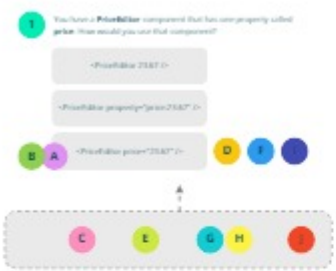
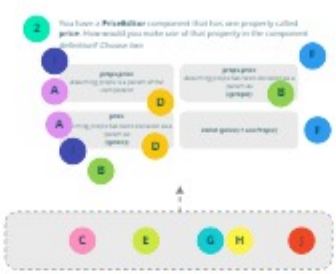
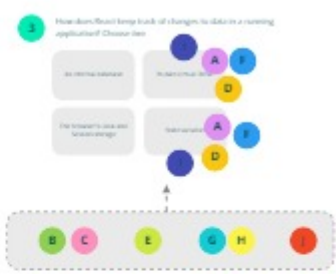

1
You have a PriceBiker component that has user property called price. How would you use that component?
<PriceBiker 2587 />
<PriceBiker property="price:2587" />
<PriceBiker price="2587" />
YES
NO

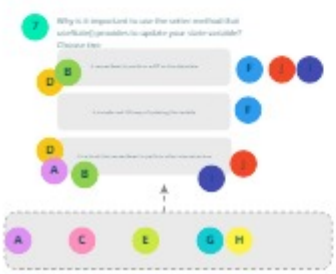

2
You have a PriceBiker component that has user property called price. How would you make sure all that property in the component definition? Choose two
prop.price
prop={price}
price
{price}
const price = user.bigger
YES
NO


3
How does React keep track of changes to data in a running application? Choose two
YES
NO

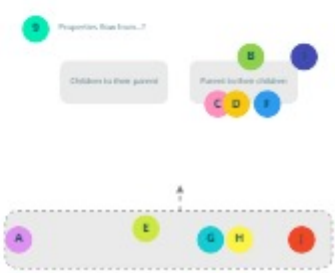

4
How does React's virtual DOM recognize when something has changed?
YES
NO


5
Yes or No?
You can modify a state variable by modifying it directly
YES
NO


6
State variables are declared using which syntax?
const variable = useState(initialValue)
const variable = useState()
YES
NO


7
Why is it important to use the setter method that useState() provides to update your state variable? Choose two
YES
NO


8
What does React call the flow of data changes from child components to parents?
Reverse flow
Inverse flow
Unidirectional flow
YES
NO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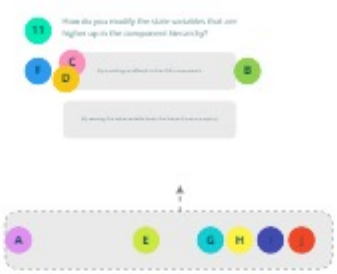
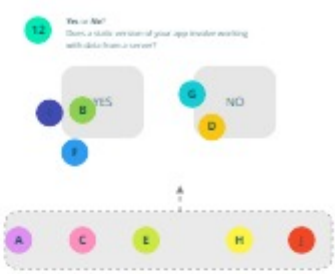
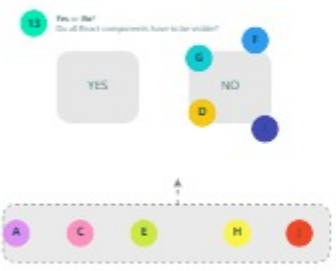
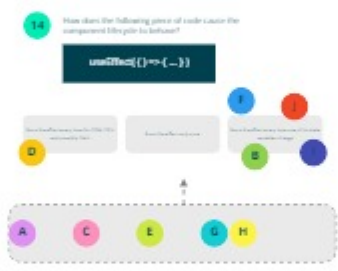
Properties flow from...?
Children to their parent
Parent to their children
YES
NO

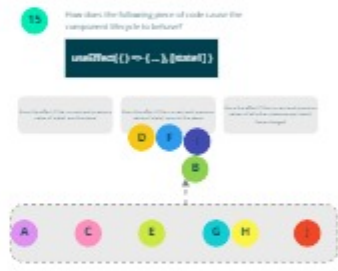

10
Where should state data be placed in a component hierarchy?
In the highest component in the hierarchy
In the highest common component in the hierarchy
In the same component where the data is being used
YES
NO

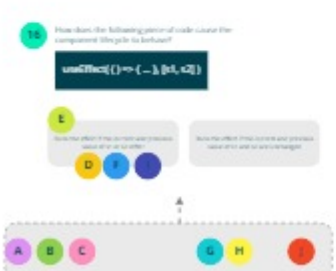

11
How do you modify the state variables that are higher up in the component hierarchy?
YES
NO

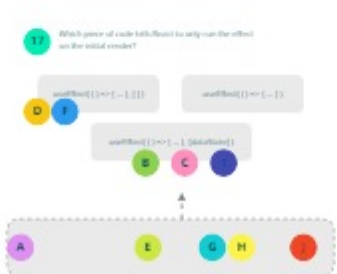

12
Yes or No?
Does a state version of your app involve working with data from a server?
YES
NO

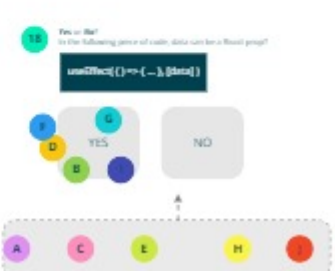

13
Yes or No?
Do all React components have to be visible?
YES
NO


14
How does the following piece of code cause the component lifecycle to behave?
useEffect(() => { ... })
YES
NO


15
How does the following piece of code cause the component lifecycle to behave?
useEffect(() => { ... }, [state])
YES
NO


16
How does the following piece of code cause the component lifecycle to behave?
useEffect(() => { ... }, [x1, x2])
YES
NO


17
Which piece of code tells React to only run the effect on the initial render?
useEffect(() => { ... }, [])
useEffect(() => { ... })
useEffect(() => { ... }, [dataState])
YES
NO


18
Yes or No?
In the following piece of code, data can be a React prop?
useEffect(() => { ... }, [data])
YES
NO

1

You have a **PriceEditor** component that has one property called **price**. How would you use that component?

<PriceEditor 23.67 />

<PriceEditor property="price:23.67" />

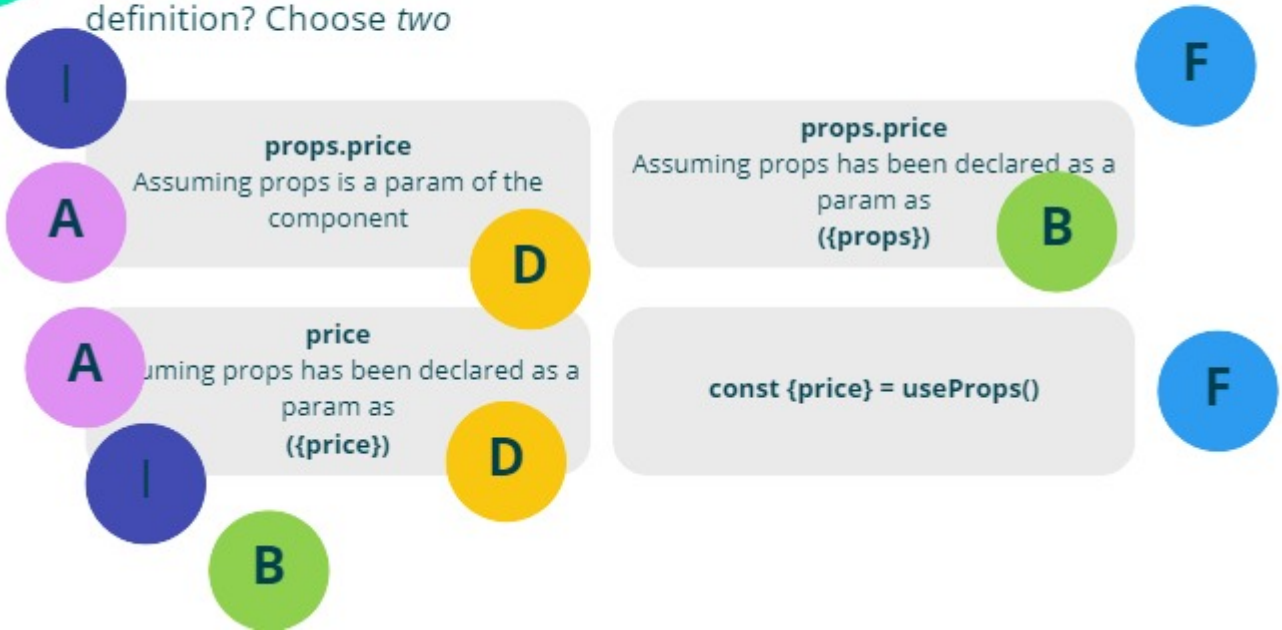
B A

<PriceEditor price="23.67" />

D F I

2

You have a **PriceEditor** component that has one property called **price**. How would you make use of that property in the component definition? Choose *two*



3

How does React keep track of changes to data in a running application? Choose *two*

An internal database

Its own virtual DOM

The browser's Local and Session storage

State variables

4

How does React's virtual DOM recognize when something has changed?

State hooks cause React to check current and previous state values

A

I

Scanning your code's state variables

Use of its diff algorithm

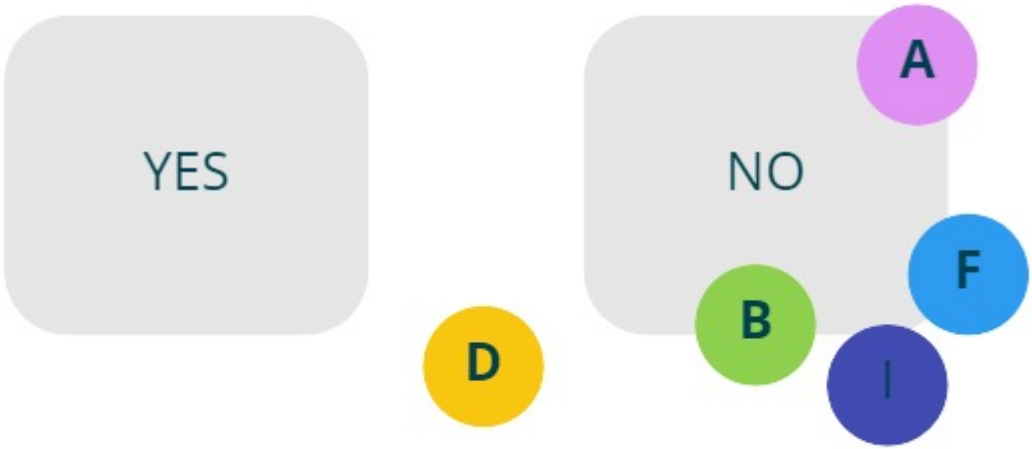
B

D

5

Yes or ***No***?

You can modify a state variable by modifying it directly.



6

State variables are declared using which syntax?

const variable = <some initial value>

const variable = useState()

B t [variable, setterForVariable] = useState()

D F I A

7

Why is it important to use the setter method that useState() provides to update your state variable?
Choose *two*

It causes React to perform a diff on the state data

It's a safer and OO way of updating the variable

It's a hook that causes React to perform other internal actions

8

What does React call the flow of data changes from child components to parents?

Reverse flow

G

D

B

Inverse flow

F

Unidirectional flow

9

Properties flow from...?

Children to their parent

B

I

Parent to their children

C

D

F

10

Where should state data be placed in a component hierarchy?

In the highest component in the hierarchy

B

D

In the highest common component in the hierarchy

I

F

In the same component where the data is being used

11

How do you modify the state variables that are higher up in the component hierarchy?

F

C

D

By providing a callback to the child components

B

By passing the state variable down the hierarchy as a property

12

Yes or ***No***?

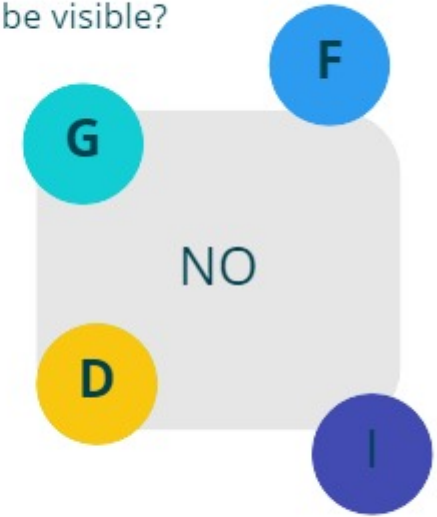
Does a static version of your app involve working with data from a server?

