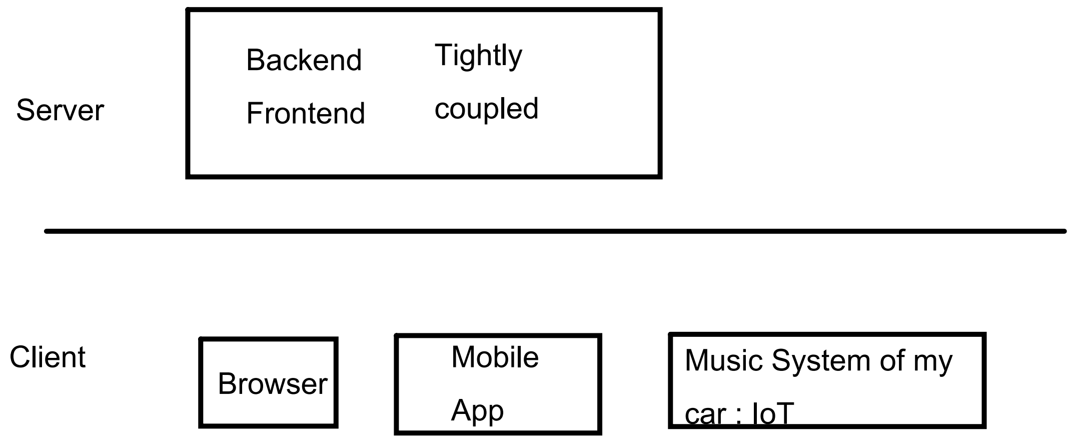
ReactJS : JS lib for building UI

Dedicated,focus, expert lib to create Frontend app

Traditionally



Decouple the backend -& frontend

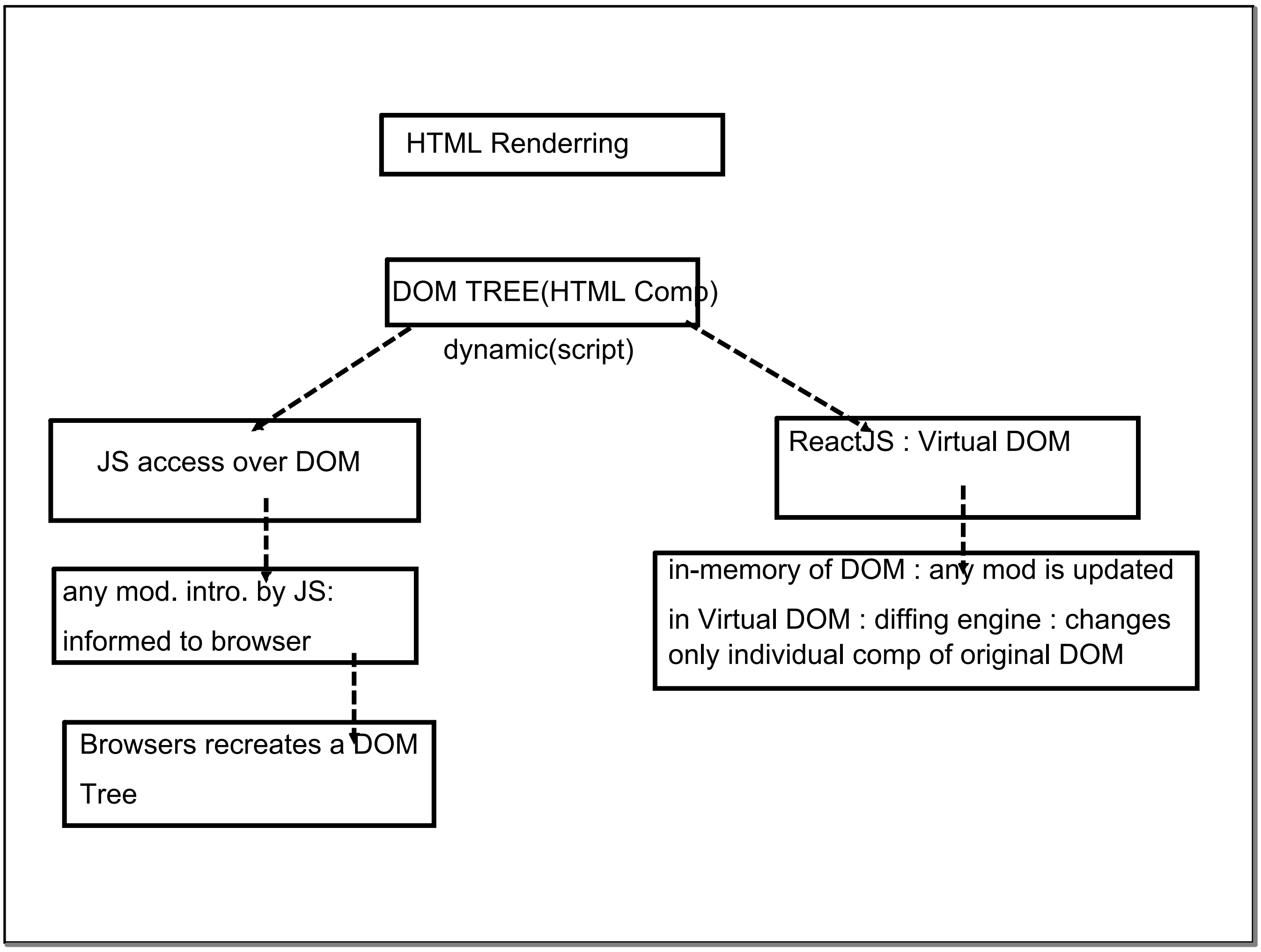
Performance enhancements

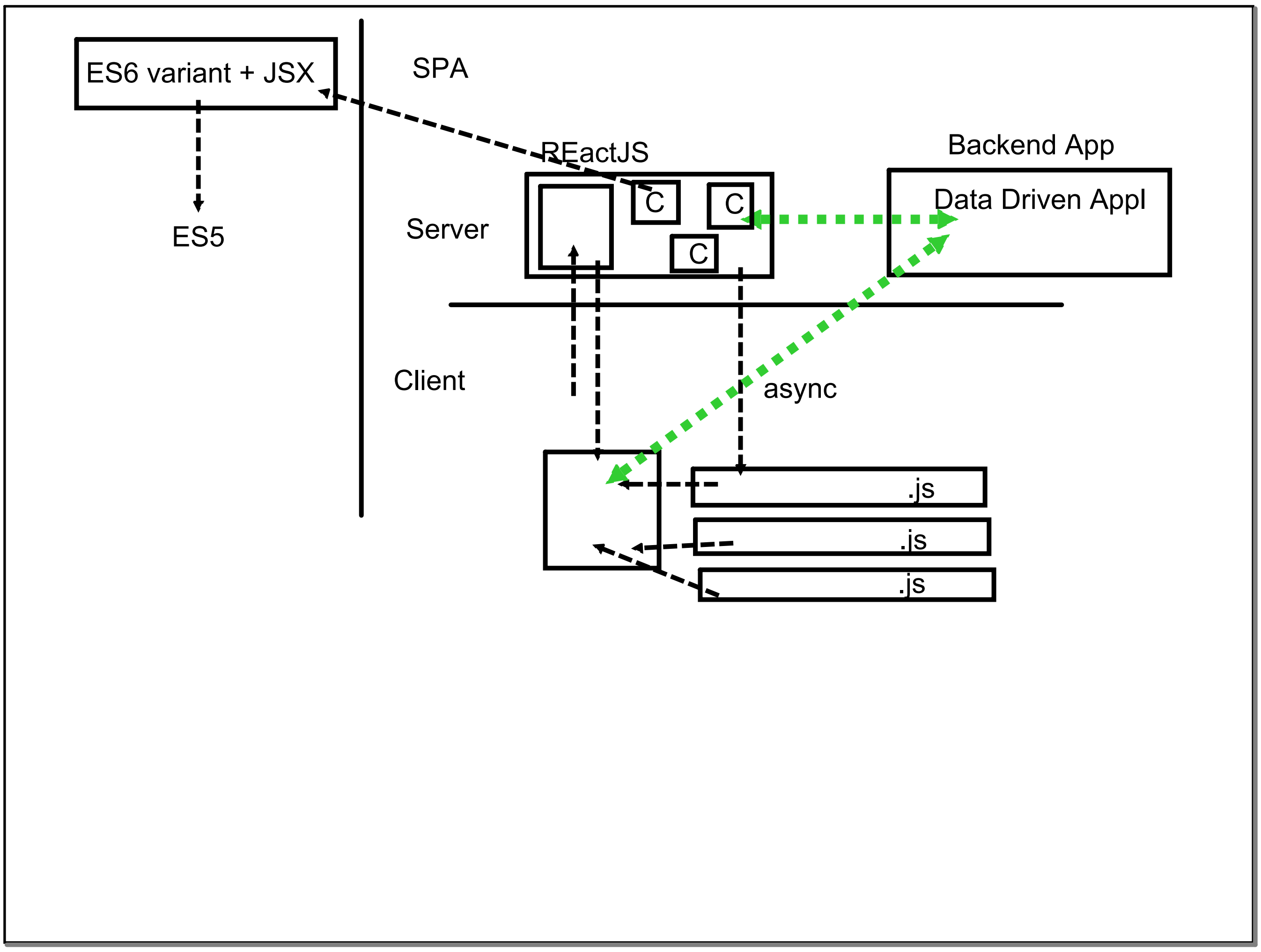
Angular : MVC architecture

ReactJS : V

build large app : data changes frequently with time

DOM Tree : Recreats the DOM tree on every change : Rerenderring


HTML Renderring
DOM TREE(HTML Comp)
dynamic(script)
JS access over DOM
any mod. intro. by JS: informed to browser
Browsers recreates a DOM Tree
ReactJS : Virtual DOM
in-memory of DOM : any mod is updated in Virtual DOM : diffing engine : changes only individual comp of original DOM


ES6 variant + JSX
ES5
SPA
REactJS
C
C
C
Backend App
Data Driven Appl
Server
Client
async
.js
.js
