
  
  return (  
    <div>  
      <label htmlFor={id}>{label}</label>  
      <input id={id} type="text" value={value} onChange={(evt) => setValue(evt.target.value)} />  
      <p>{value}</p>  
    </div>  
  )  
}
```

Anatomy of a component

```
export interface TextFieldProps {  
  label: string  
}  
  
export const TextField = ({ label }: TextFieldProps) => {  
  return (  
    <div>  
      <label htmlFor={id}>{label}</label>  
      <input id={id} type="text" value={value} onChange={(evt) => setValue(evt.target.value)} />  
      <p>{value}</p>  
    </div>  
  )  
}
```

jsx

Anatomy of a component

```
export interface TextFieldProps {  
  label: string  
}  
  
export const TextField = ({ label }: TextFieldProps) => {  
  const id = useId()  
  const [value, setValue] = useState("")  
  
  return (children  
    <div>  
      <label htmlFor={id}>{label}</label>  
      <input id={id} type="text" value={value} onChange={(evt) => setValue(evt.target.value)} />  
      <p>{value}</p>  
    </div>  
  )  
}
```

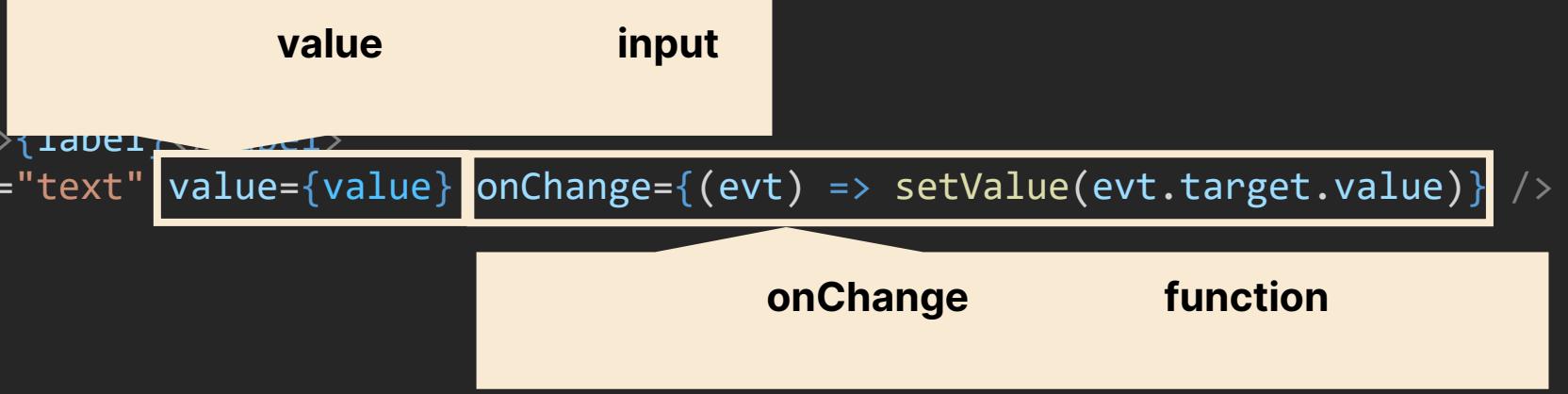
| children | label | children |
|-----------|-------|----------|
| TextField | label | label |
| return () | <div> | <input> |
| | | |

Anatomy of a component

```
export interface TextFieldProps {  
  label: string  
}  
export const [value, setValue] = useState("")  
const id = useState()  
useState  
destructure  
  return (  
    <div>  
      <label htmlFor={id}>{label}</label>  
      <input id={id} type="text" value={value} onChange={(evt) => setValue(evt.target.value)} />  
      <p>{value}</p>  
    </div>  
  )  
}
```

Anatomy of a component

```
export interface TextFieldProps {  
  label: string  
}  
  
export const TextField = ({ label }: TextFieldProps) => {  
  const id = useId()  
  const [value, setValue] = useState("")  
  
  return (  
    <div>  
      <label htmlFor={id}>{label}</label>  
      <input id={id} type="text" value={value} onChange={(evt) => setValue(evt.target.value)} />  
      <p>{value}</p>  
    </div>  
  )  
}
```



The code defines a `TextField` component that takes a `label` prop. It uses `useId` and `useState` to generate a unique ID and store the current value of the text input respectively. The component returns a `div` containing a `label` and an `input` element. The `input` has its `value` set to the current state and its `onChange` event handler set to a function that updates the state when the value changes.

Anatomy of a component

- **Component:**
- **Props**
- **Hooks**
- **State**
- **Children**
- **JSX**
- **{}**

JSX

Anatomy of an event