13

Yes or ***No***?

Do all React components have to be visible?

YES



14

How does the following piece of code cause the component lifecycle to behave?

```
useEffect( ( ) => { ... } )
```

F

J

Runs the effect every time for CDM, CDU and possibly CWU

Runs the effect only once

Runs the effect every time one of its state variables change

D

B

I

15

How does the following piece of code cause the component lifecycle to behave?

```
useEffect( ( ) => { ... }, [state1] )
```

Runs the effect if the current and previous value of state1 are the same

Runs the effect if the current and previous value of state1 are not the same

Runs the effect if the current and previous values of all other states except state1 have changed

16

How does the following piece of code cause the component lifecycle to behave?

```
useEffect( ( ) => { ... }, [s1, s2] )
```

E

Runs the effect if the current and previous value of s1 or s2 differ

D F I

Runs the effect if the current and previous value of s1 and s2 are unchanged

17 Which piece of code tells React to only run the effect on the initial render?

useEffect(( ) => { ... }, [ ])

D F

useEffect(( ) => { ... })

useEffect(( ) => { ... }, [dataState])

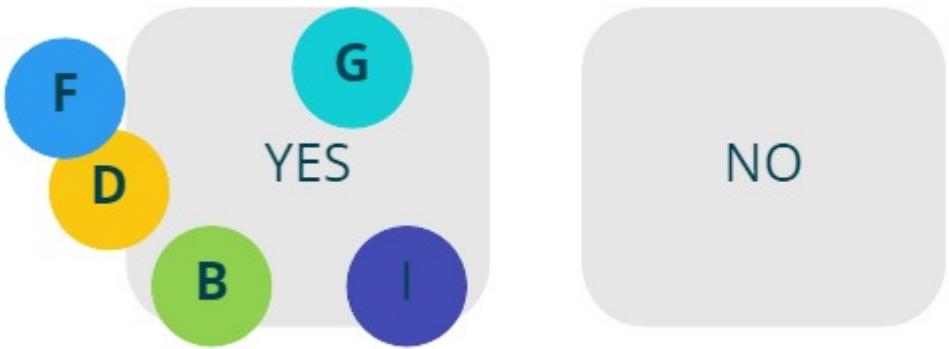
B C I

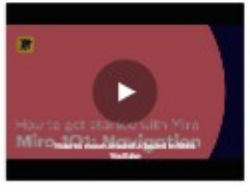
18

Yes or ***No***?

In the following piece of code, data can be a React prop?

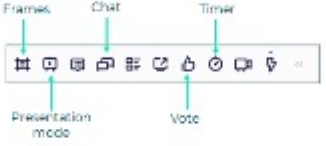
```
useEffect( ( ) => { ... }, [data] )
```

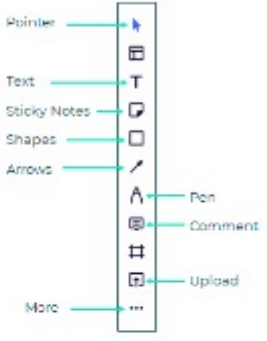




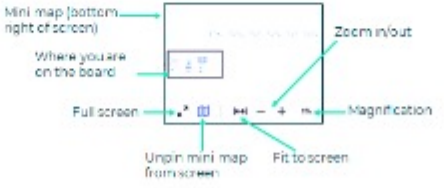
Basic navigation tools...

- **Main navigation tools (visible to everyone) are on left-hand side of screen**
- **Can use keyboard shortcuts – e.g. CTRL-C, CTRL-C**
- **Tools (bottom left of screen) visible to you**





Basic navigation tools...



Add some post its!

Press N to create your own sticky notes

Hello from Dom

This is Mike

Kawabunga

Hello!

Draw something

Press P to create your art

Write something

Press T to express your thoughts

OK

Lots of notes

Hello!

arh nutts

Objectives for this event

Thinking in React

Build stuff

Learn ReactJS with details

Regarding webcams

Regarding mute

Frequency of breaks

9:30
Tea Coffee:
15min
lunch: 60
16:30

Regarding group participation

Regarding questions

Anything else

Name	Organisation	Role	Project Types
Dom Tautvydas	Howdens DDT	Junior Digital Developer Digital Developer	Desktop and Mobile apps C#, Java for 5 years, front and back end, focused on engineering and timber industries. Enjoy game dev.
Paul Tony Forrest		Senior Software Developer Technical lead developer 15 years .net experience C# ,Sql Full stack developer Web development	Sitecore CMS development Websites. CMS's c# developer with javascript, jquery experience , css, sass, html etc
MIKE		DIGITAL DEVELOPER (MID)	• DESKTOP (IN THE PAST) • NOW MORE WEB BASE • C# DOTNET MOSTLY (3.5 YRS) SOME JAVA, NOT MUCH FRONT END. PYTHON & C++ BEFORE THAT IN AUDIO • SOME EXP IN JS ETC BUT NOT MUCH

1 You have a **PriceBiker** component that has user property called **price**. How would you use that component?

- <PriceBiker 2587 />
- <PriceBiker property="price:2587" />
- <PriceBiker price="2587" /> ✓

2 You have a **PriceBiker** component that has user property called **price**. How would you make use of that property in the component definition? Choose two

- ✓ **props.price** — assuming there is a search array component
- **props.price** — assuming price was sent to server as a param as `/getprice`
- ✓ **price** — assuming price was sent to server as a param as `/getprice`
- **const price = usePrice()**

3 How does React keep track of changes to data in a running application? Choose two

- An internal database
- ✓ In-memory virtual DOM
- The browser's local and session storage
- ✓ State variables

4 How does React's virtual DOM recognize when something has changed?

- State tasks cause React to create a new virtual DOM with the new values
- Updating your users state variables
- ✓ Use of its own algorithm

5 **Yes** or No?
You can modify a state variable by modifying it directly

- YES
- NO ✓

6 **State variables** are declared using which syntax?

- `const variable = useVar.state.value.value`
- `const variable = useState()`
- ✓ `const [variable, setVariable] = useState()`

7 Why is it important to use the setter method that `setState()` provides to update your state variable?

- A new state is created as well as the old state
- It includes all the ways of updating the variable
- ✓ It's the only way React is aware that a state value has changed

8 What does React call the flow of data changes from child components to parents?

- Reverse flow
- Inverse flow ✓
- Unidirectional flow

9 Properties, flow from...?

- Children to their parent
- Parent to their children ✓

10 Where should state data be placed in a component hierarchy?

- In the highest component in the hierarchy
- ✓ In the highest common component in the hierarchy
- In the same component where the data is being used

11 How do you modify the state variables that are higher up in the component hierarchy?

- By sending a callback to the child component ✓
- By sending the state variable from the child component

12 Yes or No?
Does a state version of your app involve working with data from a server?

- YES
- NO ✓

13 Yes or No?
Do all React components have to be visible?

- YES
- NO ✓

14 How does the following piece of code cause the component lifecycle to behave?

```
useEffect( () => { ... } )
```

✓

- Runs the effect every time the component renders (mounts and updates)
- Runs the effect once only
- Runs the effect every time one of the state variables changes

15 How does the following piece of code cause the component lifecycle to behave?

```
useEffect( () => { ... }, [state] )
```

- Runs the effect ONLY the very first time the component renders (mounts)
- Runs the effect ONLY the very first time the component renders (mounts) and every time the state changes
- Runs the effect ONLY the very first time the component renders (mounts) and every time the state changes

✓

16 How does the following piece of code cause the component lifecycle to behave?

```
useEffect( () => { ... }, [s1, s2] )
```

✓

- Runs the effect if the current and previous value of s1 or s2 differ
- Runs the effect if the current and previous value of s1 and s2 are changed

17 Which piece of code tells React to only run the effect on the initial render?

✓

- `useEffect( () => { ... }, [] )`
- `useEffect( () => { ... } )`
- `useEffect( () => { ... }, [doSomething] )`

18 Yes or No?
In the following piece of code, data can be a React prop?

```
useEffect( () => { ... }, [data] )
```

✓

- YES
- NO

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You have a **PriceEditor** component that has one property called **price**. How would you use that component?

<PriceEditor 23.67 />

<PriceEditor property="price:23.67" />

<PriceEditor price="23.67" />

2

You have a **PriceEditor** component that has one property called **price**. How would you make use of that property in the component definition? Choose *two*

props.price
Assuming props is a param of the component

props.price
Assuming props has been declared as a param as
({props})

price
Assuming props has been declared as a param as
({props})

const {price} = useProps()

3

How does React keep track of changes to data in a running application? Choose *two*

An internal database

Its own virtual DOM

The browser's Local and Session storage

State variables

4

How does React's virtual DOM recognize when something has changed?

State hooks cause React to check current and previous state values

Scanning your code's state variables

Use of its diff algorithm

5

Yes or *No*?

You can modify a state variable by modifying it directly.

YES

NO

6

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const variable = <some initial value>

const variable = useState()

const [variable, setterForVariable] = useState()

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- It causes React to perform a diff on the state data 
- It's a safer and OO way of updating the variable
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Yes or No?
Does a static version of your app involve working with data from a server?

YES

NO

13

Yes or No?
Do all React components have to be visible?

YES

NO

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17

Which piece of code tells React to only run the effect on the initial render?

```
useEffect( ( ) => { ... }, [ ] )
```

```
useEffect( ( ) => { ... } )
```

```
useEffect( ( ) => { ... }, [dataState] )
```

18

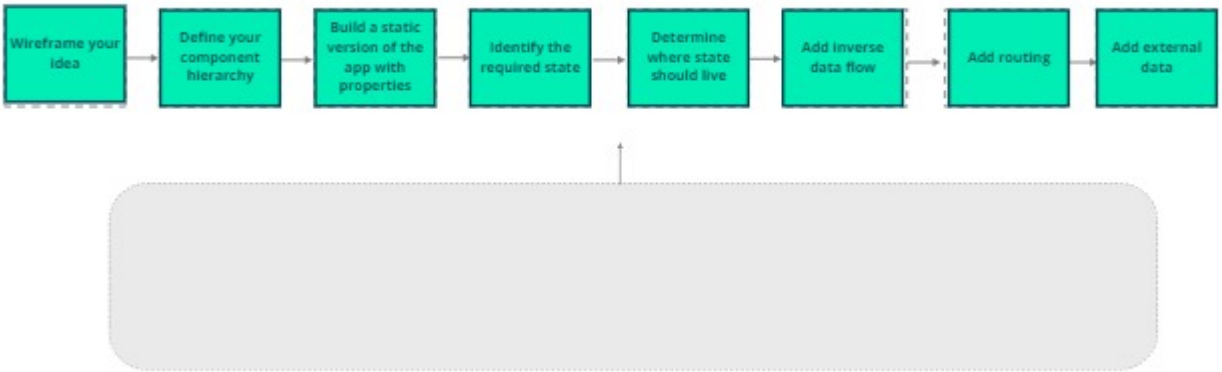
Yes or No?