.js

Resource Management

- complete React JS library is in single file
- react.js(vesrion)

Additional lib :

- react-dom.js :(virtual DOM)

JS

NodeJS : npm tool (node package manager)

installing new frameworks,api, cli, tool

structure, config

npm initiate any JS

Manual :

Download all lib/api

structure code

add and define config

Auto : Tool by Facebook

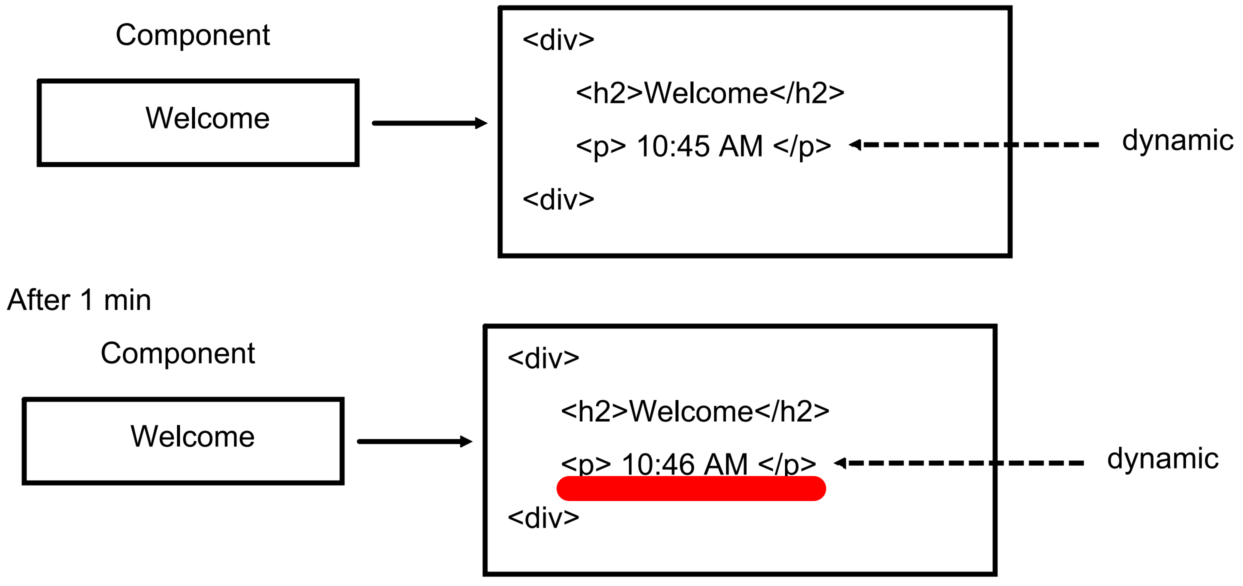
create-react-app (cli)

```
>npm i -g <tool-name>
>npm i -g create-react-app
```

Component based programming : create reusable HTML components (JS logic)

# custom HTML tag

# Javascript function : generates output every time it is invoked (managed & modelled by Virtual DOM)



```
<div>
    <h2>Welcome</h2>
    <p> 10:45 AM </p>
<div>
```

```
<div>
    <h2>Welcome</h2>
    <p> 10:46 AM </p>
<div>
```

Components :