```
export interface TextFieldProps {  
  label: string  
}  
  
export const TextField = ({ label }: TextFieldProps) => {  
  const id = useId()  
  const [value, setValue] = useState("")  
  
  return (  
    <div>  
      <label htmlFor={id}>{label}</label>  
      <input id={id} type="text" value={value} onChange={(evt) => setValue(evt.target.value)}>  
      <p>{value}</p>  
    </div>  
  )  
}
```



input*

input

onChange

input

Anatomy of an event

```
export interface TextFieldProps {  
  label: string  
}  
  
export const TextField = ({ label }: TextFieldProps) => {  
  const id = useId()  
  const [value, setValue] = useState("")  
  
  return (  
    <div>  
      <label htmlFor={id}>{label}</label>  
      <input id={id} type="text" value={value} onChange-  
        {evt) => setValue(evt.target.value)} />  
      <p>{value}</p>  
    </div>  
  )  
}
```



The diagram illustrates the flow of an event. A curved arrow originates from the `onChange` prop in the `TextField` component's render function and points to the `evt` parameter in the `onChange` handler. This handler is enclosed in a yellow box labeled "event handler". Inside this box, another arrow points from the `evt` parameter to the `target.value` property, which is then passed to the `setValue` state setter. The `setValue` call is also enclosed in a yellow box labeled "setter".

Anatomy of an event

```
export interface TextFieldProps {  
  label: string  
}
```

State change

re-render
updated data

```
export const TextField = ({ label }: TextFieldProps) => {  
  const id = useId()  
  const [value, setValue] = useState("")  
  
  return (  
    <div>  
      <label htmlFor={id}>{label}</label>  
      <input id={id} type="text" value={value} onChange={(evt) => setValue(evt.target.value)} />  
      <p>{value}</p>  
    </div>  
  )  
}
```

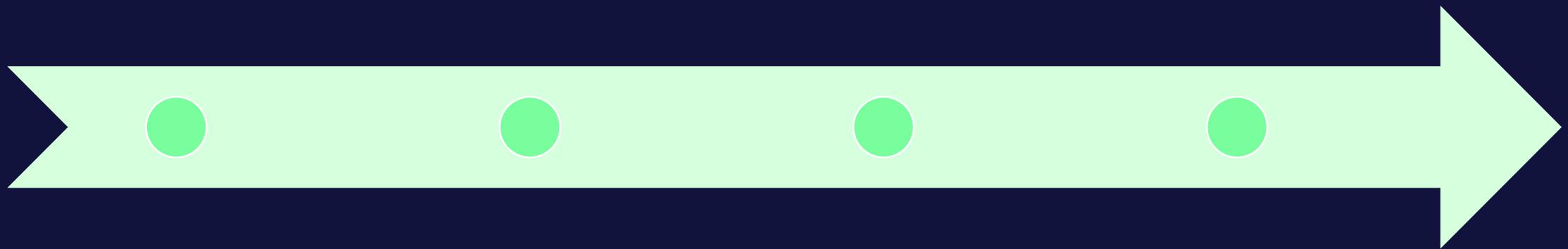
Anatomy of an event

```
export interface TextFieldProps {  
  label: string  
}  
  
export const TextField = ({ label }: TextFieldProps) => {  
  const id = useId()  
  const [value, setValue] = useState("")  
  