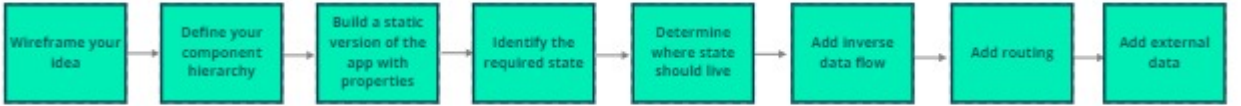
In the following piece of code, data can be a React prop?

```
useEffect( ( ) => { ... }, [data] )
```

YES

NO


Wireframe your idea
Define your component hierarchy
Build a static version of the app with properties
Identify the required state
Determine where state should live
Add inverse data flow
Add routing
Add external data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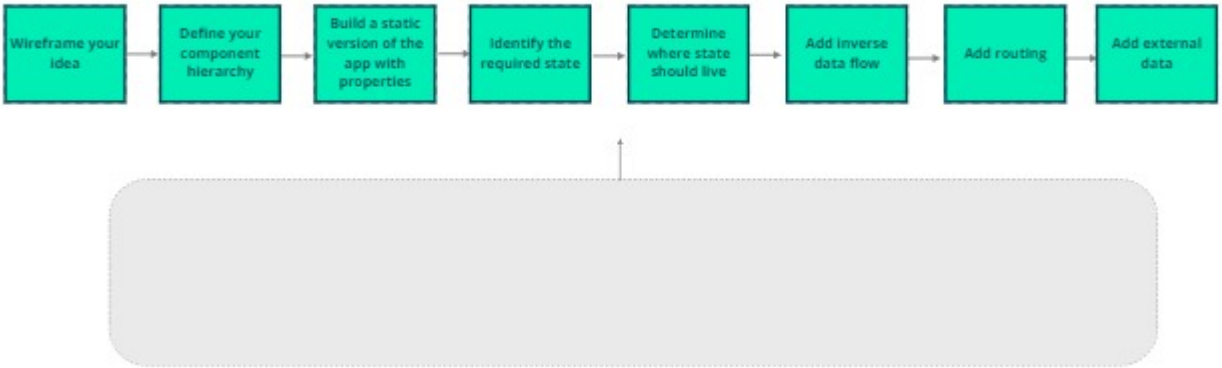
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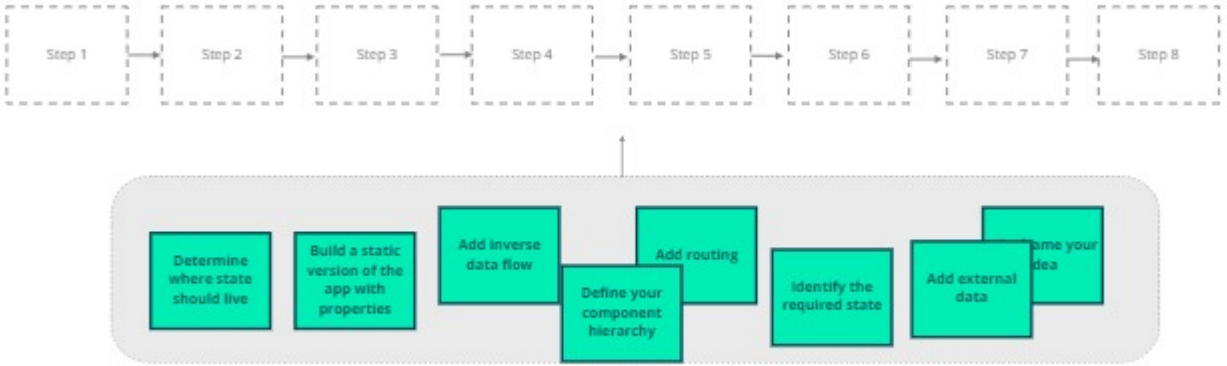
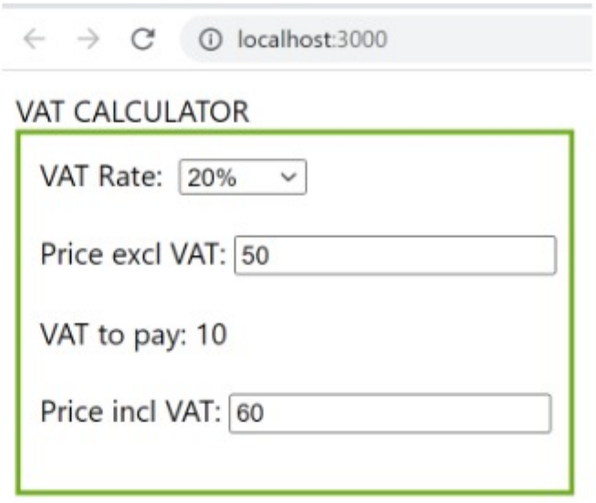

Step 1
Step 2
Step 3
Step 4
Step 5
Step 6
Step 7
Step 8
Determine where state should live
Build a static version of the app with properties
Add inverse data flow
Define your component hierarchy
Add routing
Identify the required state
Add external data

Mini Lab - VAT Calculator

During your Digital Phase you completed labs for a **ToDo** application

As a refresher and to consolidate what you have learnt, you will now develop a simple **VAT Calculator**



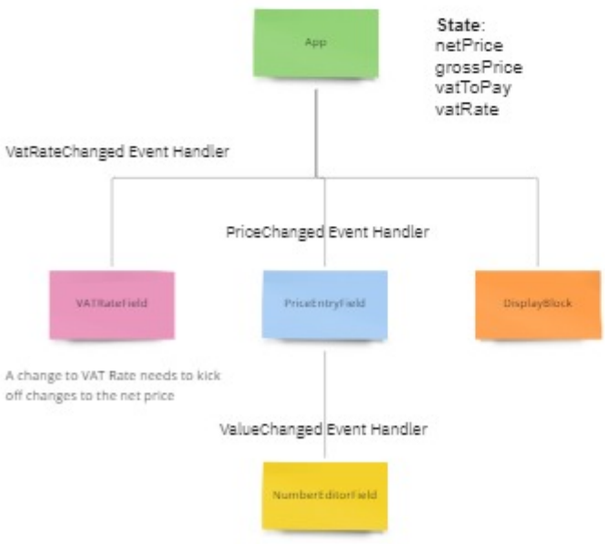
User Stories

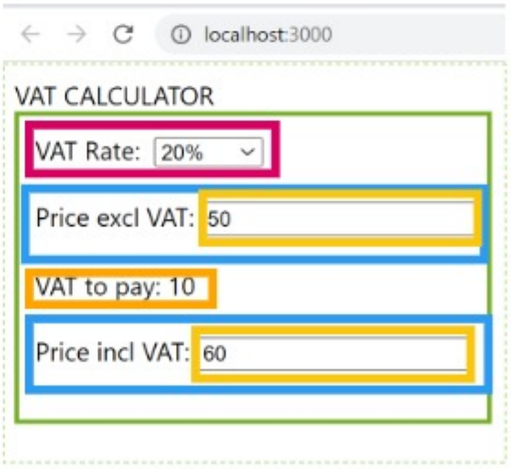
1. As a user, I want to be able to calculate the VAT to pay and the net price (price excluding VAT) given the gross price of an item (price including VAT).

2. As a user, I want to be able to adjust the VAT rate so that I can meet different government VAT requirements. The VAT rates should be 20%, 15%, 12.5% and 0% (Exempt).

3. As a user, I want to be able to calculate the total VAT to pay on an item and the total cost of the item including VAT (gross price) given its price excluding VAT (net price).

Suggested Components





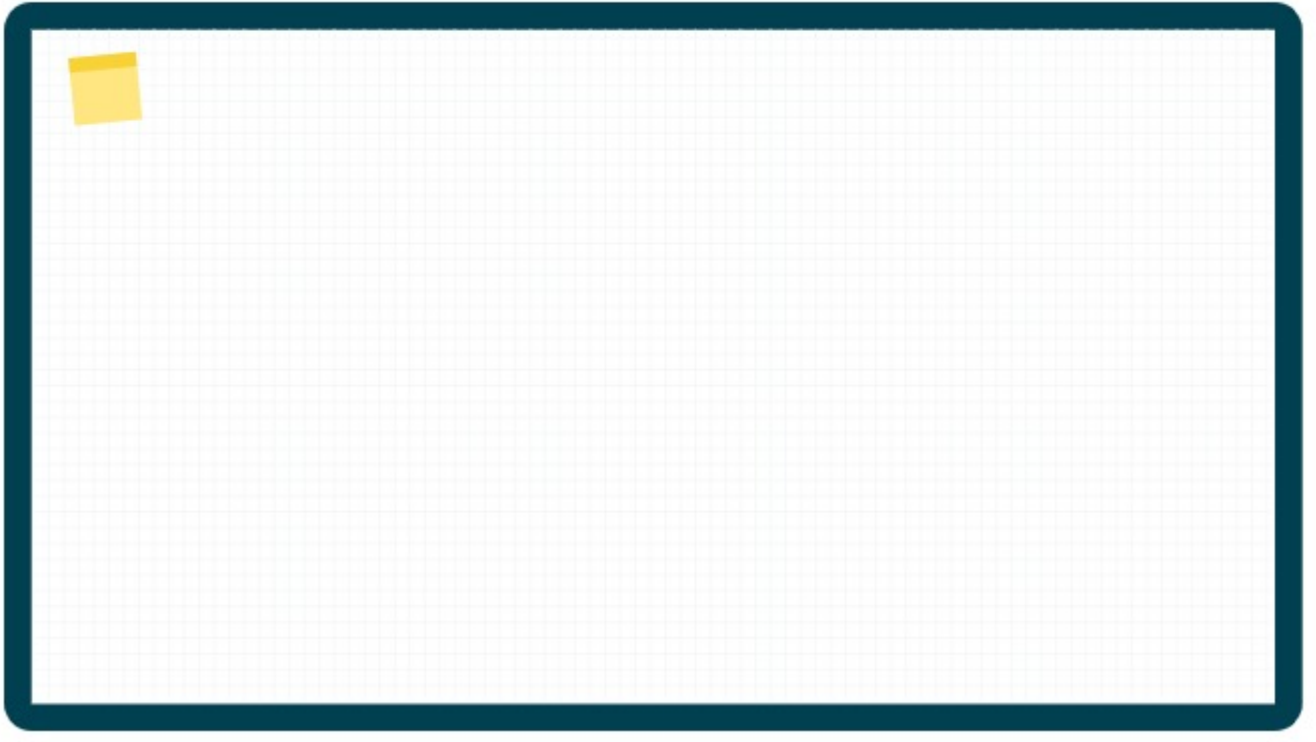
Code in Pairs

Option 1
Code the solution for the VAT calculator in pairs.

Option 2
Code the solution for the VAT calculator along with your instructor.

Mini Lab - Key Takeaways

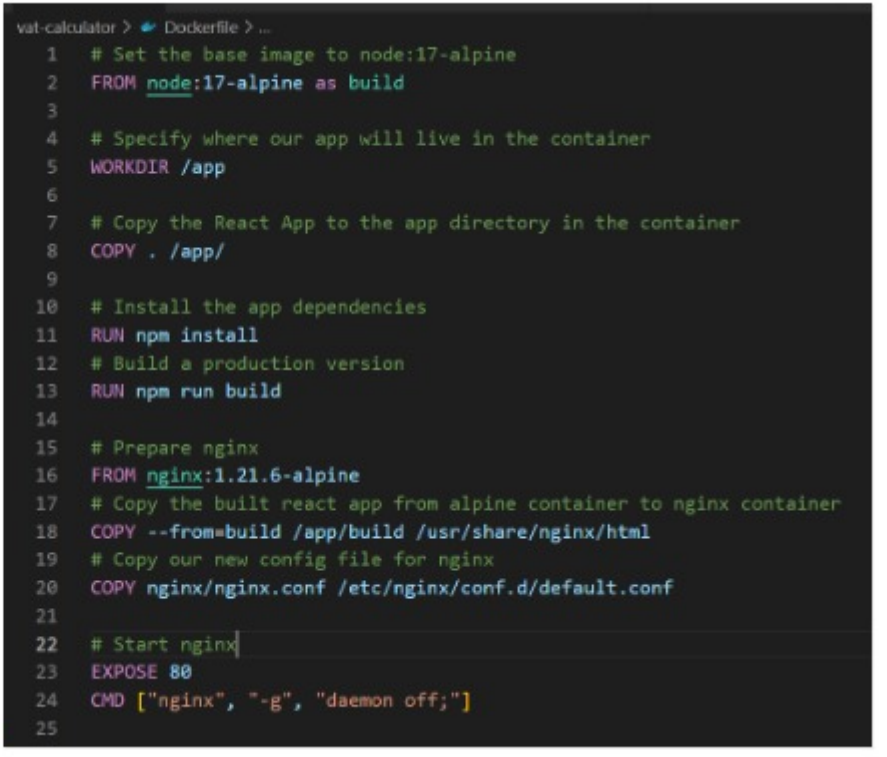
Add stickies describing your key takeaways from this activity.



Dockerizing a React Application

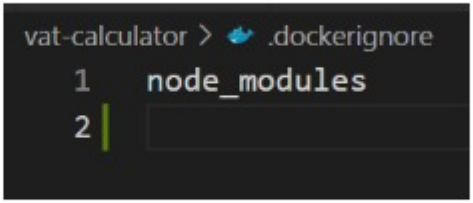
Step 1:

Create a **Dockerfile** in the root of your React Application directory



Right click picture and select "Send to back" to reveal copyable code

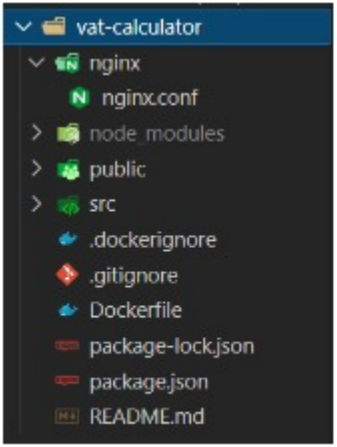
Step 2:
Create a **.dockerignore** file in the root of your React Application directory



Step 3:

Create an **nginx** folder in the root of your React Application folder.

