
AWS
re:Invent
NOV. 28 – DEC. 2, 2022 | LAS VEGAS, NV

FWM309

Design to code: Build an app frontend UI in minutes with AWS Amplify Studio

René Brandel (he/him)

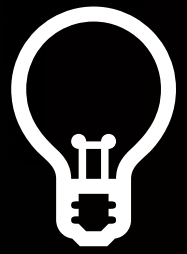
Principal Product Manager – Technical
AWS Amplify
Amazon Web Services

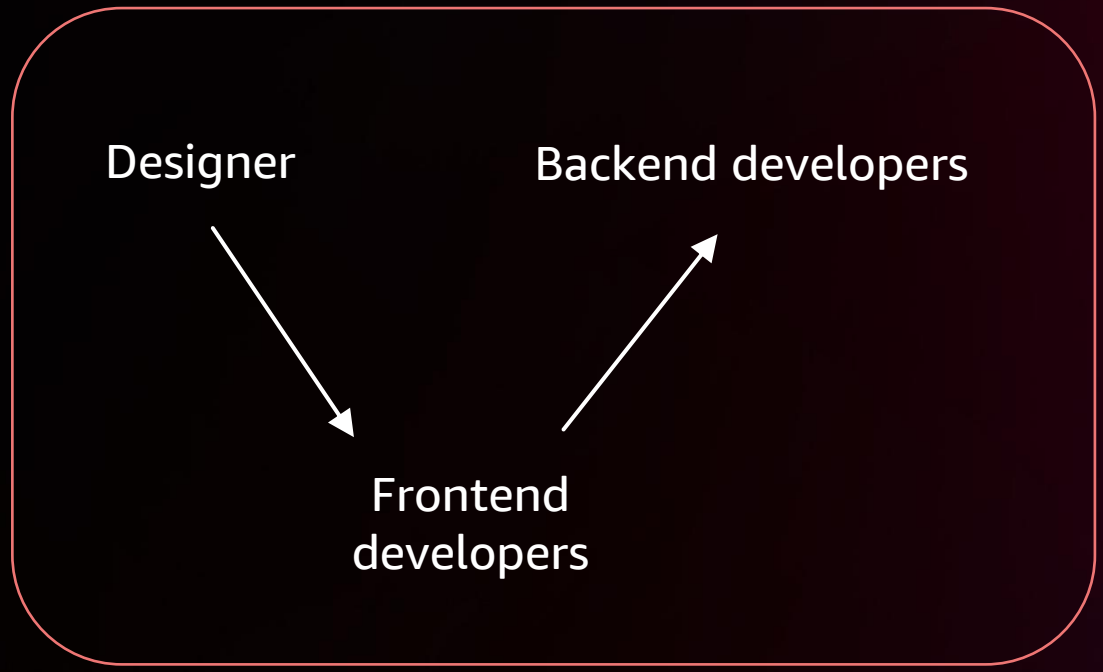
Chris Woolum (he/him)

Senior Frontend Engineer
AWS Amplify
Amazon Web Services

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Design to app . . . expectation