1. Traditional JS : functions
2. ES6 std + JSX (create a class)

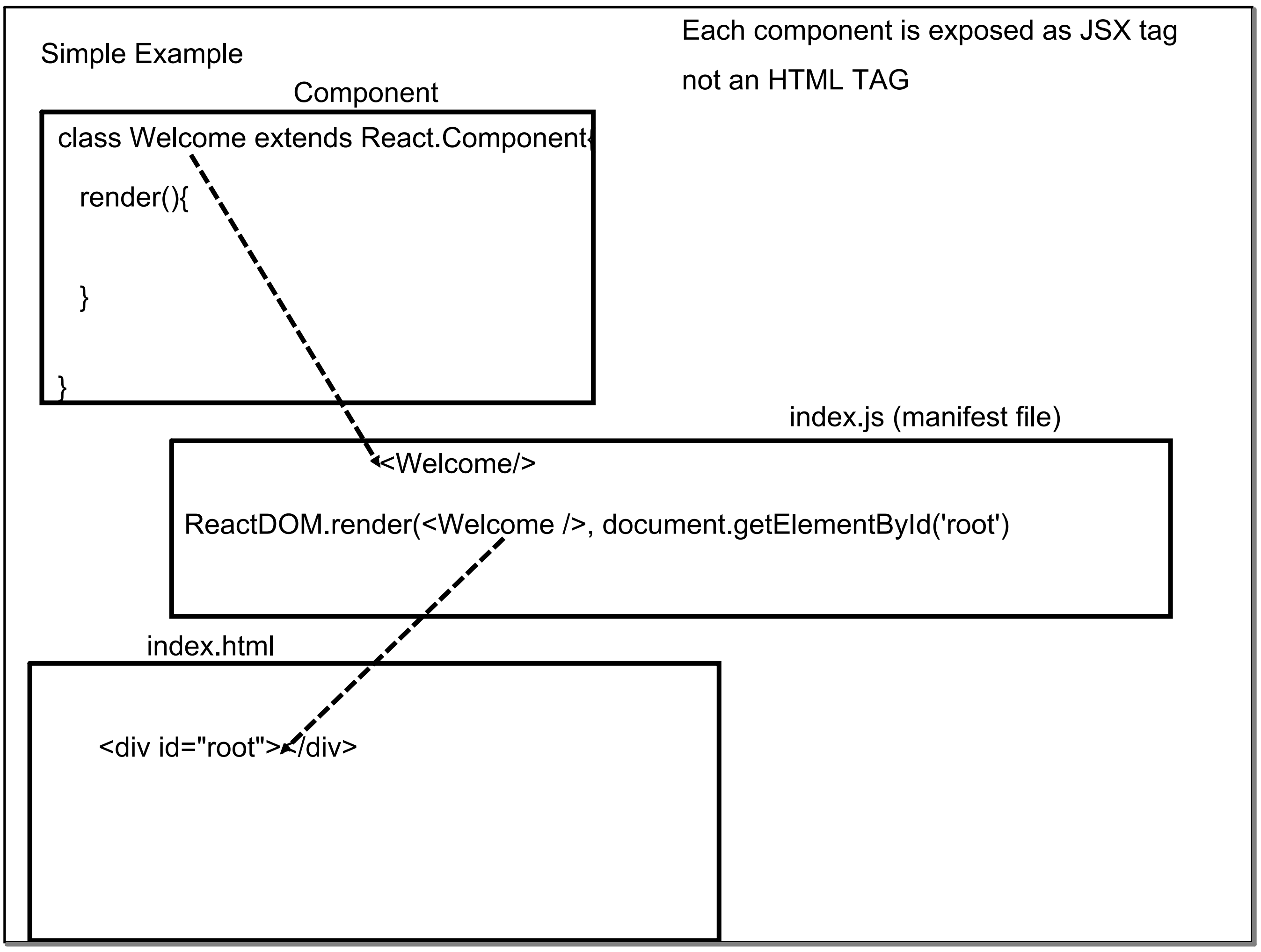
Create a React Application

```
>create-react-app <project-name>
```