Add a file: **nginx.conf**



vat-calculator > nginx > nginx.conf

```
server {

  listen 80;

  location / {
    root   /usr/share/nginx/html;
    index  index.html index.htm;
    try_files $uri $uri/ /index.html;
  }

  error_page 500 502 503 504 /50x.html;

  location = /50x.html {
      root /usr/share/nginx/html;
  }

}
```

Right click picture and select "Send to back" to reveal copyable code

Step 4:

Build your docker image and tag it as **vat-calculator:1.0**

```
C:\Total_Learning_React\Demos\vat-calculator>docker build --tag vat-calculator:1.0 .
[+] Building 671.4s (18/18) FINISHED
 => [internal] load build definition from Dockerfile
 => => transferring dockerfile: 631B
 => [internal] load .dockerignore
```

docker build --tag vat-calculator:1.0 .

Step 5:

Verify your image exists using the **docker images** command

```
C:\Total_Learning_React\Demos\vat-calculator>docker images
REPOSITORY                                TAG                 IMAGE ID            CREATED             SIZE
vat-calculator                            1.0                 36c290509464        4 minutes ago       20.9MB
mongo                                     4.2                 0df68ce04956        5 days ago          388MB
```

Create and run a container based on the image

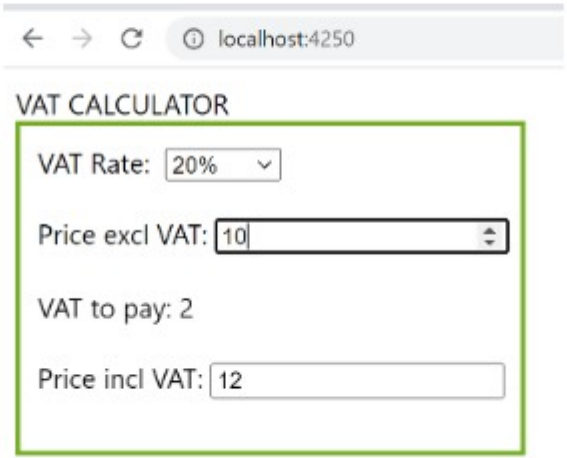
Name the container **vat-container** and expose it on an un-used port, for example: **4250**

```
C:\Total_Learning_React\Demos\vat-calculator>docker run -p 4250:80 -d --name vat-container vat-calculator:1.0
783b0b28dbdf014302b4e04ffcbedddfdd5fdc40152a125e1dfc7368247d177d
```

docker run -p 4250:80 -d --name vat-container vat-calculator:1.0

Step 6:

Browse to the port you exposed and confirm your application is running.



CI/CD: Deploying a React Application

.gitlab-ci.yml

vat-calculator > .gitlab-ci.yml > ...

gitlab-ci (ci.json)

```yaml
# A BUILD stage to confirm the React App Builds
# A TEST stage to run any React tests
# A DOCKER-BUILD stage to containerize the app using a Dockerfile and push the image to the Container Registry
# A DEPLOY stage to pull the image onto an AWS EC2 instance and spin up a container
stages:
  - build
  - test
  - docker-build
  - deploy

build:
  stage: build
  image: node
  script:
    - echo "Start building App"
    - npm install
    - npm run build
    - echo "Built successfully!"
  artifacts:
    expire_in: 1 hour
    paths:
      - build
      - node_modules/

```

Right click picture and select "Send to back"to reveal copyable code

```
24
25  test:
26    stage: test
27    image: node
28    script:
29      - echo "Testing App"
30      - CI=true npm test
31      - echo "Tested successfully!"
32
```

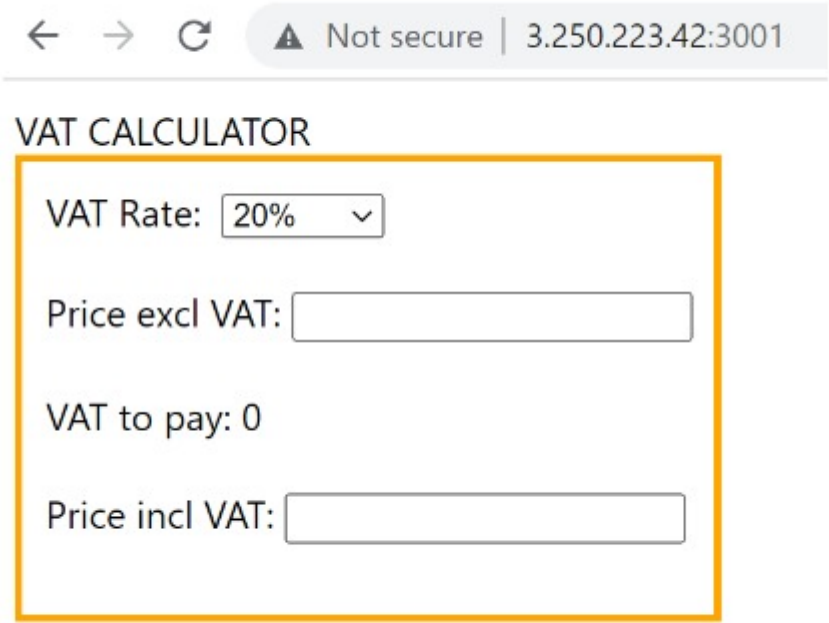
Right click picture and select "Send to back"to reveal copyable code

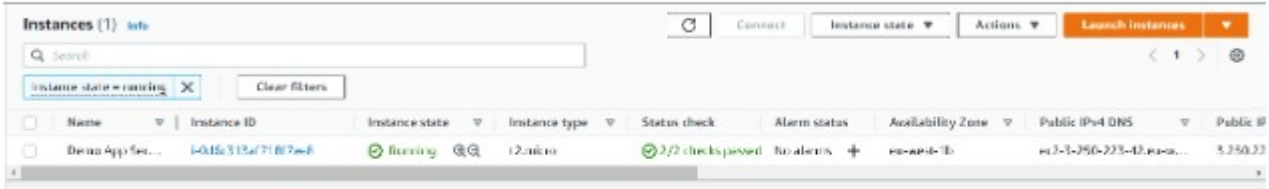
```
32
33  docker-build:
34    stage: docker-build
35    # this version of docker is used to prevent 'access denied' errors when connecting from EC2
36    image: docker:19.03.12
37    services:
38      - name: docker:19.03.12-dind
39    before_script:
40      # login to GitLab's docker registry using the built-in stored credentials
41      - docker login -u "$CI_REGISTRY_USER" -p "$CI_REGISTRY_PASSWORD" $CI_REGISTRY
42    script:
43      # Build the image from the Dockerfile. Ensure the base images are up-to-date by pulling the
44      # latest images referenced
45      # Tag the image with the address of the project's Container Registry
46      - docker build --pull -t "$CI_REGISTRY_IMAGE" .
47      # Puch the new image to the Container Registry
48      - docker push "$CI_REGISTRY_IMAGE"
49
```

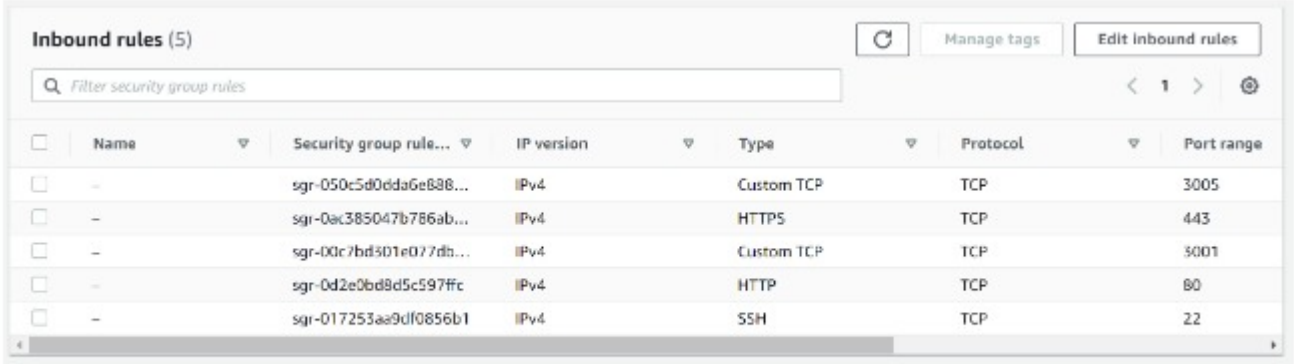
Right click picture and select "Send to back"to reveal copyable code

```
deploy:
  stage: deploy
   # need an image that will enable us to ssh int our cloud server
  image: kroniak/ssh-client
  before_script:
    - echo "Deploying app"
    # need variable in gitlab: SSH_PRIVATE_KEY and PROD_SERVER_IP
  script:
    - chmod 400 $SSH_PRIVATE_KEY
    - ssh -o StrictHostKeyChecking=no -i $SSH_PRIVATE_KEY ec2-user@$PROD_SERVER_IP "echo 'hello from your AWS EC2 instance'"
    - echo "Did I connect to EC2?"
    - ssh -o StrictHostKeyChecking=no -i $SSH_PRIVATE_KEY ec2-user@$PROD_SERVER_IP "echo 'try to peform a docker login'"
    - ssh -o StrictHostKeyChecking=no -i $SSH_PRIVATE_KEY ec2-user@$PROD_SERVER_IP "sudo docker login -u "$CI_REGISTRY_USER" -p
    "$CI_REGISTRY_PASSWORD" $CI_REGISTRY"

    - ssh -o StrictHostKeyChecking=no -i $SSH_PRIVATE_KEY ec2-user@$PROD_SERVER_IP "sudo docker pull registry.gitlab.com/qa167/vat-calculator"
    - echo "Pulled"
    - ssh -o StrictHostKeyChecking=no -i $SSH_PRIVATE_KEY ec2-user@$PROD_SERVER_IP "docker stop vatcontainer || true && docker rm
    vatcontainer || true"
    - ssh -o StrictHostKeyChecking=no -i $SSH_PRIVATE_KEY ec2-user@$PROD_SERVER_IP "docker run -p 3001:80 -d --name vatcontainer registry.gitlab.
    com/qa167/vat-calculator"
```

Right click picture and select "Send to back"to reveal copyable code


Not secure | 3.250.223.42:3001
VAT CALCULATOR
VAT Rate: 20%
Price excl VAT:
VAT to pay: 0
Price incl VAT:


Instances (1) Info
Connect
Instance state
Actions
Launch instances
Search
Clear filters
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availability Zone
Public IPv4 DNS
Public IP
Demo App Ser...
running
2/2 checks passed
No alarms


Inbound rules (5)
Manage tags
Edit inbound rules
Filter security group rules
Name
Security group rule...
IP version
Type
Protocol
Port range
sgr-050c5d0dda6e838...
IPv4
Custom TCP
TCP
3005
sgr-0ac385047b786ab...
IPv4
HTTPS
TCP
443
sgr-00c7bd501e077db...
IPv4
Custom TCP
TCP
3001
sgr-0d2e0bd8d5c597ffc
IPv4
HTTP
TCP
80
sgr-017253aa9df0856b1
IPv4
SSH
TCP
22

Open EC2 instance command line interface:

Install Docker on your Amazon Linux 2 instance:

```
sudo yum update -y
sudo amazon-linux-extras install docker
sudo service docker start
sudo systemctl enable docker
sudo usermod -a -G docker ec2-user
```