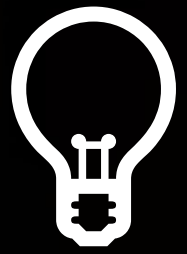


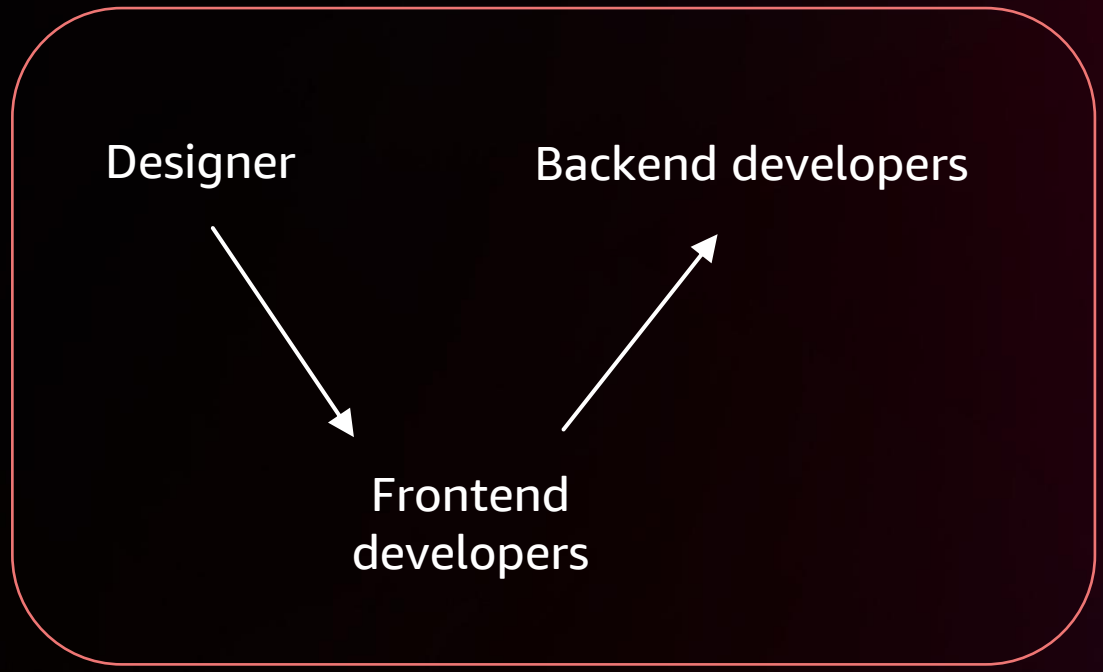




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Design to app . . . reality

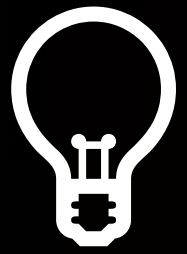


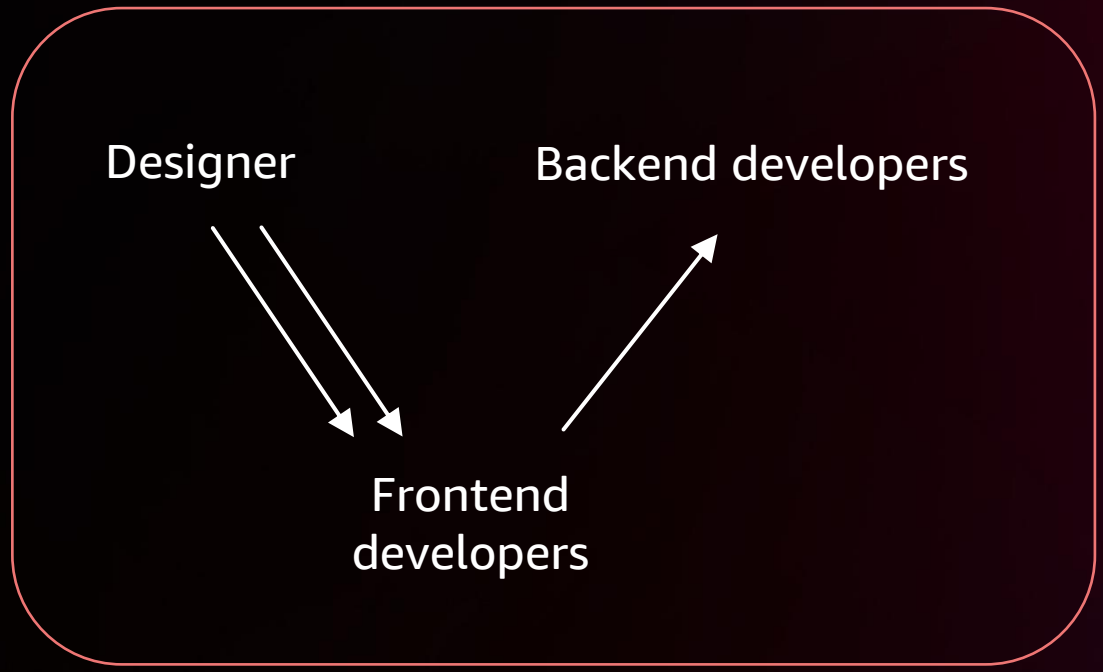




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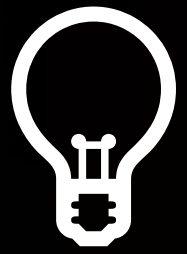