create a JS class and inherit class React.Component

In package.json : add new lib

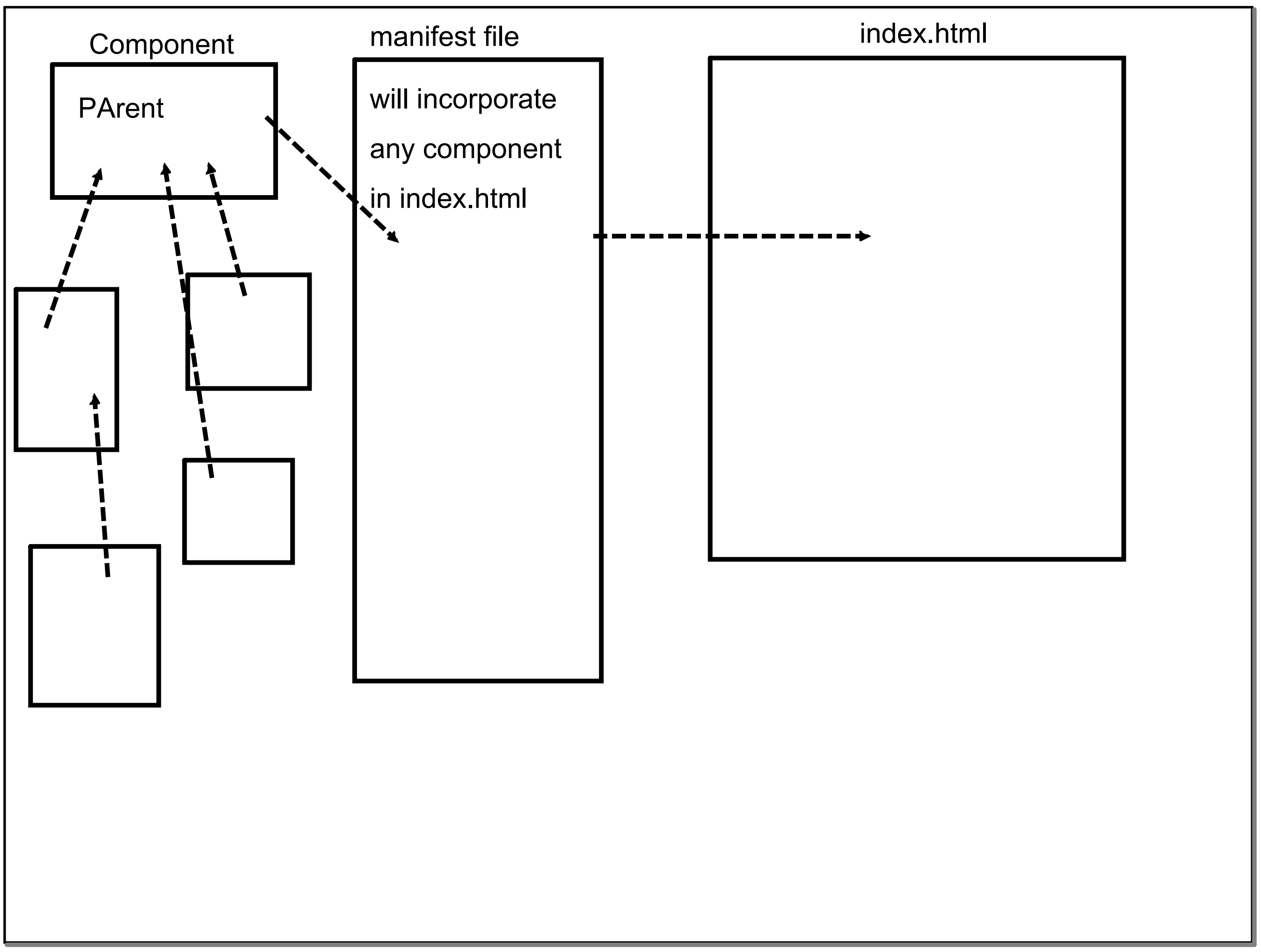
```
>npm install
```

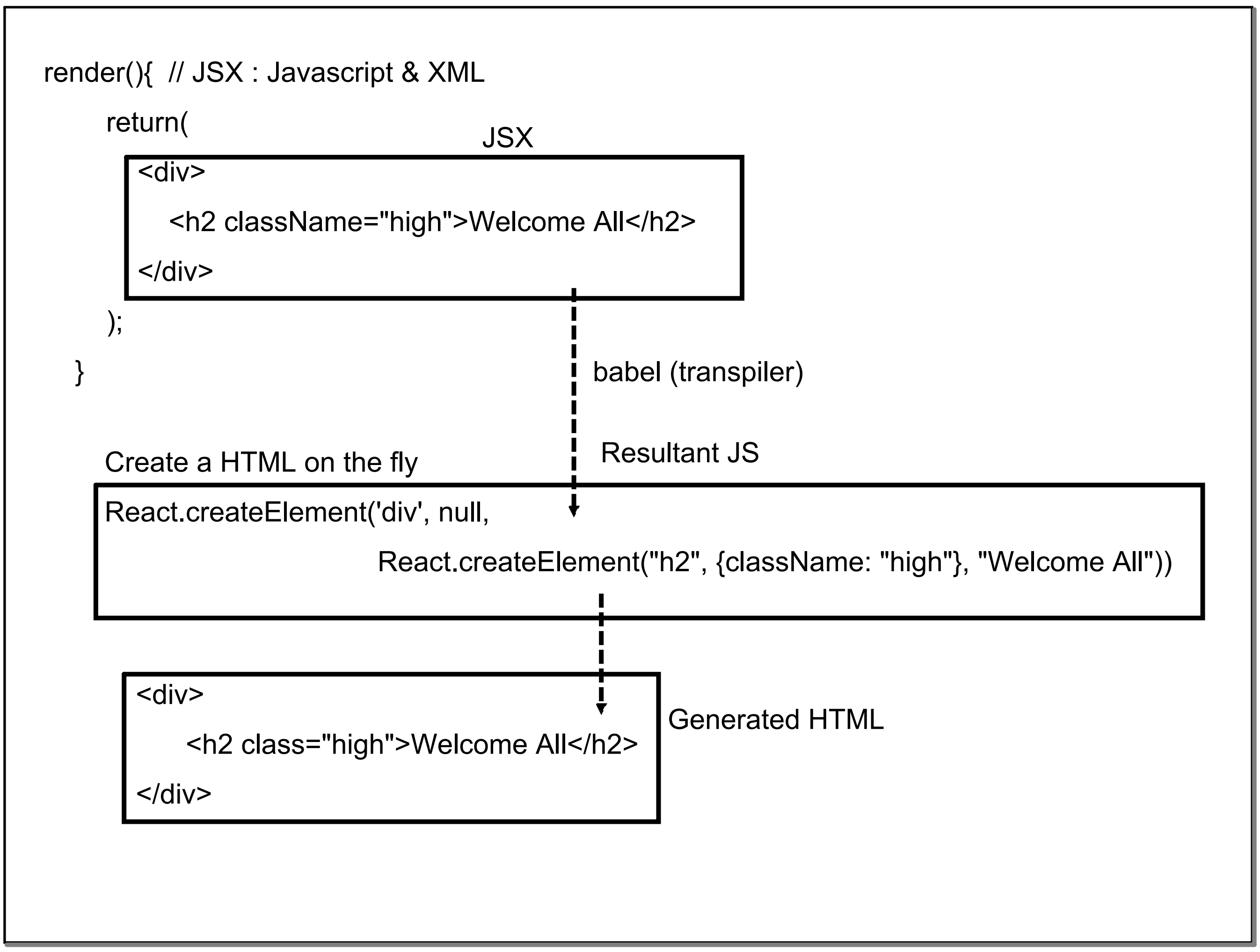


```
class Welcome extends React.Component
  render(){

  }

}
```

```
<Welcome/>

ReactDOM.render(<Welcome />, document.getElementById('root')
```

```
<div id="root"></div>
```


Component
PArent
manifest file
will incorporate
any component
in index.html
index.html



```
render(){  // JSX : Javascript & XML
       return(
          <div>
              <h2 className="high">Welcome All</h2>
          </div>
       );
   }
```

```
React.createElement('div', null,
                              React.createElement("h2", {className: "high"}, "Welcome All"))
```

```
<div>
      <h2 class="high">Welcome All</h2>
</div>
```