  return (  
    <div>  
      <label htmlFor={id}>{label}</label>  
      <input id={id} type="text" value={value} onChange={(evt) => setValue(evt.target.value)} />  
      <p>{value}</p>  
    </div>  
  )  
}
```

The diagram illustrates the state flow in a React component. It starts with a callout pointing to the `value` prop in the `TextFieldProps` interface. A curved arrow then points from this prop to the `value` state in the `useState` hook. Another curved arrow points from the `value` state to the `value` prop of the `<input>` element. A final arrow points from the `value` prop of the `<input>` element to its `value` attribute, which is highlighted with a yellow box. To the right of this highlighted area, the text "updating the UI" is displayed, indicating that this step triggers a re-render of the user interface.

value updating the UI

Anatomy of an event

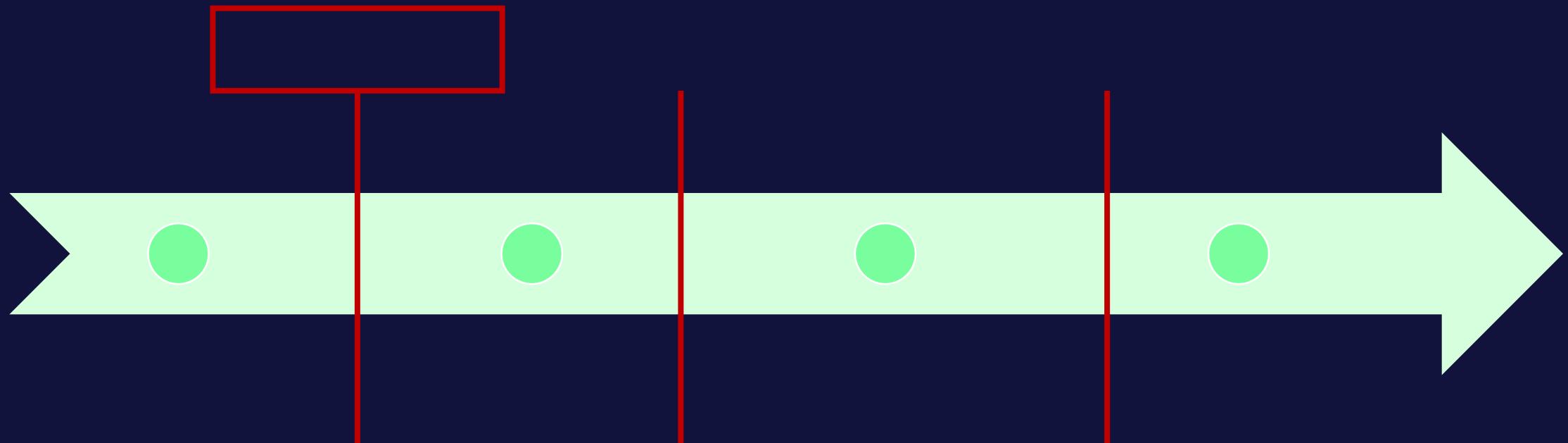


Component lifecycle

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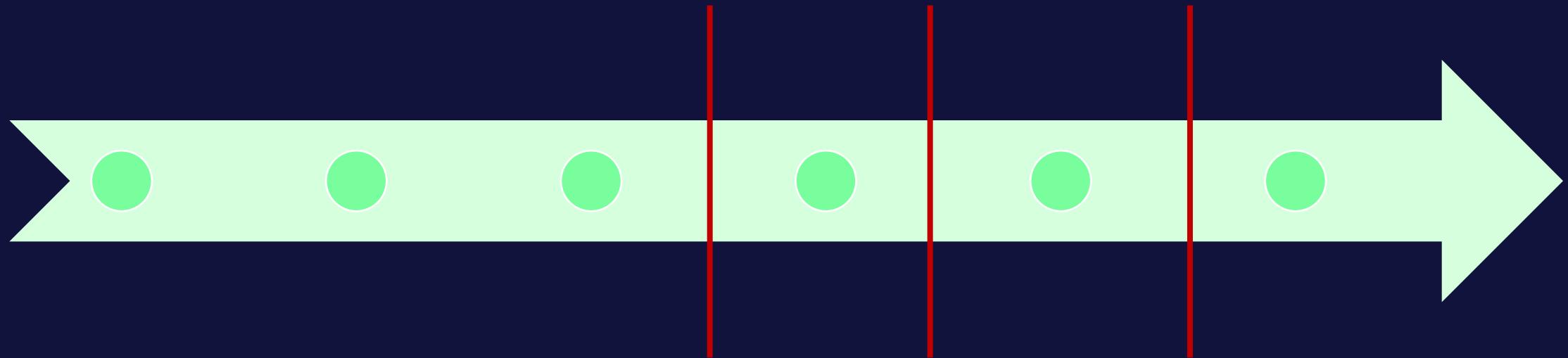
Component lifecycle

TextField



Component lifecycle

TextField



<> ClickUntil

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<> NumericField



<> ClickUntilForm



Styling

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<> Style TextField



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<> Style components