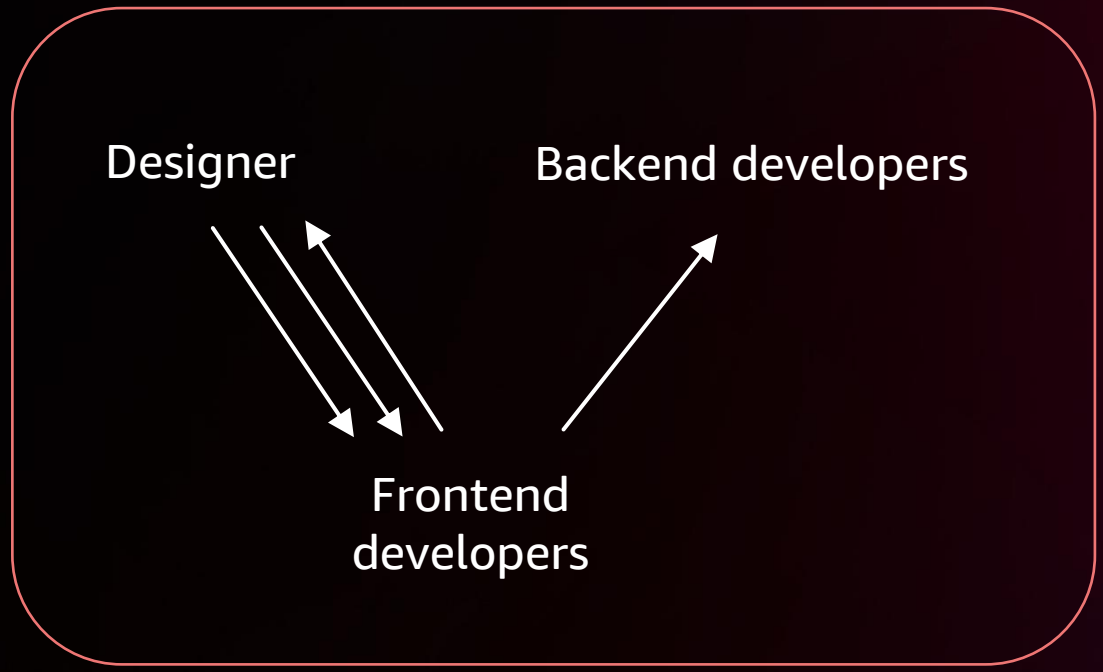




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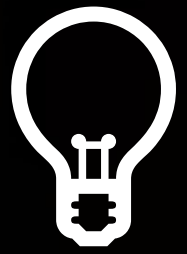