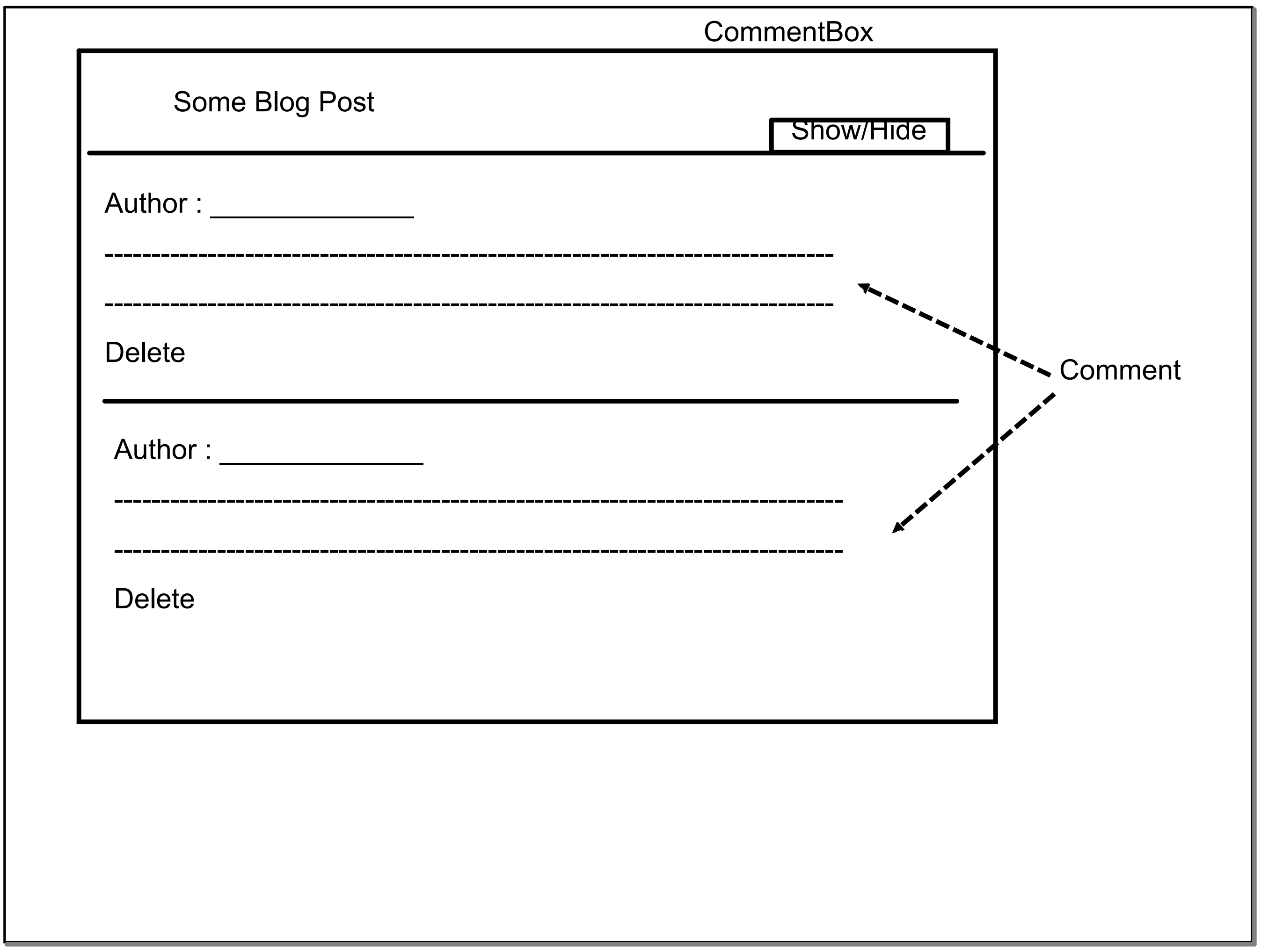
Commenting Engine Use Case

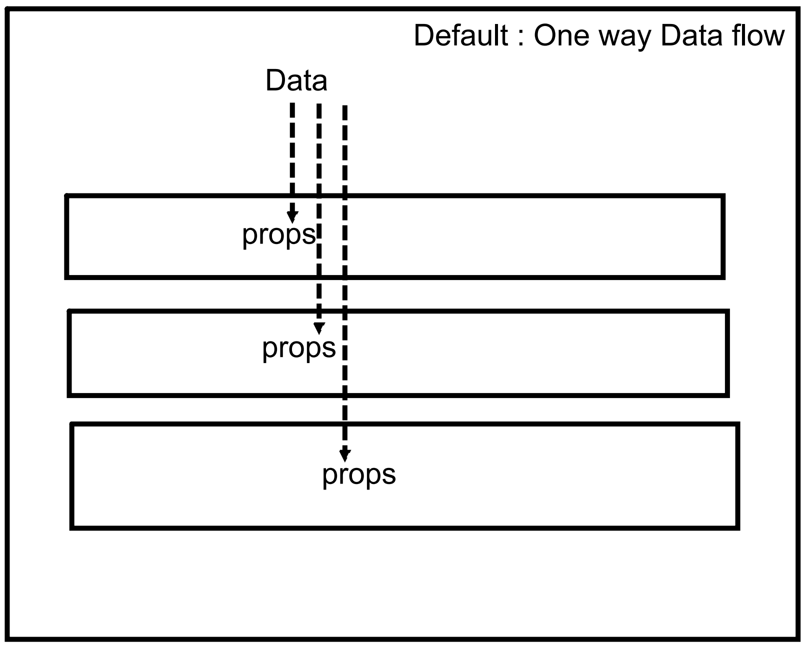
==> Allow visitors to post comments on a blog post

# able to show / hide the comments

# able to add new comments

# delete comments


CommentBox
Some Blog Post
Show/Hide
Author : ______________
Delete
Author : ______________
Delete
Comment



Each React Component has inbuilt object that hold the props (values passed from parent as attributes)

Child/Any Component can define default values for prop

# How to handle the events
# state

Manipulate DOM

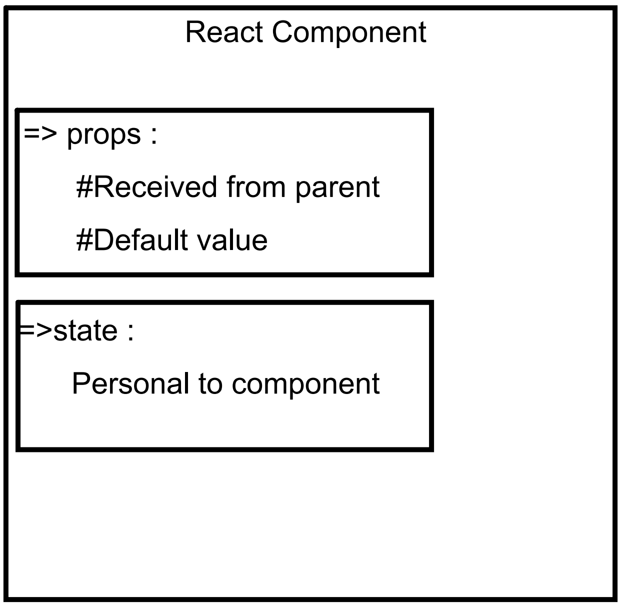
1. Traditional : Direct/Manually DOM Manipulation,(Plain, Jquery)

```
    $('.show_hide_btn').on('click', function(){
        $('.comment-list').show();
    })
    $('.show_hide_btn').on('click', function(){
        $('.comment-list').hide();
    })
```

Complete DOM Tree will be re-renderer

2. Indirect DOM Manipulation:

ReactJS : modify component state object in response to user event and let React handle updates to DOM (Virtual DOM + Diffing Engine)