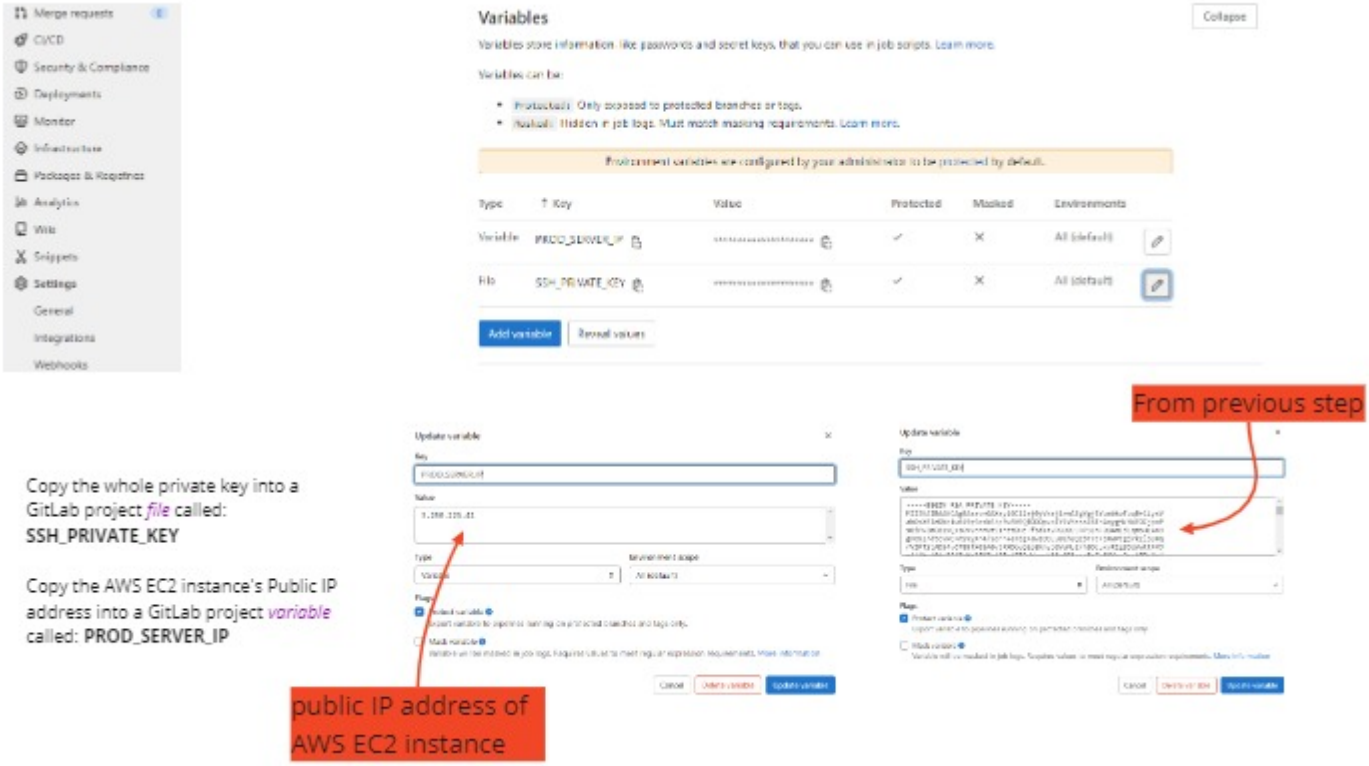
Log out of your instance, then log back in to confirm your permissions

```
docker info
```

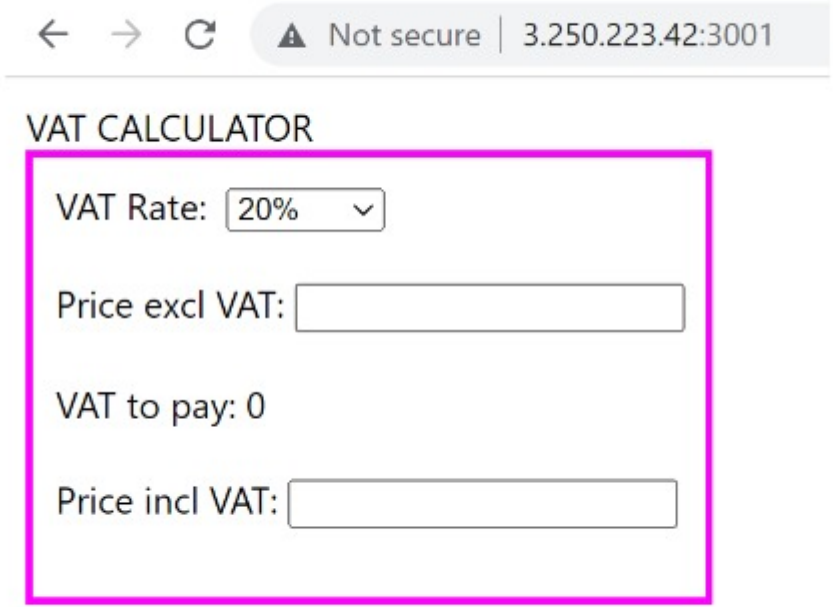
```
$ ssh-keygen -m PEM -t rsa -b 4096 -C "yourAWSemail@email.com"

$ cat ~/.ssh/id_rsa

$ cat ~/.ssh/id_rsa.pub >> ~/.ssh/authorized_keys
```

Be sure to include these lines when copying

Consider using a tool like PUTTY to run the above scripts simply because it's easier to select, copy and paste the private key ready for the next step

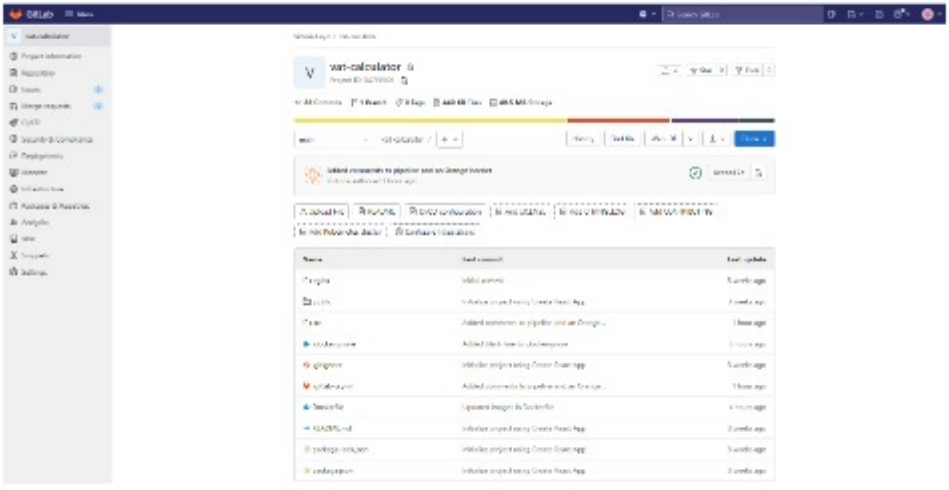

Merge requests
CI/CD
Security & Compliance
Deployments
Monitor
Infrastructure
Packages & Registries
Analytics
Wiki
Snippets
Settings
General
Integrations
Webhooks
Variables
Collapse
Variables store information, like passwords and secret keys, that you can use in job scripts. Learn more.
Variables can be:
Protected: Only exposed to protected branches or tags.
Masked: Hidden in job logs. Must match masking requirements. Learn more.
Environment variables are configured by your administrator to be protected by default.
Type
Key
Value
Protected
Masked
Environments
Variable
PROD_SERVER_IP
All (default)
File
SSH_PRIVATE_KEY
All (default)
Add variable
Reveal values
From previous step
Update variable
Key
Value
Type
Environment scope
Flags
Protect variable
Mask variable
Cancel
Update variable
Copy the whole private key into a GitLab project *file* called: **SSH_PRIVATE_KEY**
Copy the AWS EC2 instance's Public IP address into a GitLab project *variable* called: **PROD_SERVER_IP**
public IP address of AWS EC2 instance

Push some code changes to your GitLab repository and watch the pipeline stages run.


Not secure
3.250.223.42:3001
VAT CALCULATOR
VAT Rate:
20%
Price excl VAT:
VAT to pay: 0
Price incl VAT:

Create a GitLab project and push your React App code to its repository.

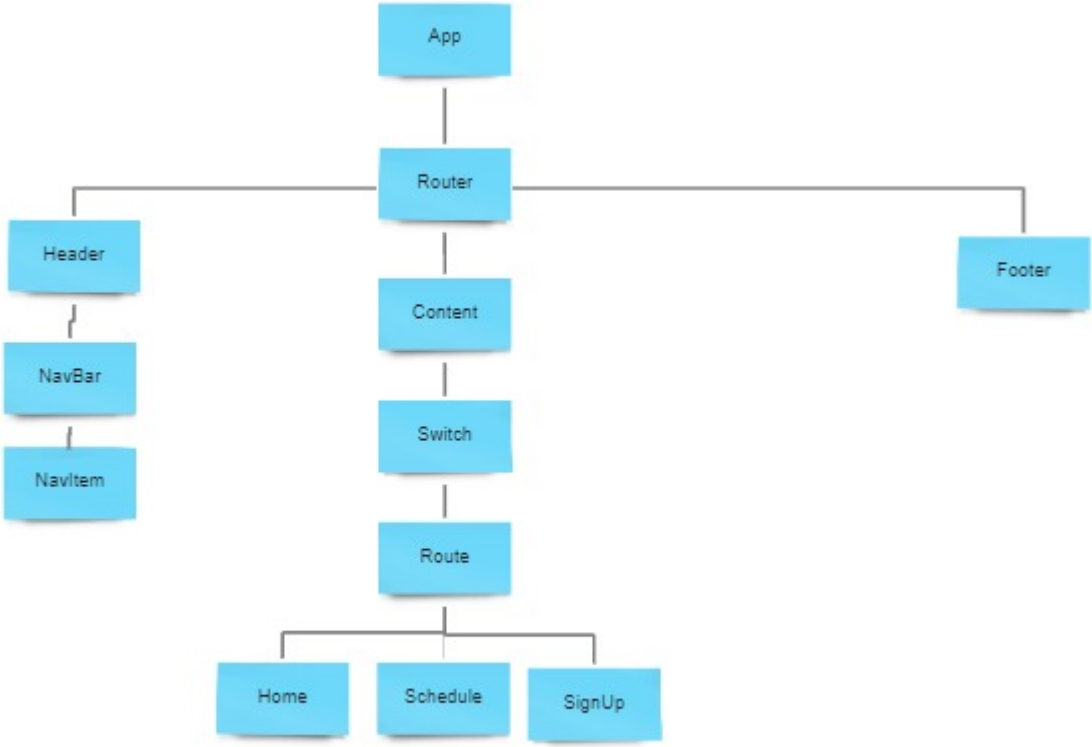
Add a GitLab pipeline to the project by adding a special file called: **.gitlab-ci.yml**

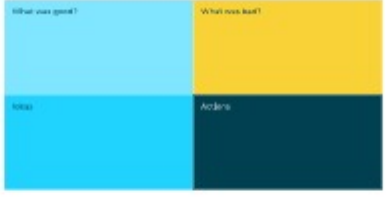



CLASSIC
CINEMA
COMPANY


W-HPS ON

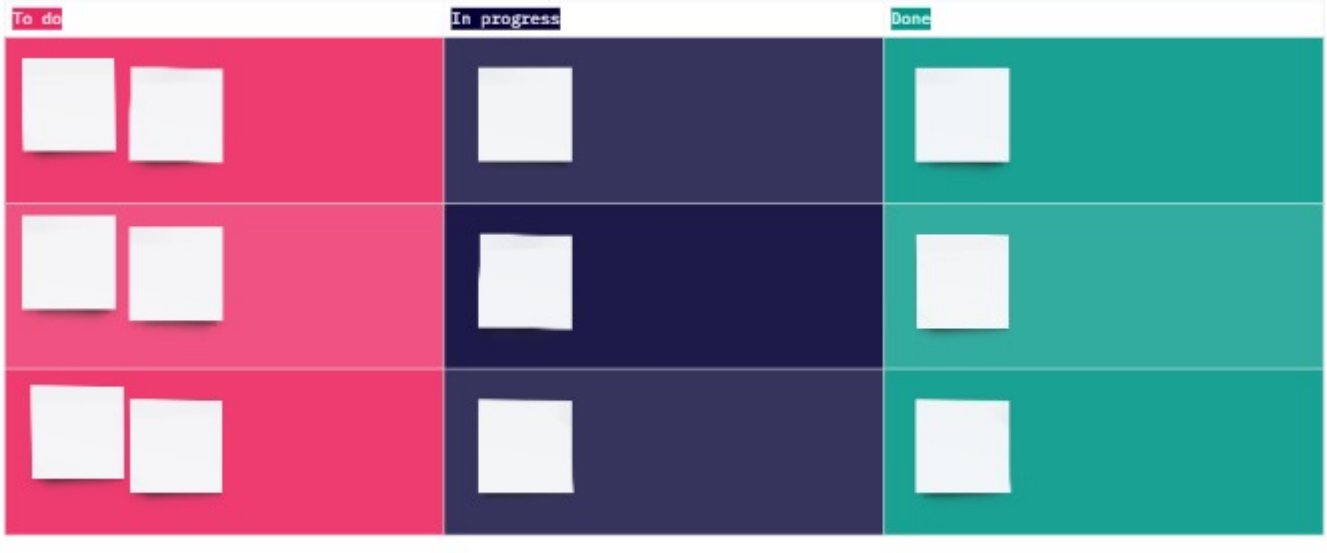

JOIN THE CLUB

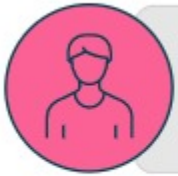

App
Router
Header
NavBar
NavItem
Content
Switch
Route
Home
Schedule
SignUp
Footer