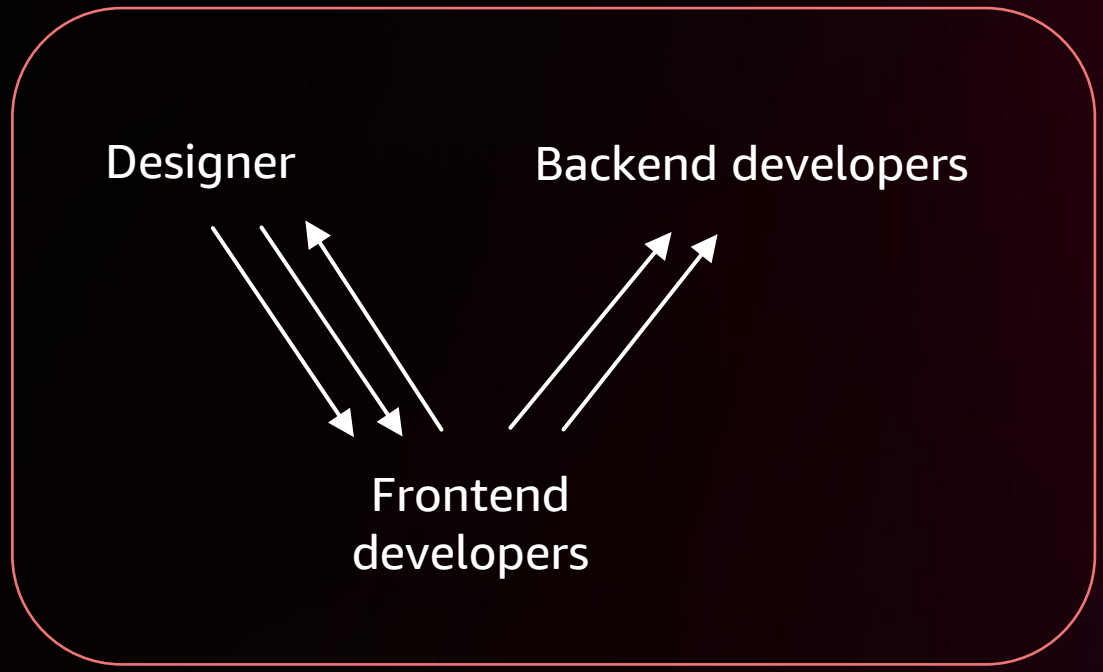




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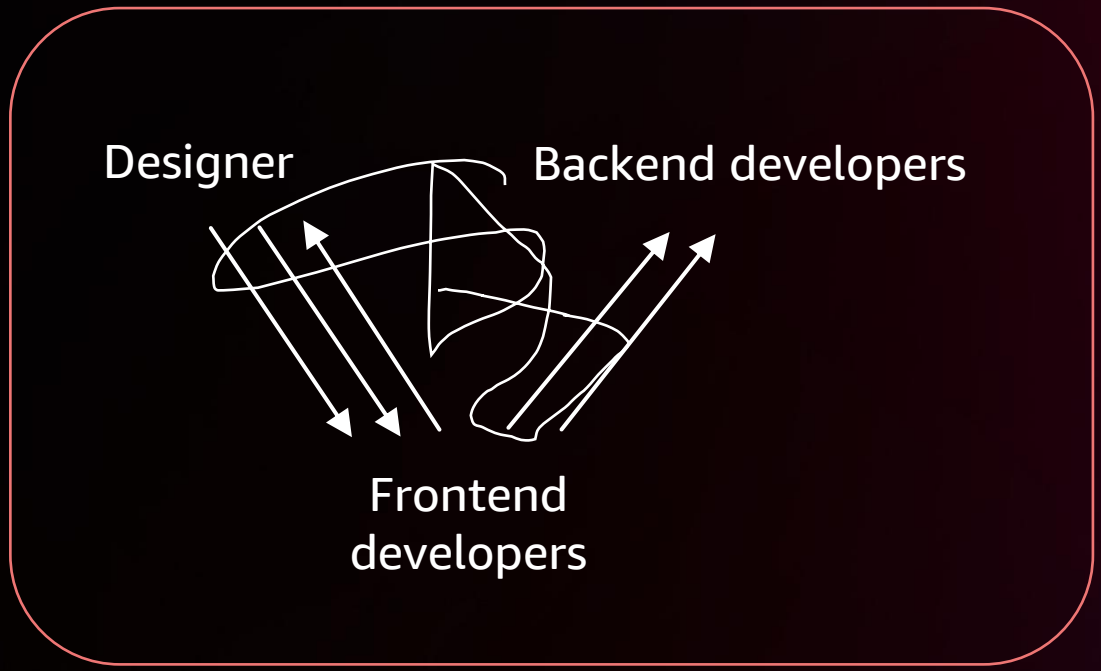




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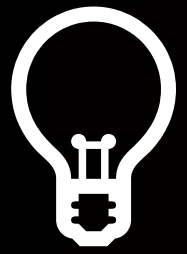


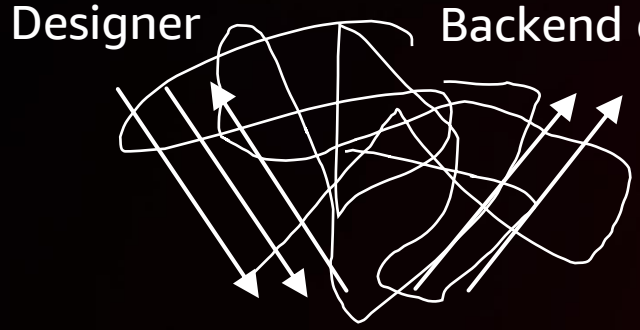




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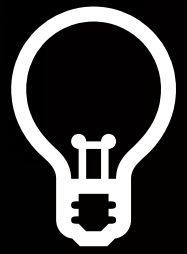