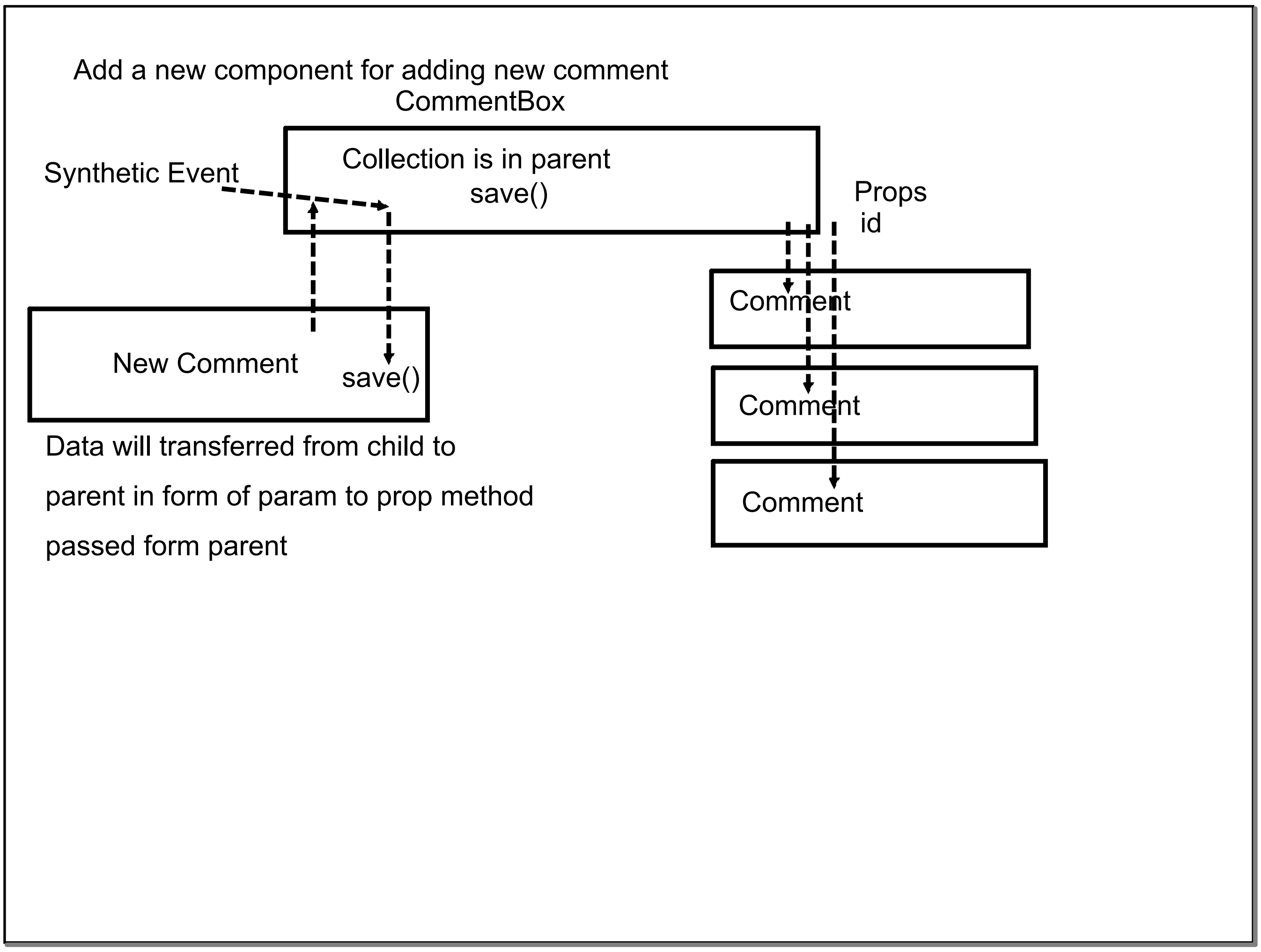
We cannot manually call render method for UI change

React handles the call of render method

When REACT calls render method

# when there is a change in:

1. state object
2. props


Add a new component for adding new comment
CommentBox
Collection is in parent
save()
Synthetic Event
Props
id
Comment
Comment
Comment
New Comment
save()
Data will transferred from child to
parent in form of param to prop method
passed form parent

ref : attribute that asks for a callback function : function gets called on render

: function will recieve that component as parameter

Making a React App talk with backend server

# Assume a backend server exposing REST endpoint

# All interaction needs to take place async (AJAX)

# need the support JQuery

1. add CDN Link of Jquery in index.html
2. Add Jquery Lib to React

React Component Lifecycle (Hooks/phases)

Hooks methods : callback methods

get called auto as per the phases

Need a provision to continously

poll for new comments from other users

Timer facility will allow to schedule any activity

constructor

componentWillMount() only once

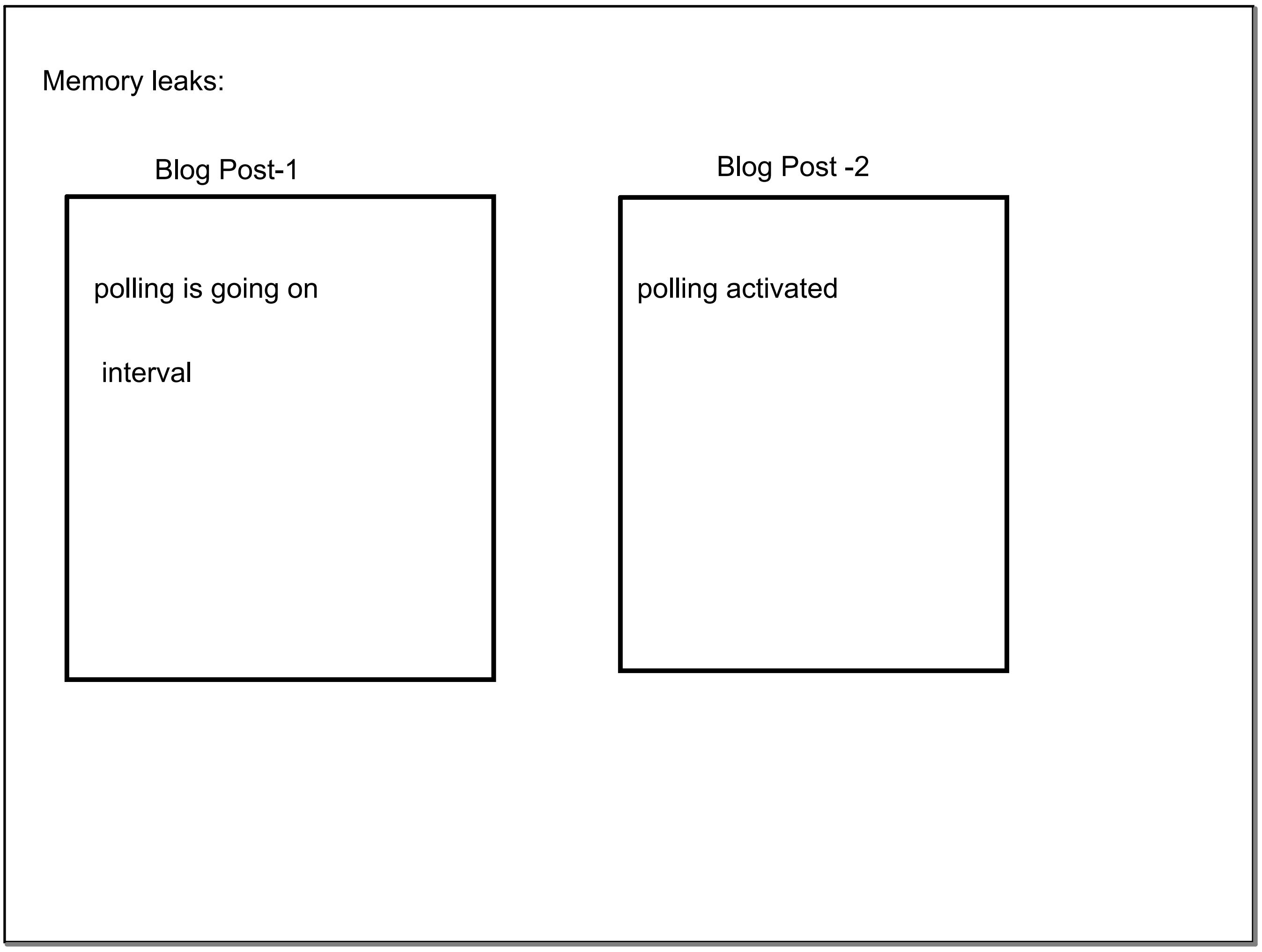
render

Schedule the call for _fetchComments()

componentDidMount()