What was good?
What was bad?
Ideas
Actions


What was good?
What was bad?
Ideas
Actions


Type something
Type something
Type something
Type something
Type something


To do
In progress
Done



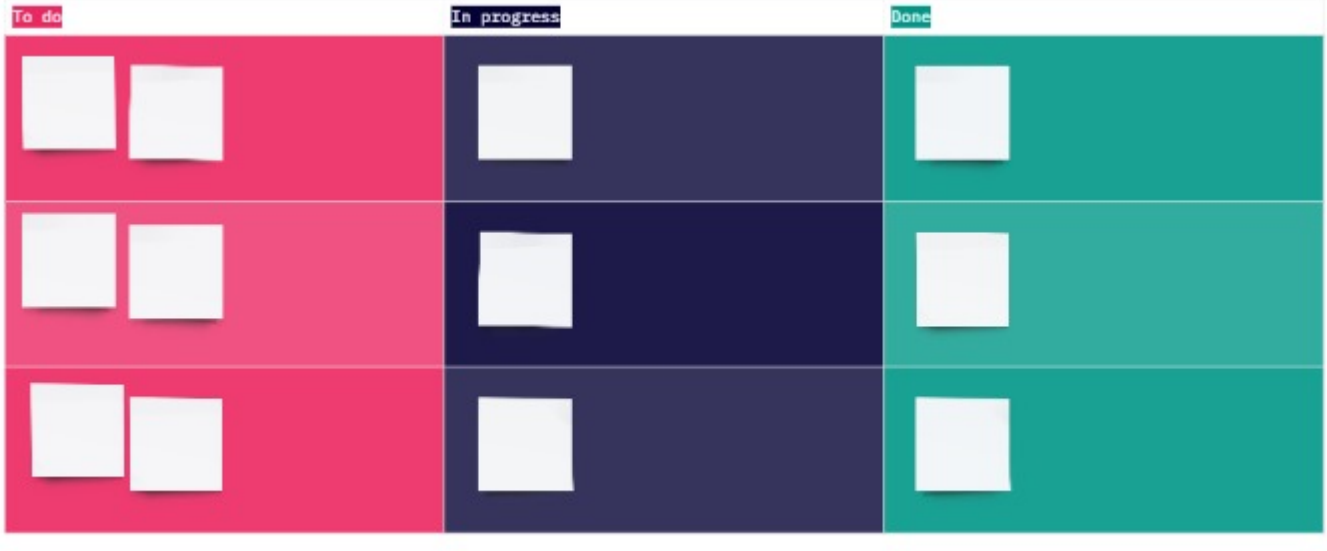
As a User, I want to be able to leave a review for a movie, so that other Users can decide whether the Movie is worth going to see.

As a User, I want to be able to access the website on any device, so that I can access the information I need on the device of my choice.

As a User, I want to be able to subscribe to the website using a form, so that I can receive the latest promotions and information.

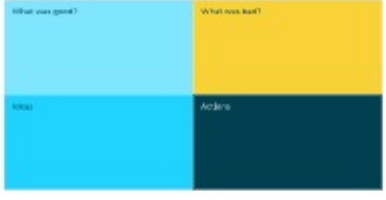
As a User, I want to be able to login to the service, so that I have access to user specific features like reviews.

As a User, I want to be able to register to the site, so that I can login to the site and use special features.


To do
In progress
Done

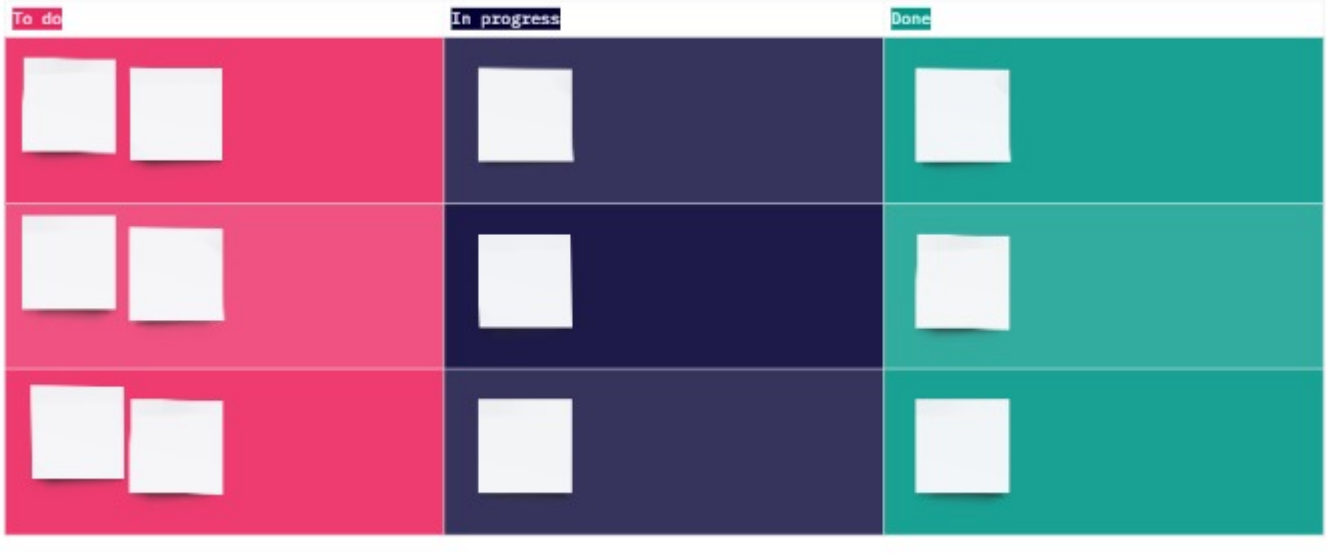
What was good?	What was bad?
Ideas	Actions

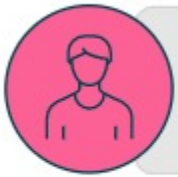
What was good?	What was bad?
Ideas	Actions


What was good?
What was bad?
Ideas
Actions


What was good?
What was bad?
Ideas
Actions


Type something
Type something
Type something
Type something
Type something


To do
In progress
Done



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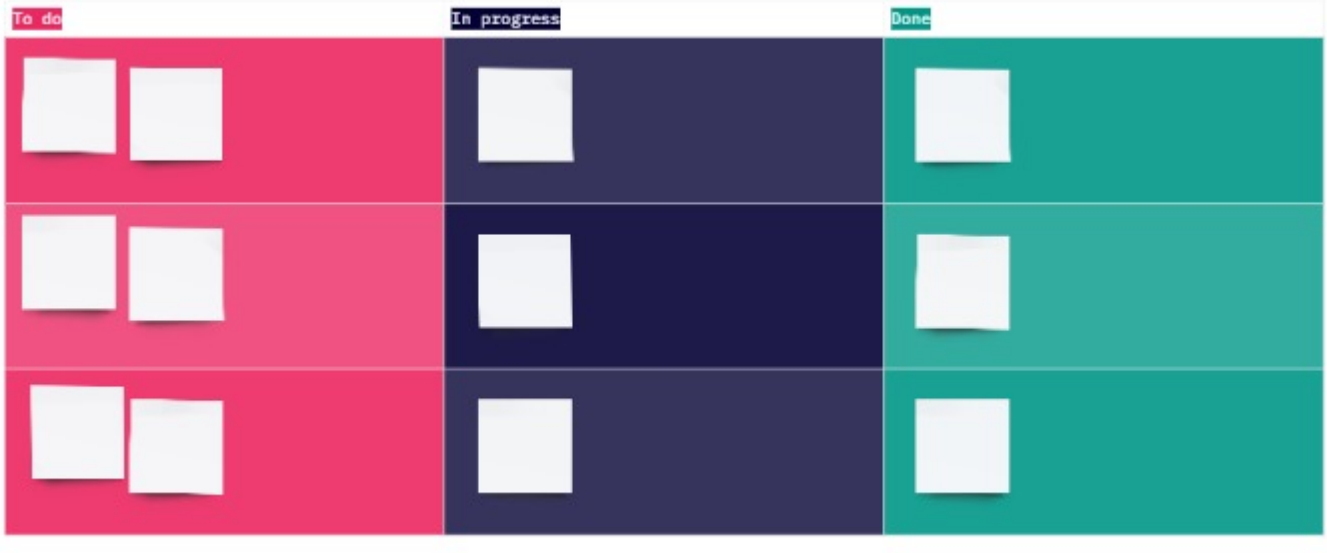
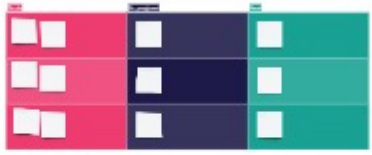
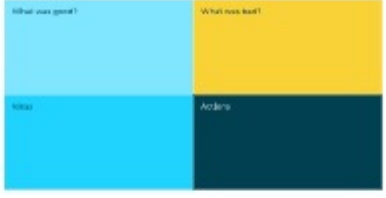

To do
In progress
Done

What was good?	What was bad?
Ideas	Actions

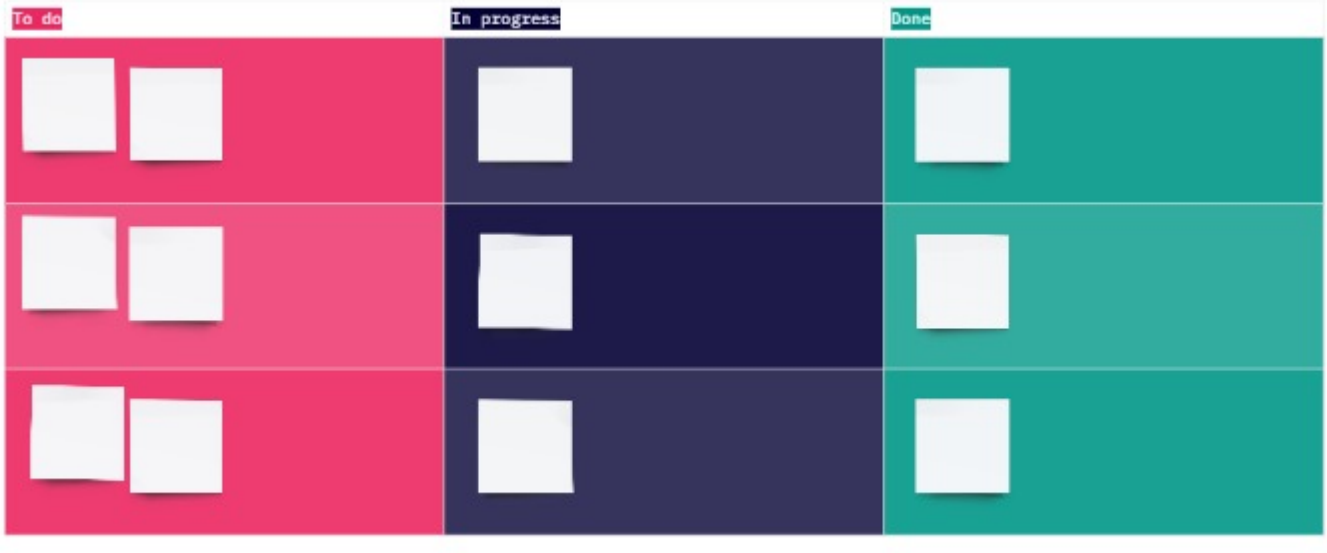
What was good?	What was bad?
Ideas	Actions

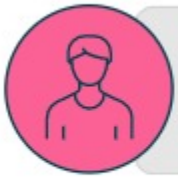



What was good?
What was bad?
Ideas
Actions


What was good?
What was bad?
Ideas
Actions


Type something
Type something
Type something
Type something
Type something


To do
In progress
Done



As a User, I want to be able to leave a review for a movie, so that other Users can decide whether the Movie is worth going to see.