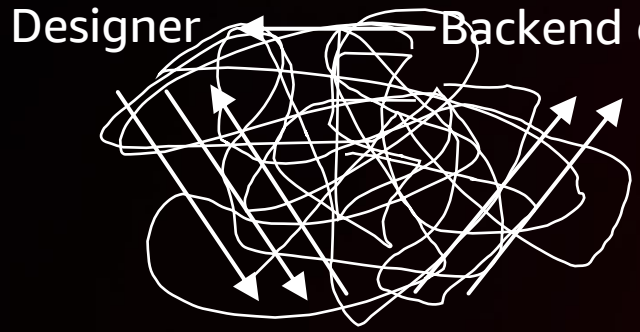




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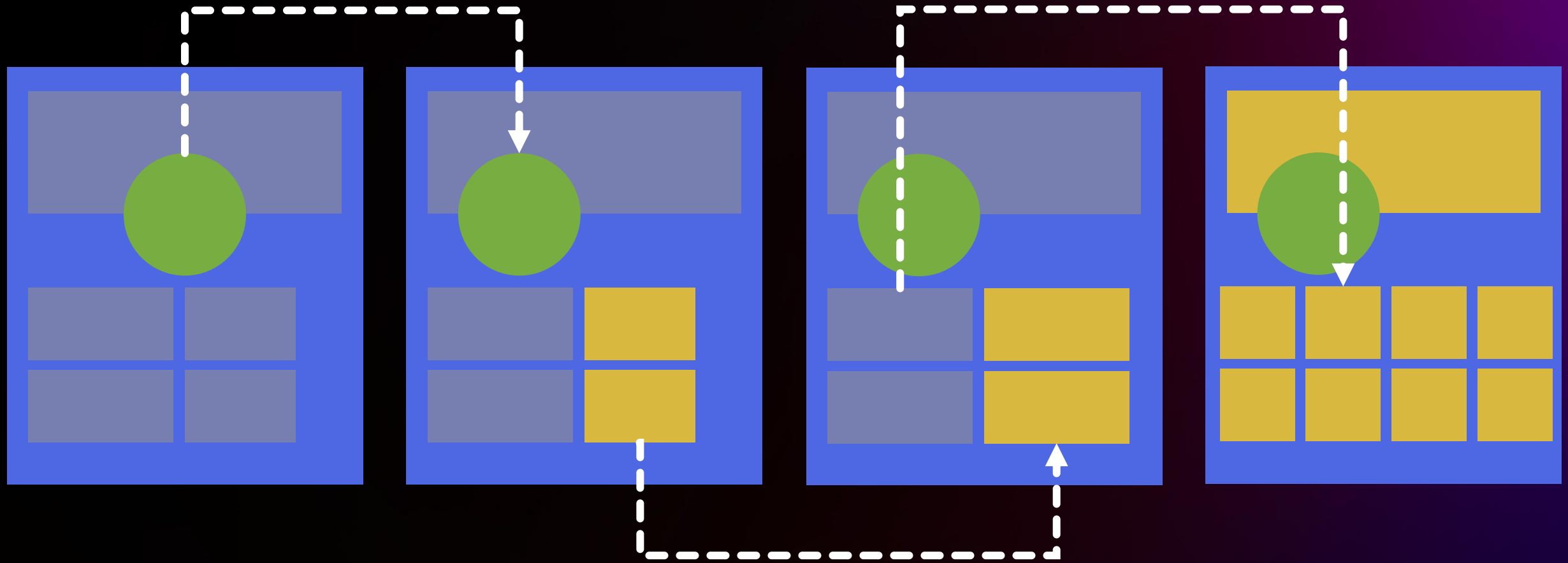






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Developers spend months pixel-pushing



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50% of designers are not satisfied with developers' implementation of designs