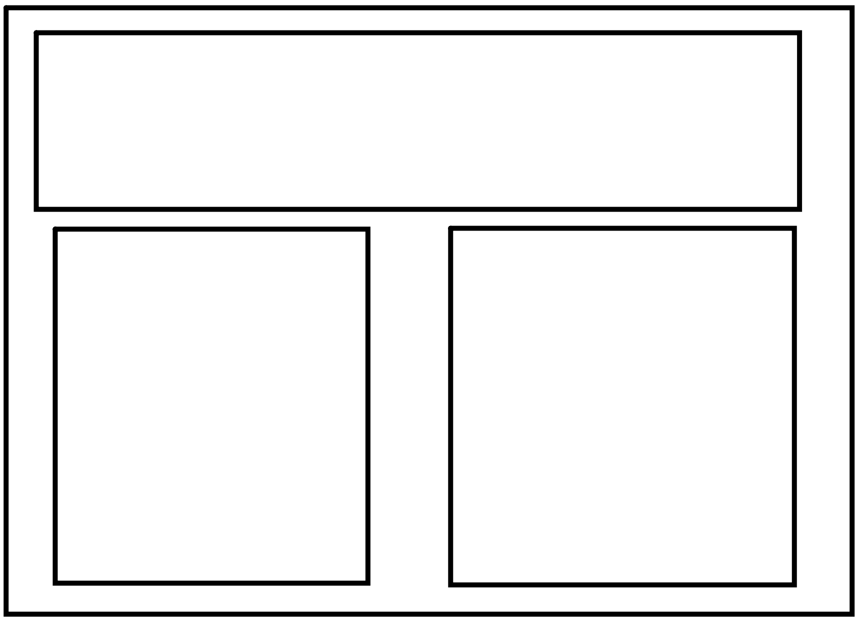
componentWillUnMount()

whenever a component is about to be removed from DOM Tree


Memory leaks:
Blog Post-1
polling is going on
interval
Blog Post -2
polling activated