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EoD 1

Organizing our repository

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Immutability

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< > UserDetails

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<> GroupDetails

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Loops



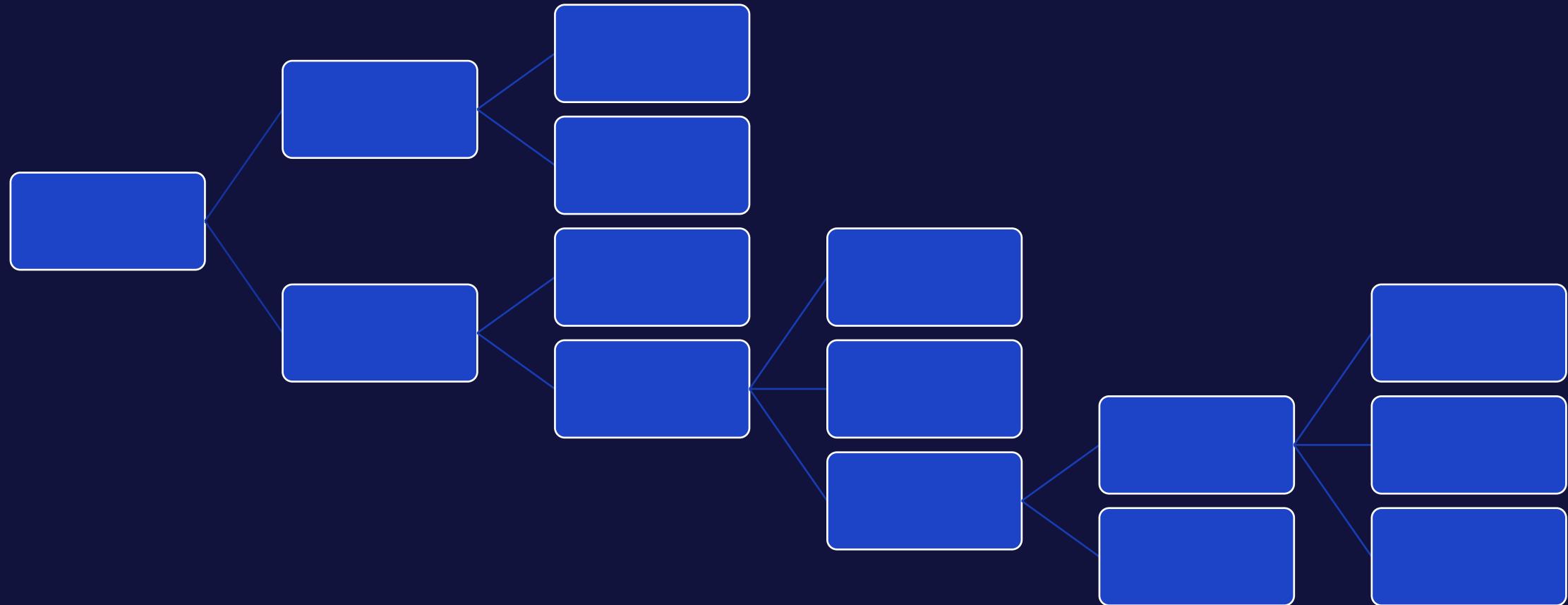
useMemo

.

Routing

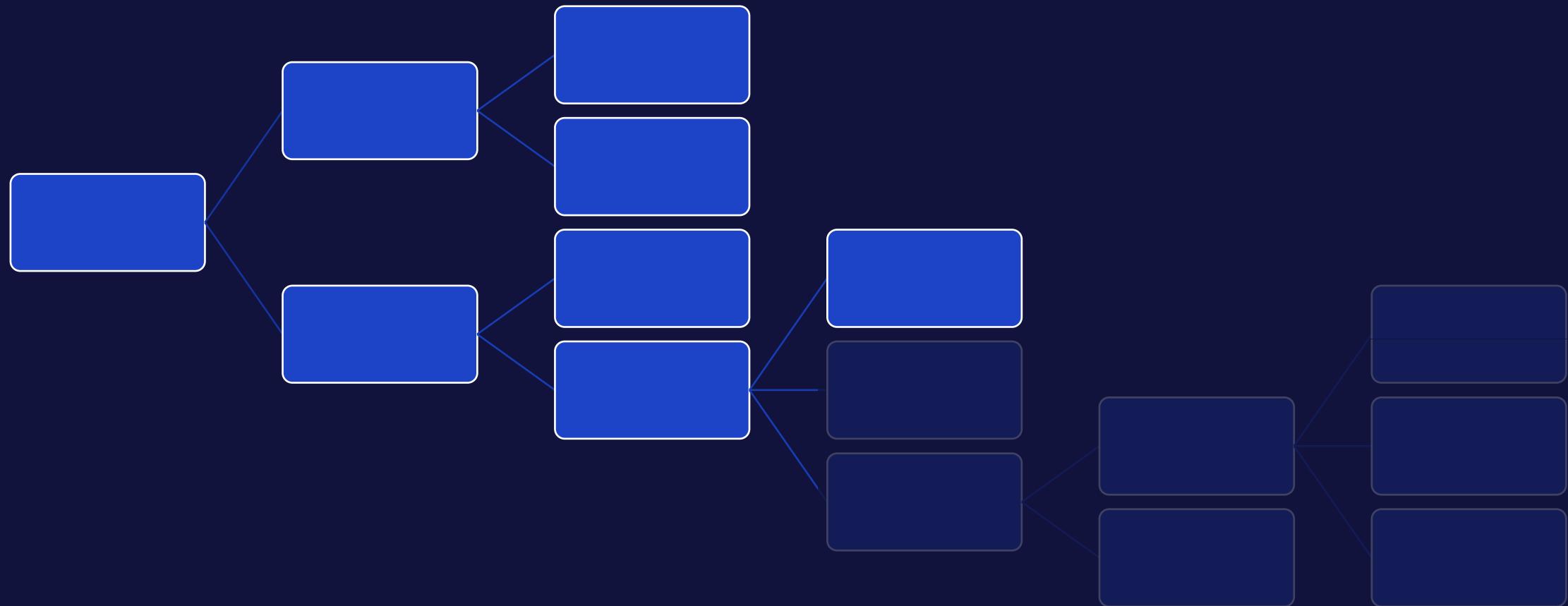
-
-

Anatomy of routing



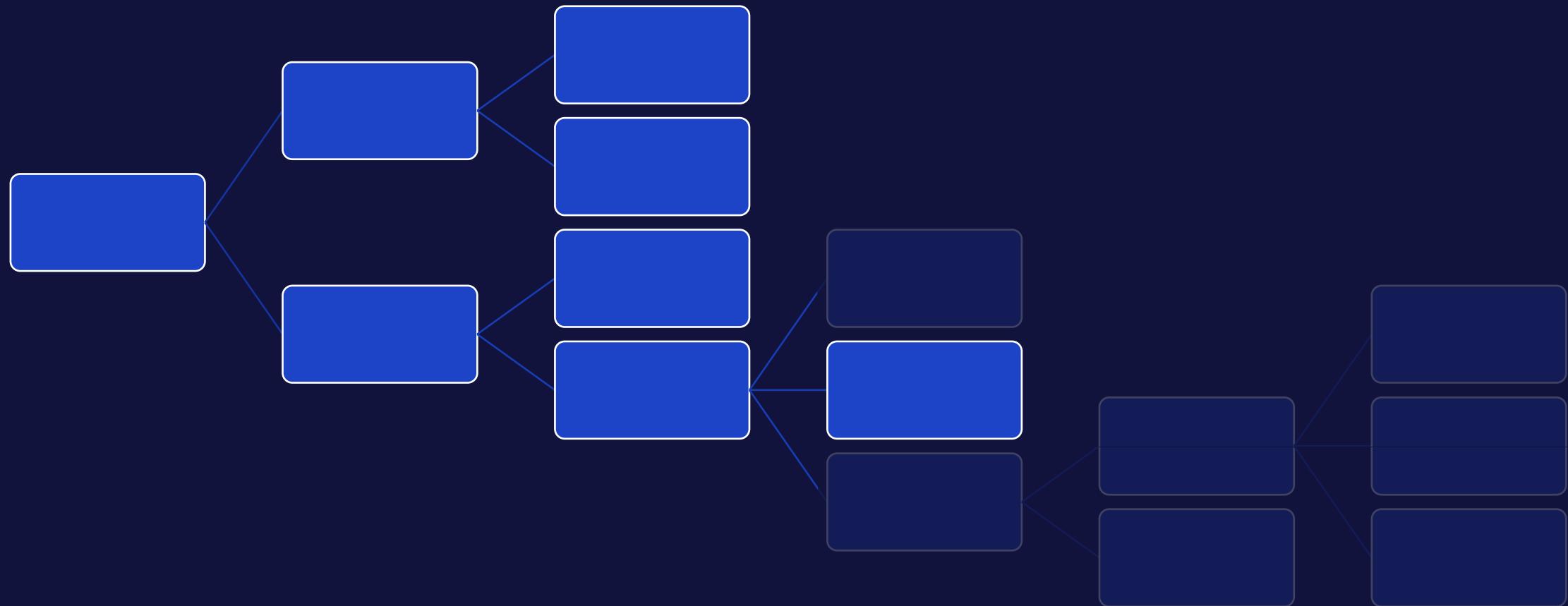
Anatomy of routing

/home



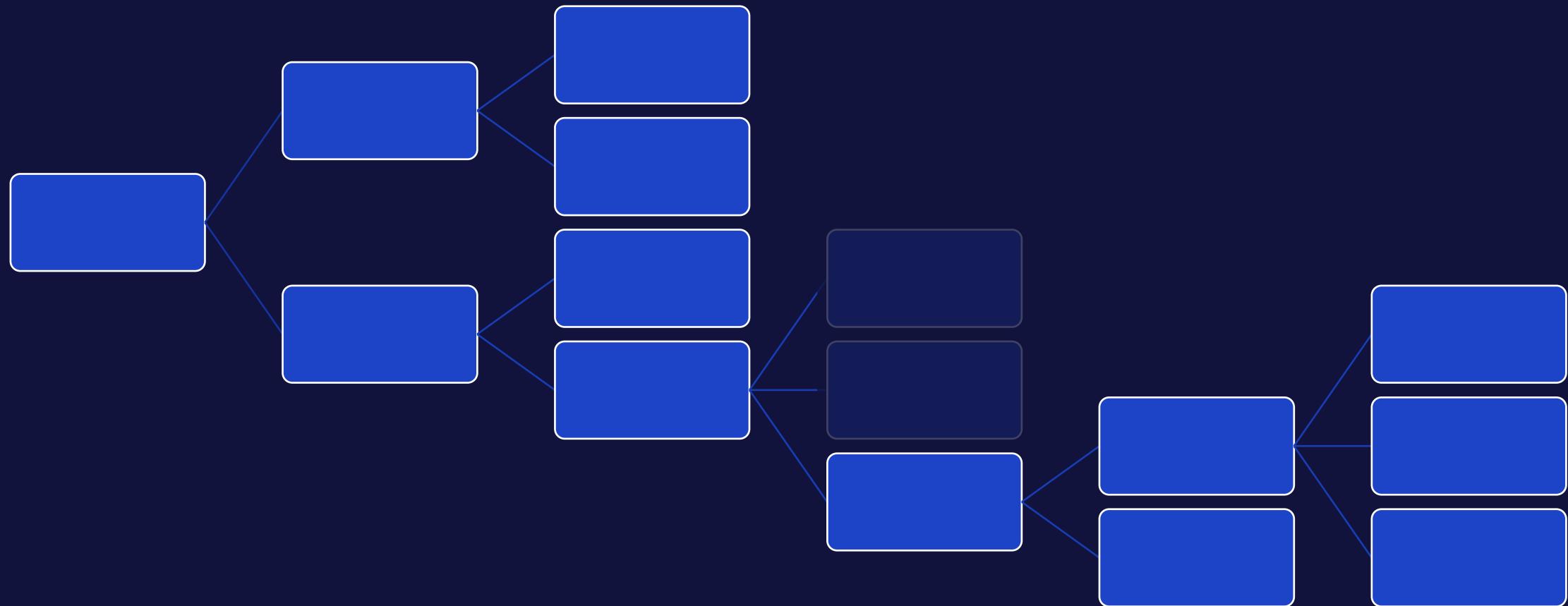
Anatomy of routing

/login



Anatomy of routing

/profile



<> HomePage and UserDetailsPage



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<> MainLayout



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<> UsersTable Page and UserDetails Page

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-
- /users
-

EoD 2

Hooks



Most common react hooks

- **useId:**
- **useState:**
- **useMemo:**
- **useEffect:**
- **useRef:** **does not**

<> useRandom



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<> useWindowTitle

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Error handling

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- errorElement

<> useThrowIfNetworkUnavailable

-
-

TypeScript Generics



TypeScript Generics