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Designers not happy

Developers frustrated

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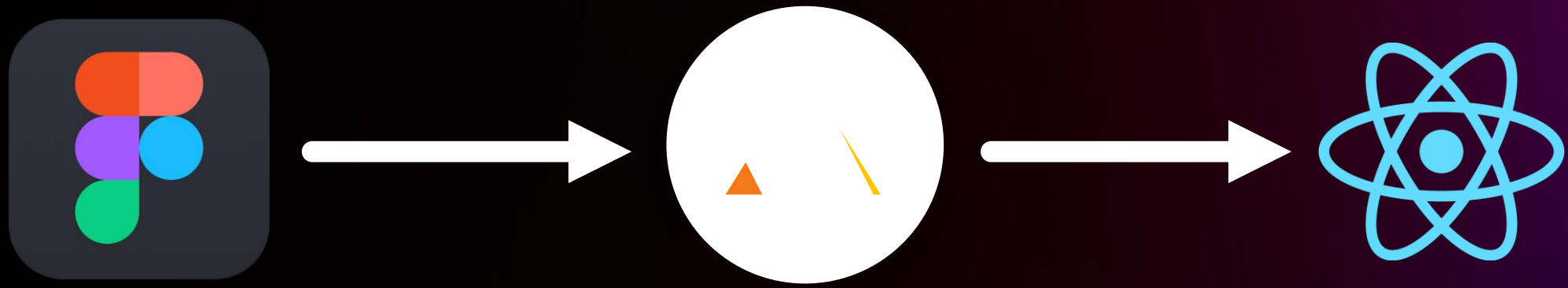
What if . . .



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Introducing AWS Amplify Studio