Additional Library : react-router-dom

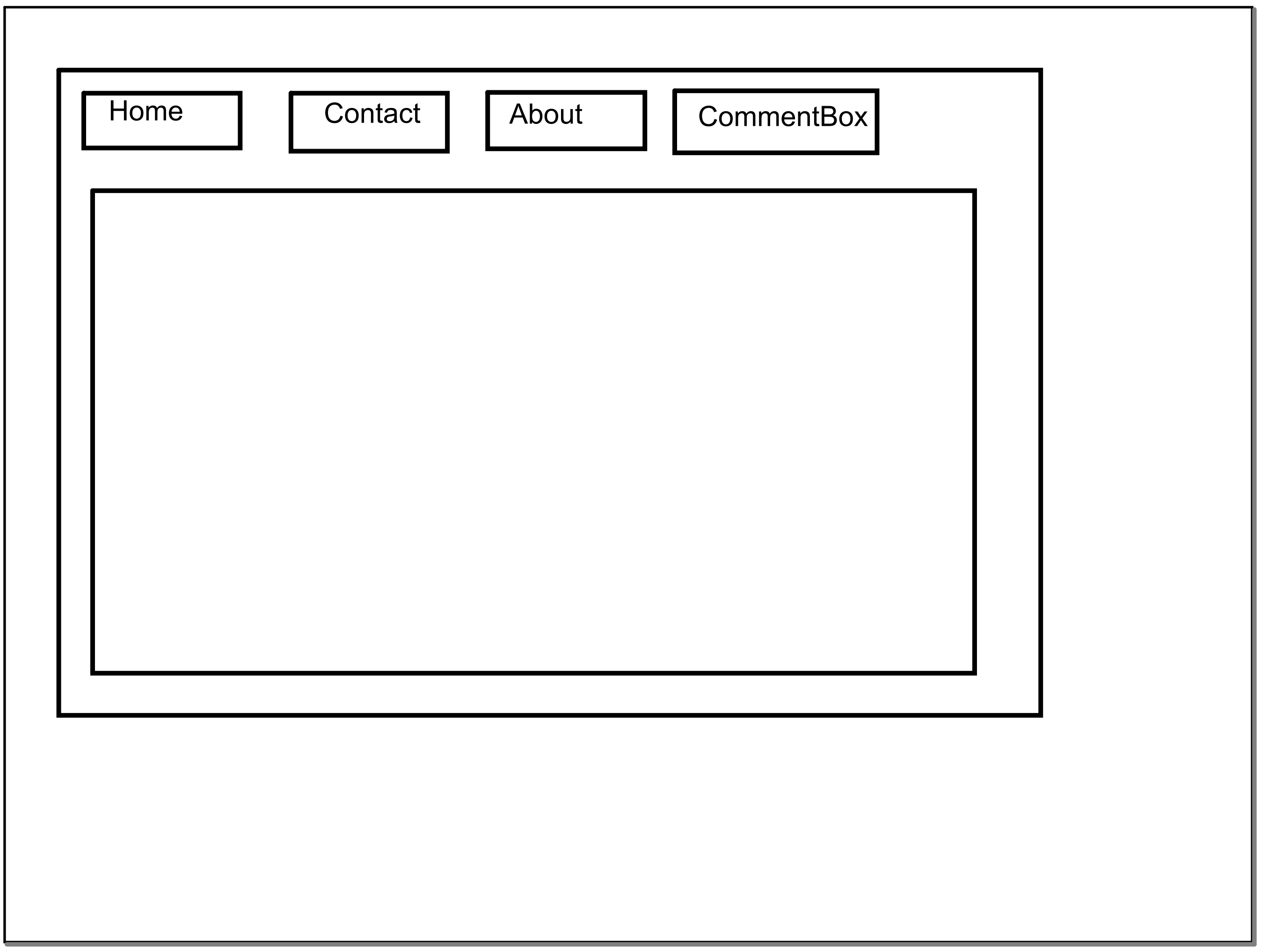
Route, Link, BrowserRouter



NavLink

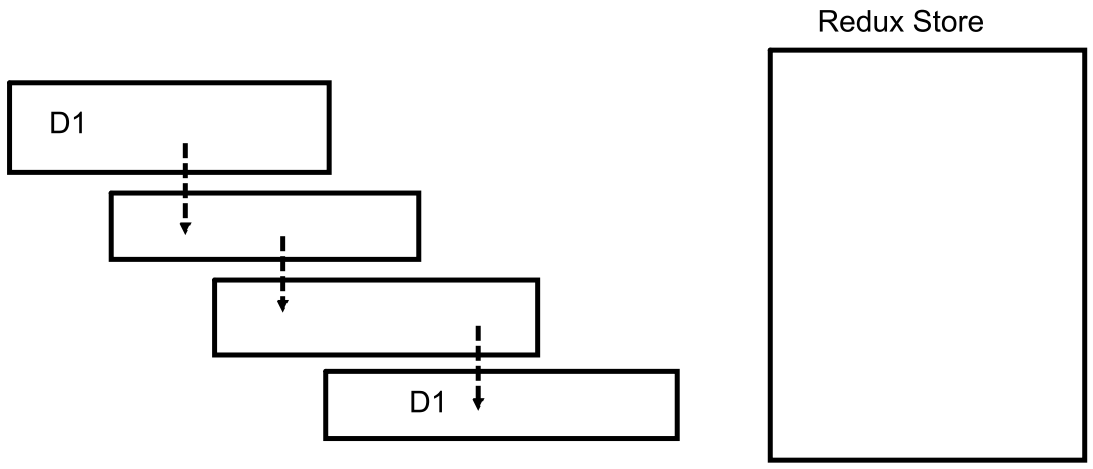
Auto detect the active

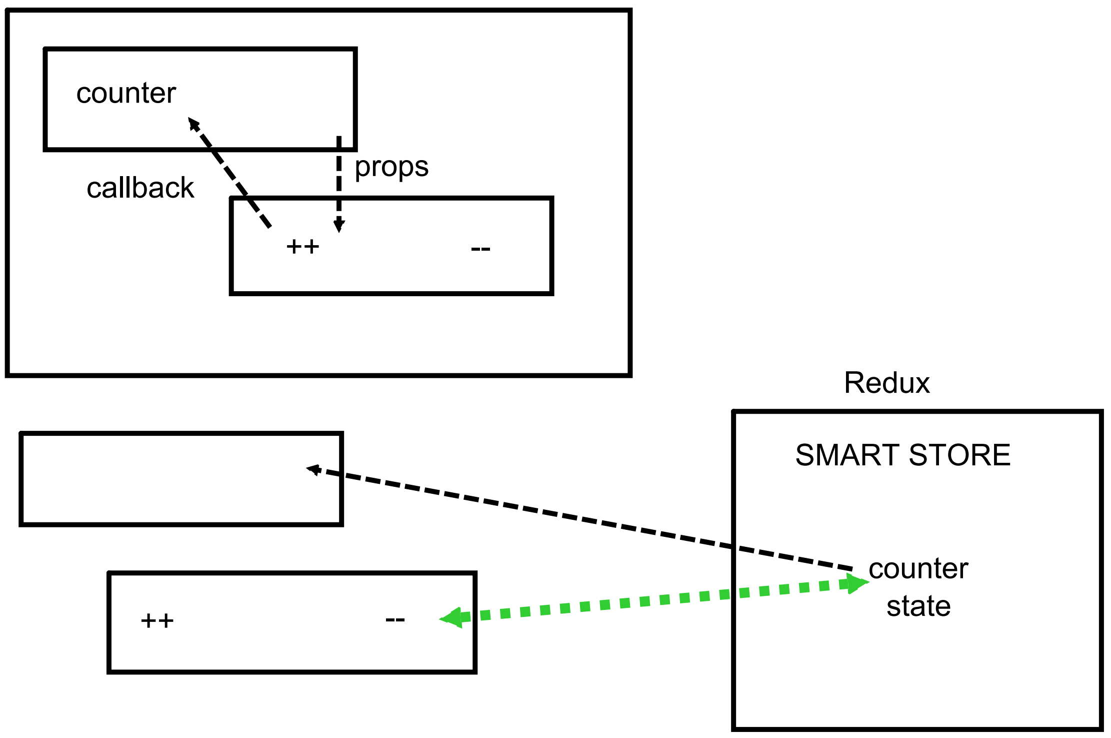
component : add dynamically a css class


Home
Contact
About
CommentBox

Flux Design Pattern :

Redux Framework (Library)

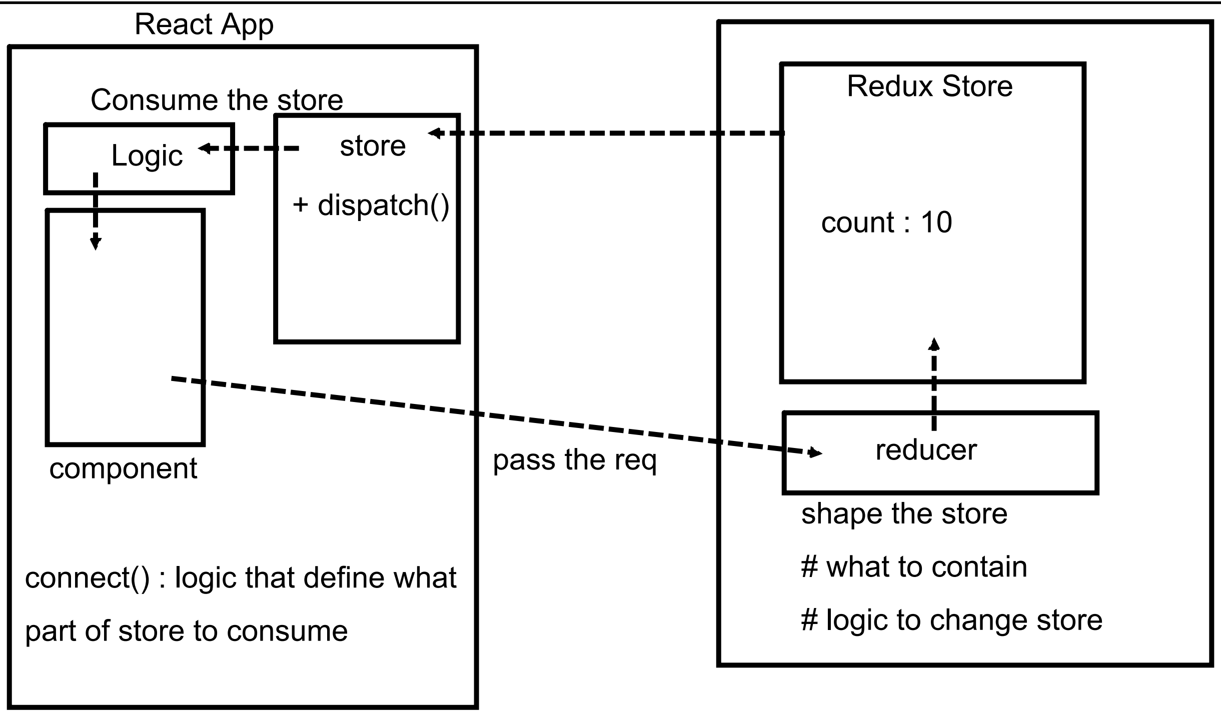




Two Lib:

Redux : store

React-Redux : plumbing library



# Only reducer can change the status of store: change the store data

# Every component consuming store data will auto recieve call back function : dispatch()

# on call of dispatch : reducer is called : reshape the store