```
interface ContainerFor<TType> {  
  id: string  
  value: TType  
}
```

```
const stringContainer: ContainerFor<string> = {  
  id: "123",  
  value: "foo"  
}  
  
const booleanContainer: ContainerFor<boolean> = {  
  id: "123",  
  value: true  
}  
  
interface Name {  
  firstName: string  
  lastName: string  
}  
const objectContainer: ContainerFor<Name> = {  
  id: "123123",  
  value: {  
    firstName: "Test",  
    lastName: "Testington"  
  }  
}
```

TypeScript Generics

```
interface ContainerFor<TType extends string | boolean> {  
  id: string  
  value: TType  
}
```

```
const stringContainer: ContainerFor<string> = {  
  id: "123",  
  value: "foo"  
}  
  
const booleanContainer: ContainerFor<boolean> = {  
  id: "123",  
  value: true  
}
```

TypeScript Generics

```
interface GenericInterface<T> {
  id: string
  value: T
}

type GenericType<T> = {
  id: string
  value: T
}

const genericFn = <T, T2>(firstArg: T, secondArg: T2) => {
  //...
}

function genericFn2<T, TReturn>(firstArg: T): TReturn {
  //...
}
```

TypeScript Generics with React

```
export interface GenericComponentProps<TType> {
  label: string
  value: TType
}