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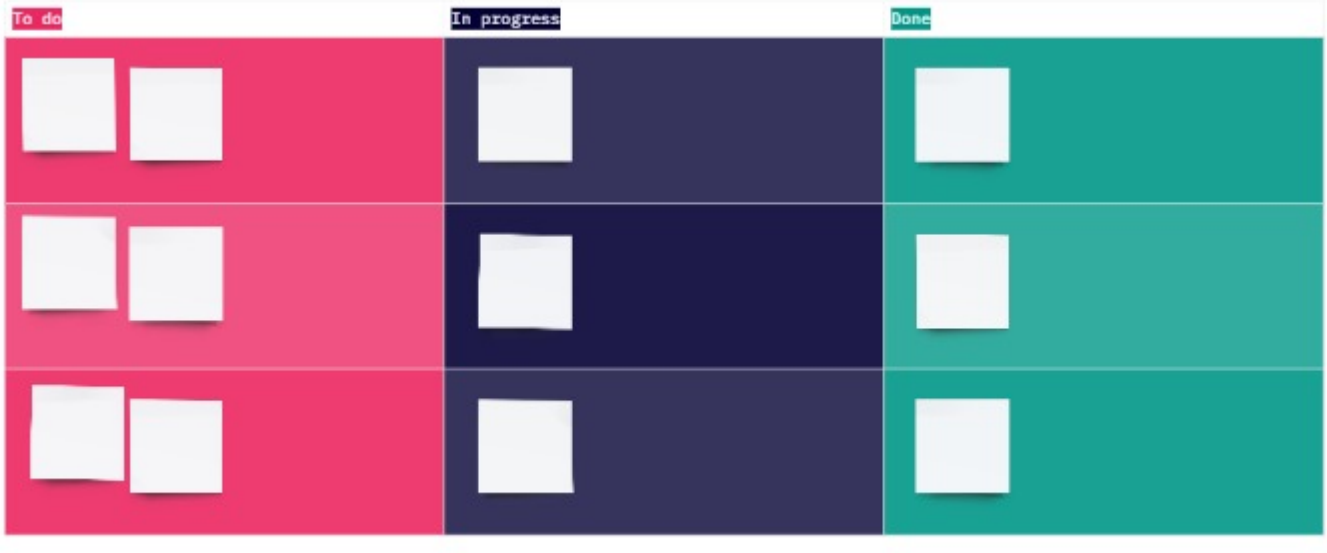

To do
In progress
Done

What was good?	What was bad?
Ideas	Actions

What was good?	What was bad?
Ideas	Actions

Securing a React Application with JWT

```
const Login = () => {
  const [user, setUser] = useState({username: '', password: ''})
  const [isAuthenticated, setAuth] = useState(false);

  const handleChange = (event) => {
    setUser({...user, [event.target.name] : event.target.value})
  }
```

```
const login = () => {
  fetch(SERVER_URL + 'login', {
    method: 'POST',
    body: JSON.stringify(user)
  })
  .then(res => {
    const jwtToken = res.headers.get('Authorization');
    if (jwtToken !== null) {
      sessionStorage.setItem("jwt", jwtToken);
      setAuth(true);
    }
    else {
      toast.warn("Check your username and password", {
        position: toast.POSITION.BOTTOM_LEFT
      })
    }
  })
  .catch(err => console.error(err))
}
```

The React Login component submits (POSTs) the user state object to the REST API's login endpoint and then checks for an **Authorization** Header in the returned Response object

It stores the value of the Authorization Header (the sent JSON Web Token (**JWT**)) in Session storage

It then sets the isAuthenticated state variable to *true*

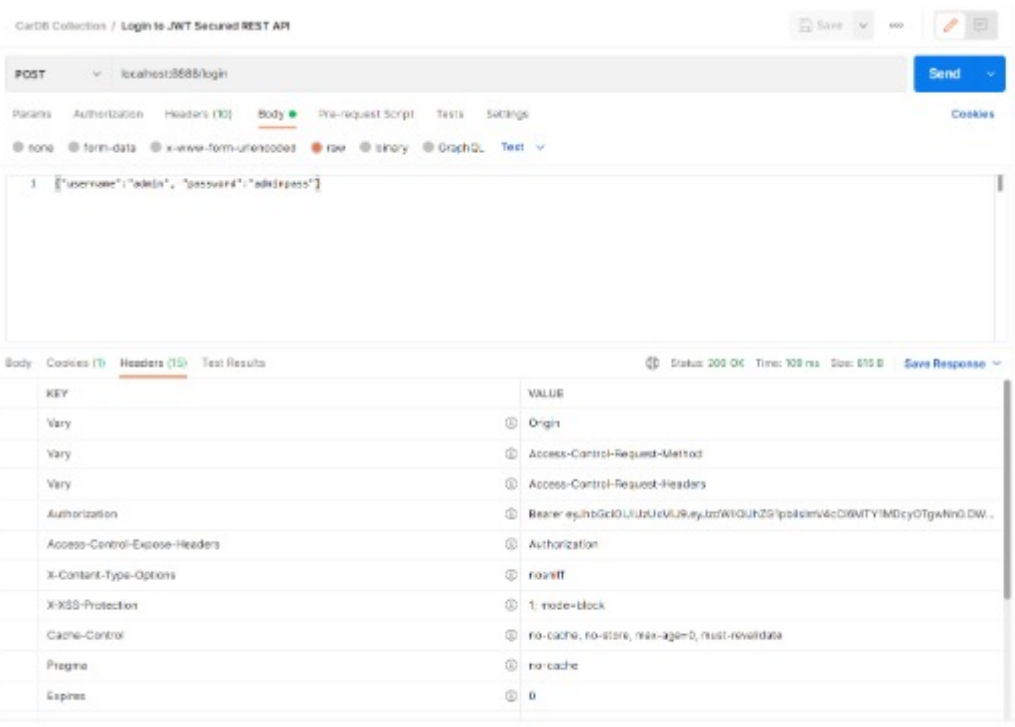
```
  if (isAuthenticated === true) {
    return (<Carlist />)
  }
  else {
    return (
      <div>
        <TextField name="username"
          label="Username" onChange={handleChange} /><br/>
        <TextField type="password" name="password"
          label="Password" onChange={handleChange} /><br/><br/>
        <Button variant="outlined" color="primary"
          onClick={login}>
          Login
        </Button>
        <ToastContainer autoClose={1500} />
      </div>
    );
  }
}

export default Login;
```

```
fetchCars = () => {
  // Read the token from the session storage
  // and include it in the Authorization header
  const token = sessionStorage.getItem("jwt");
  fetch(SERVER_URL + 'api/cars',
    {
      headers: { 'Authorization': token }
    })
    .then((response) => response.json())
    .then((responseData) => {
      this.setState({
        cars: responseData._embedded.cars,
      });
    })
    .catch(err => console.error(err));
}
```

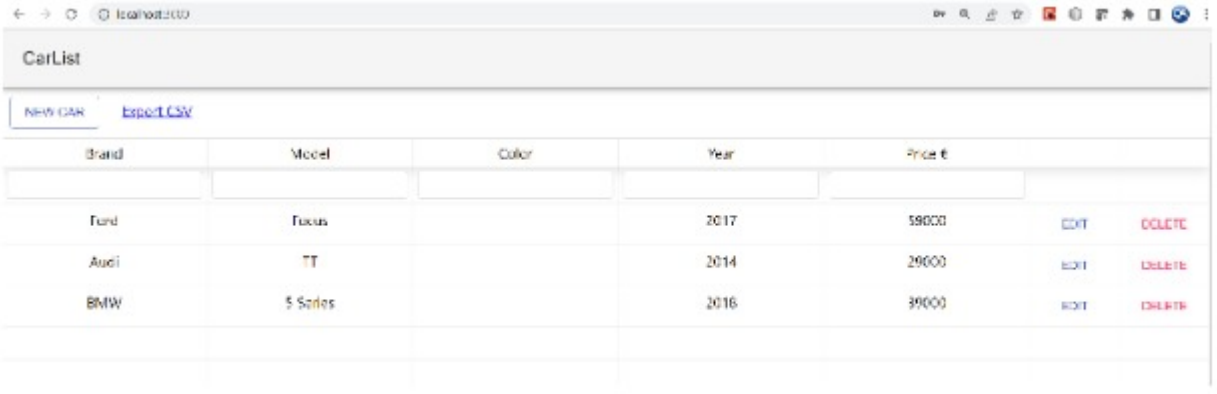
All other component functions attach the JWT to the Request header from Session storage.

```
// Add new car
addCar(car) {
  const token = sessionStorage.getItem("jwt");
  fetch(SERVER_URL + 'api/cars',
    {
      method: 'POST',
      headers: {
        'Content-Type': 'application/json',
        'Authorization': token
      },
      body: JSON.stringify(car)
    })
    .then(res => this.fetchCars())
    .catch(err => console.error(err))
}
```



Postman shows the Authorization header that is returned from the REST API

After a successful login, the app shows a list of Cars that can be edited or deleted



Repository for Security Frontend

https://github.com/QA-Instructor/car_react.git

Repository for Security Backend

https://github.com/QA-Instructor/car_database_jwt.git

Note: The demo uses OIDC/OAuth2 which is no longer a recommended approach to protect public applications. The new recommended approach is to use OAuth2 authorisation code grant with Proof key for code exchange (PKCS). See:
https://www.taithienbo.com/why-the-implicit-flow-is-no-longer-recommended-for-protecting-a-public-client
OAuth 2.0 — OAuth
Microsoft are removing this the old flow in Azure and assume the other big players will follow:
OAuth 2.0 implicit grant flow - The Microsoft identity platform - Microsoft Entra | Microsoft Learn
Possible framework to help out?
react-oauth2-code-pkce - npm (npmjs.com)

Images:

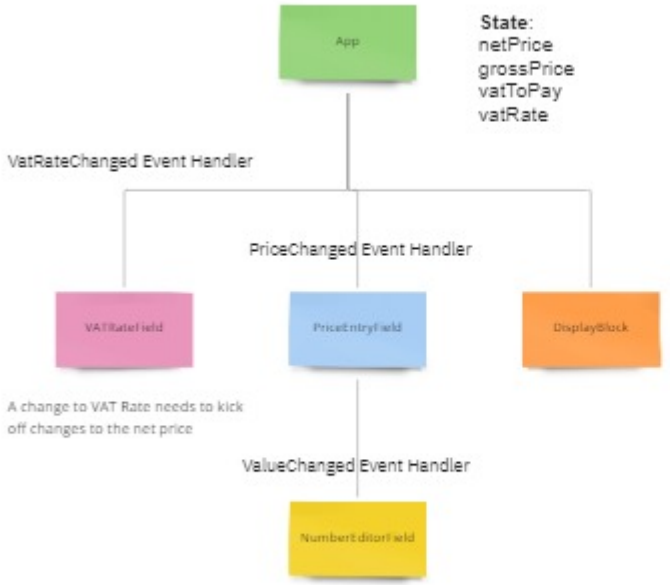
https://tinyurl.com/2p83j5zn

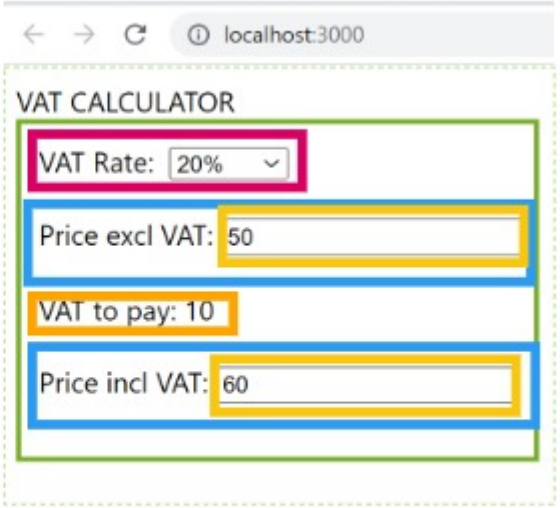
CSS and DATA

https://github.com/QA-Instructor/classic-cinema-company-assets.git

One solution to the VAT calculator :