export const GenericComponent = <TType,>(props: GenericComponentProps<TType>) => {
  // ..
}
```

<> ChoiceField

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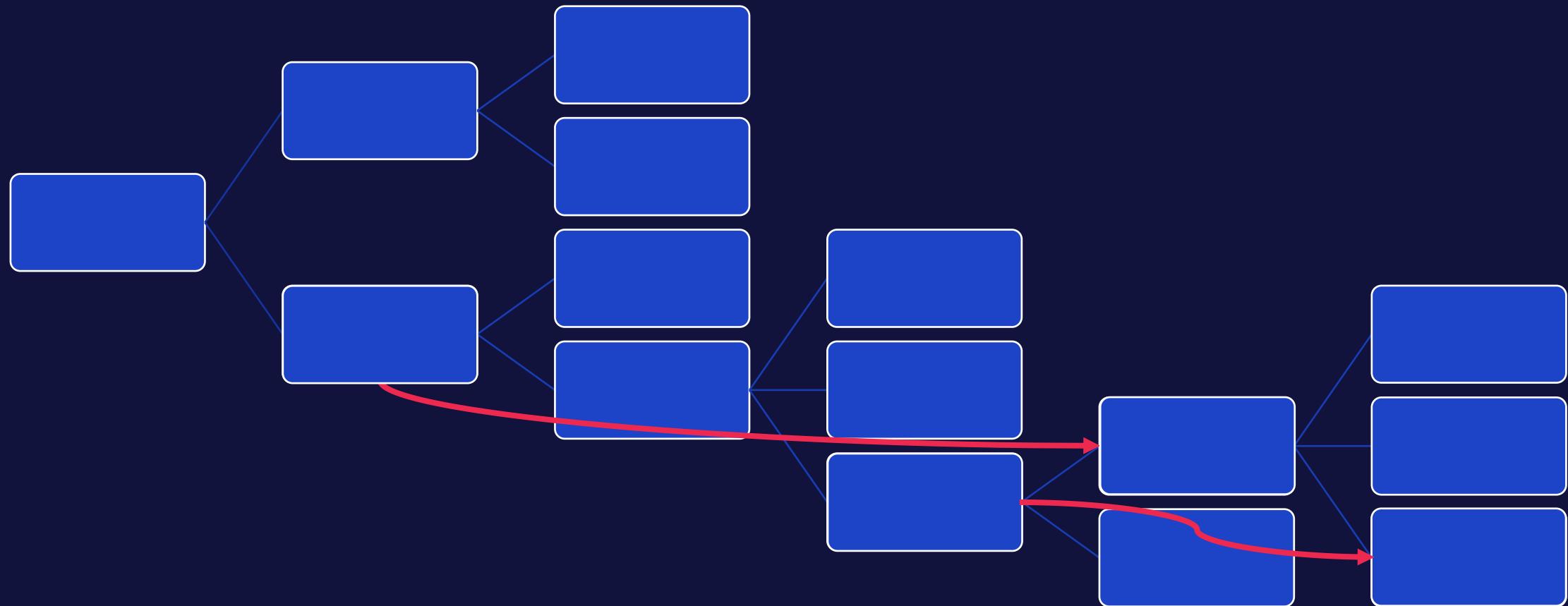
<> ChoiceField

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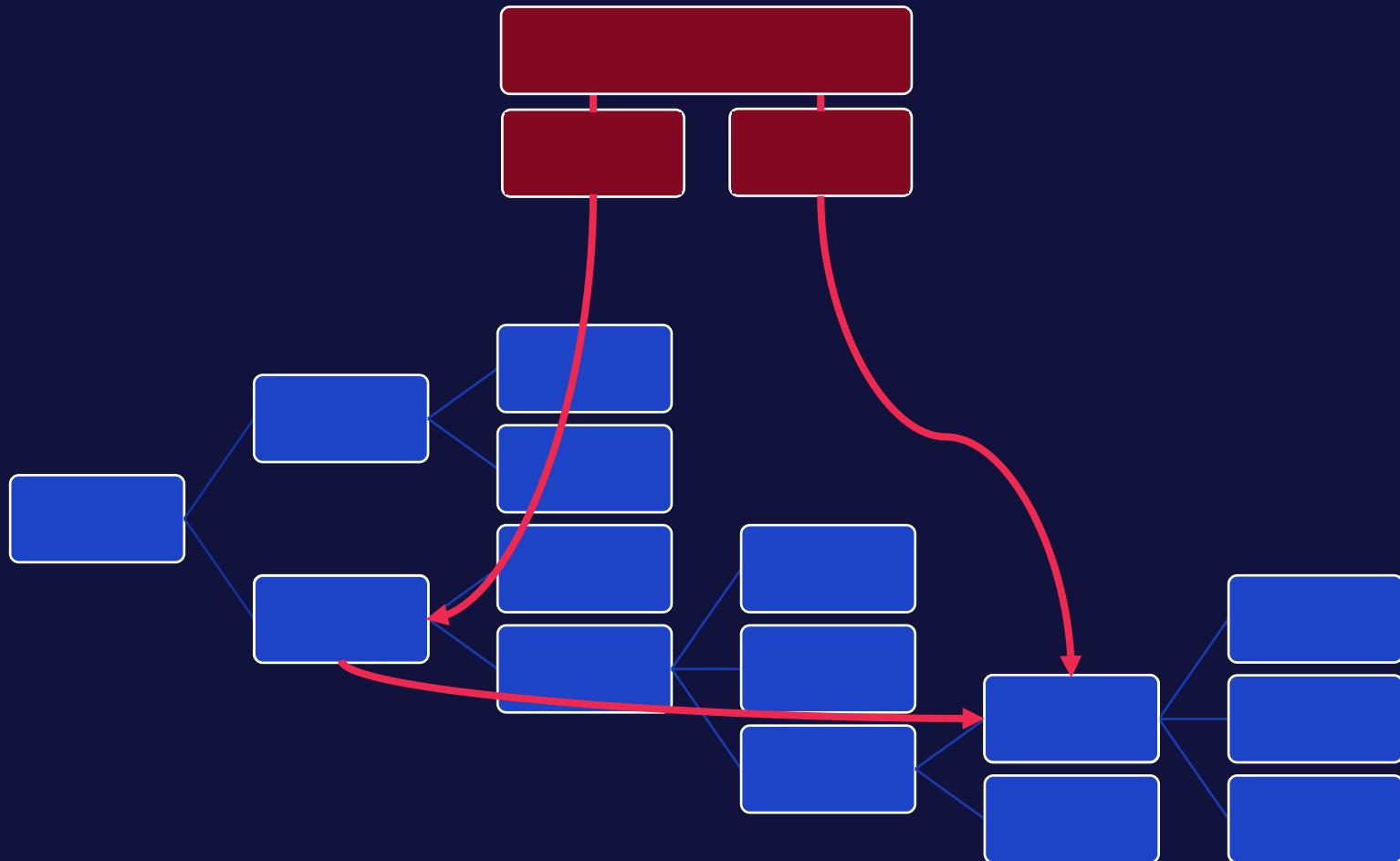
Contexts



Anatomy of Context



Anatomy of Context



<> NavContext



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<> DisableFieldsContext

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State management scopes

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Communication with a server

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Generating clients

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<> ServerSideUserTable

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UserDetails



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Testing



Optimizations

- **Avoid unnecessary re-renders**

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Resources

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