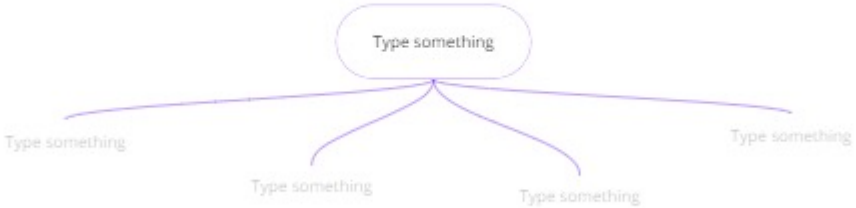
https://github.com/QA-Instructor/vat-calculator

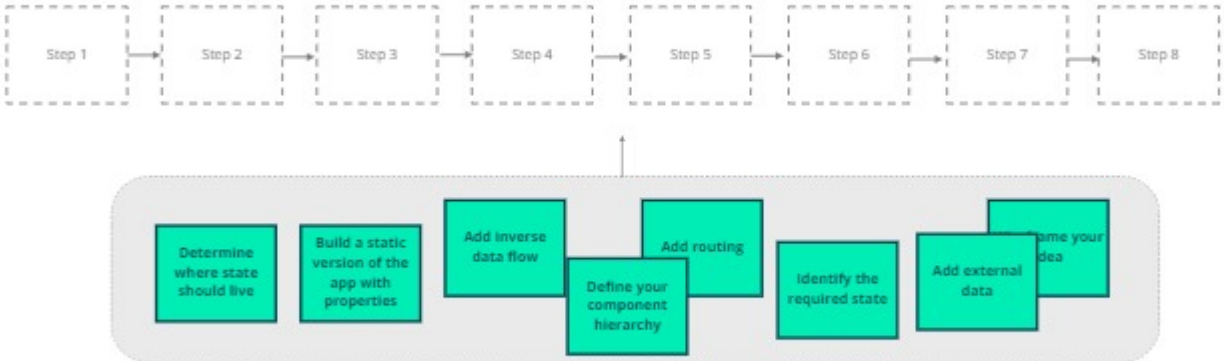

App
State:
netPrice
grossPrice
vatToPay
vatRate
VatRateChanged Event Handler
PriceChanged Event Handler
VATRateField
PriceEntryField
DisplayBlock
A change to VAT Rate needs to kick off changes to the net price
ValueChanged Event Handler
NumberEditorField

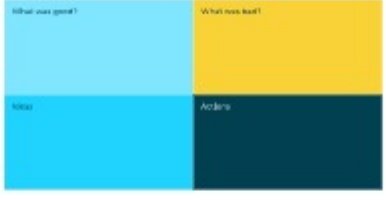

localhost:3000
VAT CALCULATOR
VAT Rate: 20%
Price excl VAT: 50
VAT to pay: 10
Price incl VAT: 60

G3 - Mini Lab - Component Hierarchy

Based on the user stories, design a component hierarchy for the VAT calculator.
Consider how you might re-use components.

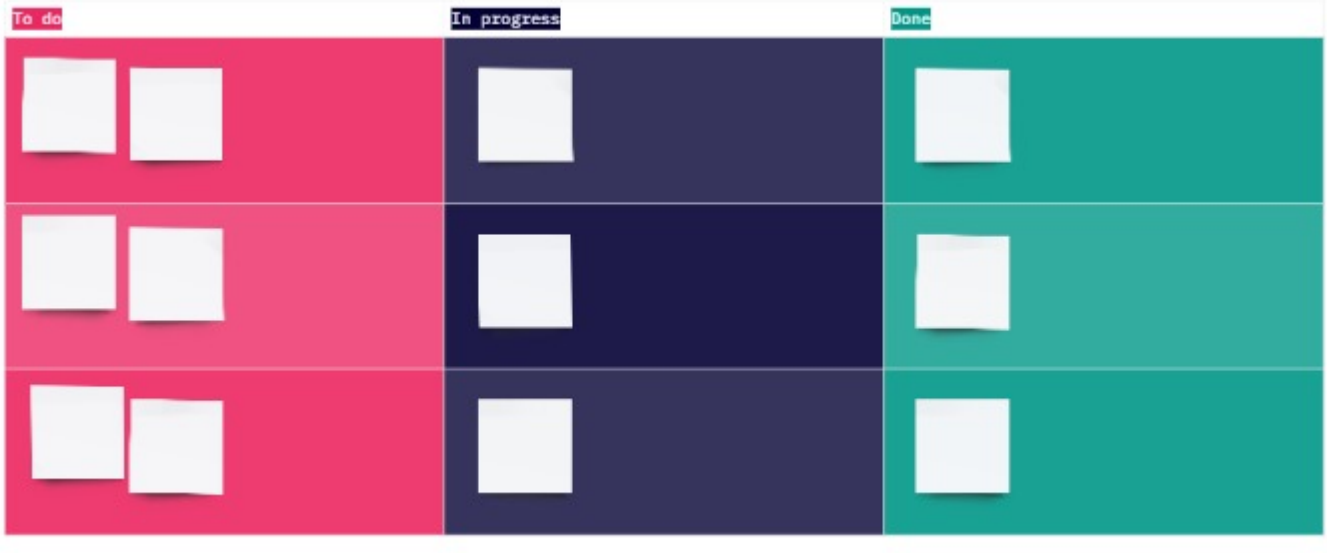


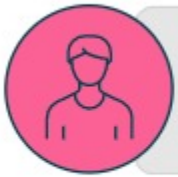

Step 1
Step 2
Step 3
Step 4
Step 5
Step 6
Step 7
Step 8
Determine where state should live
Build a static version of the app with properties
Add inverse data flow
Define your component hierarchy
Add routing
Identify the required state
Add external data
me your dea


What was good?
What was bad?
Ideas
Actions


What was good?
What was bad?
Ideas
Actions


Home
Type something
Type something
Type something
Type something


To do
In progress
Done



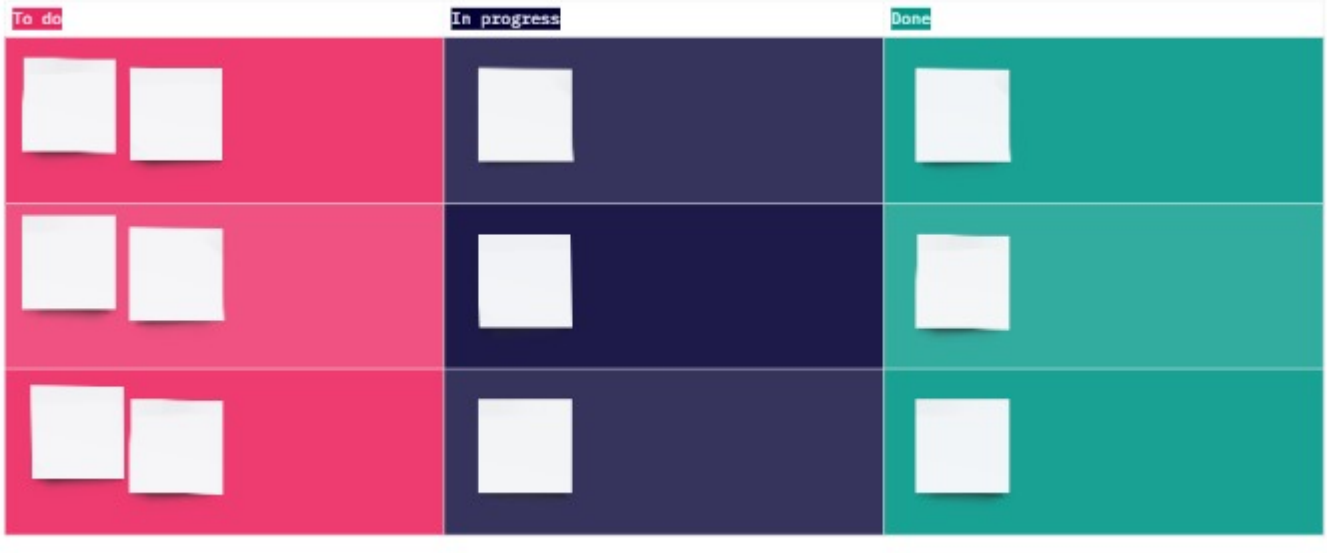
As a User, I want to be able to leave a review for a movie, so that other Users can decide whether the Movie is worth going to see.

As a User, I want to be able to access the website on any device, so that I can access the information I need on the device of my choice.

As a User, I want to be able to subscribe to the website using a form, so that I can receive the latest promotions and information.

As a User, I want to be able to login to the service, so that I have access to user specific features like reviews.

As a User, I want to be able to register to the site, so that I can login to the site and use special features.

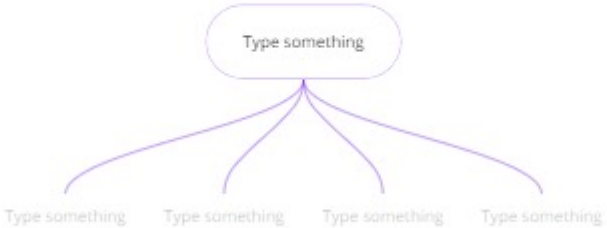

To do
In progress
Done

What was good?	What was bad?
Ideas	Actions

What was good?	What was bad?
Ideas	Actions

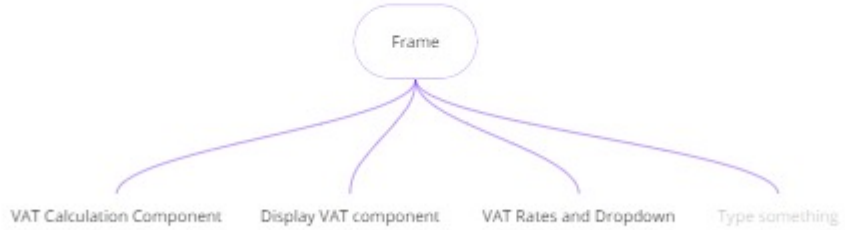
G3 - Mini Lab - Component Hierarchy

Based on the user stories, design a component hierarchy for the VAT calculator.
Consider how you might re-use components.



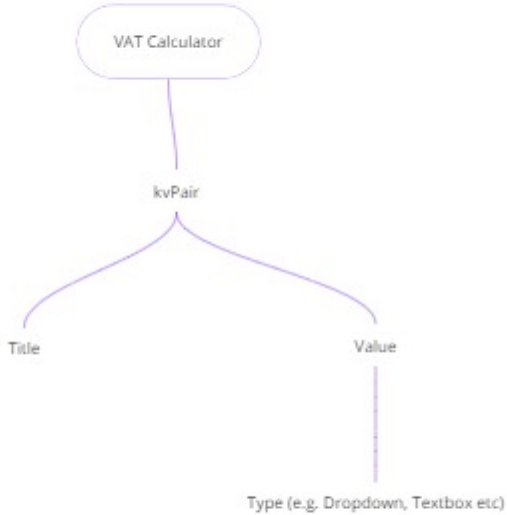
G3 - Mini Lab - Component Hierarchy

Based on the user stories, design a component hierarchy for the VAT calculator.
Consider how you might re-use components.



G3 - Mini Lab - Component Hierarchy

Based on the user stories, design a component hierarchy for the VAT calculator.
Consider how you might re-use components.



Routing V6.0 app:

QACS-TL/ReactTL-RouterV6Films (github.com)

Routing V5.0 app:

QACS-TL/ReactTL-RouterV5Films (github.com)

Migrating to React Router v6: A complete guide - LogRocket Blog

package.json:
major.minor.patch

1.0.2
Major, minor and patch represent the different releases of a package.
npm uses the tilde (~) and caret (^) to designate which patch and minor versions to use respectively.
So if you see ~1.0.2 it means to install version 1.0.2 or the latest patch version such as 1.0.4.
If you see ^1.0.2 it means to install version 1.0.2 or the latest minor or patch version such as 1.1.0.
For more see: What's the difference between a tilde (~) and a caret (^) in a npm package.json file? / Michael Lee (michaelsoolee.com)

A possible solution to the Cinema Lab uses a C# .NET app as server:
QACS-TL/QACinemaProjectSolution (github.com)