Amplify Studio

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AWS Summit File

Share

53%

Layers Assets My Components

Pages

README

Primitives

My Components

Examples

TopBar

small

AppIcon

Title

Button

medium

Details

image

Content

NameContainer

NameIcon

NameHeading

AddressContainer

AddressIcon

AddressHeading

Description

Location

NameContainer

MyIcon

Heading

label

Description

AppIcon

MyIcon

Components

TopBar

René's recommendations for Seattle

Sign out

René's recommendations for Seattle

Sign out

Location

Name

Description

400 × Hug

Details

Name

Address

Description

Rocket

Screens

Frame 419

René's recomm

Name

Description

Name

Description

Name

Description

Name

Description

Name

Description

Name

Design Prototype Inspect

Frame

X 2433 Y 471

W 400 H 84

Fixed Hug

0° 10

Clip content

Location

Properties

Auto layout

10

10 10

Layout grid

Layer

Pass through 100%

Fill

FFFFFF 100%

colors/brand/primary/60

Inside 1

Selection colors

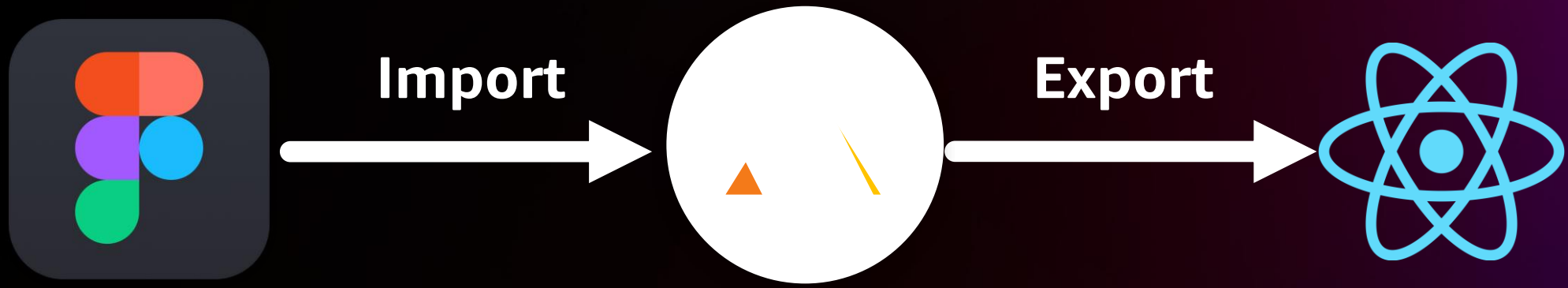
colors/brand/primary/60

colors/font/primary

colors/font/primary

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Recap

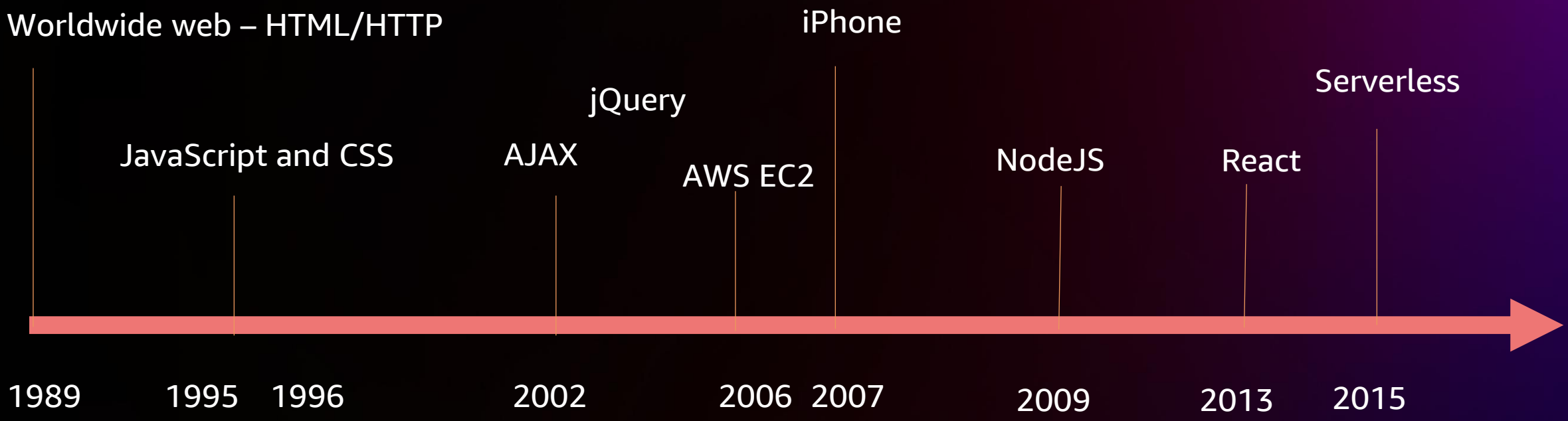


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But wait! There’s so much more to building an app!

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Evolution of frontend



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Types of apps – the 90s

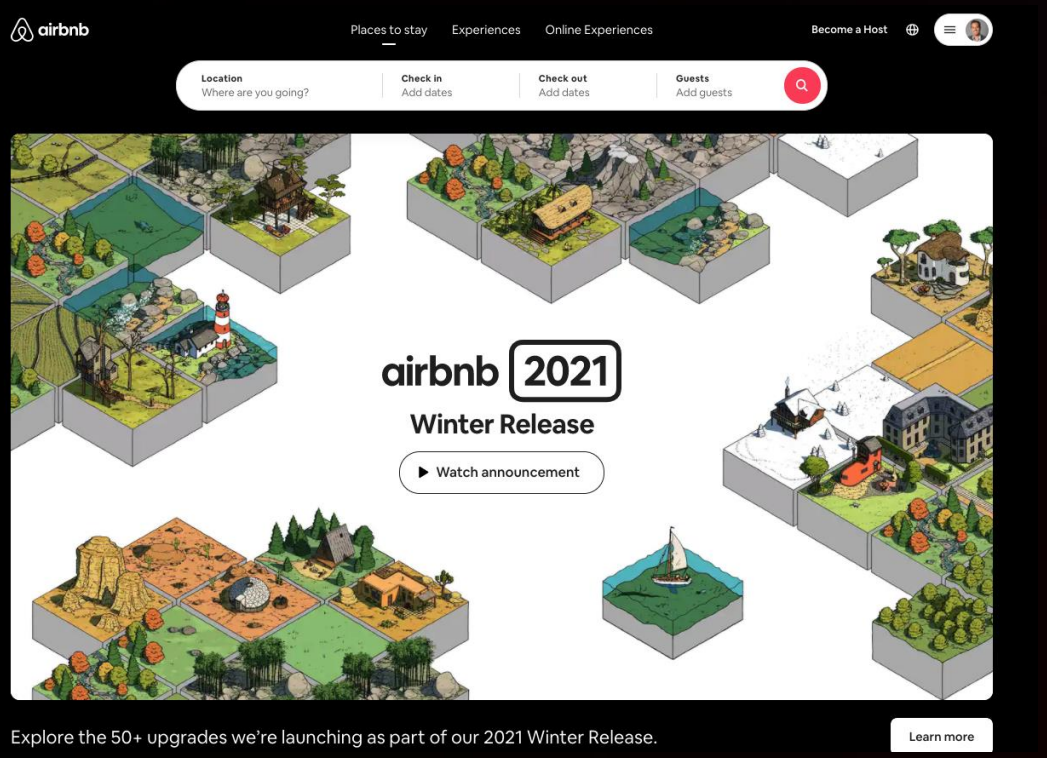


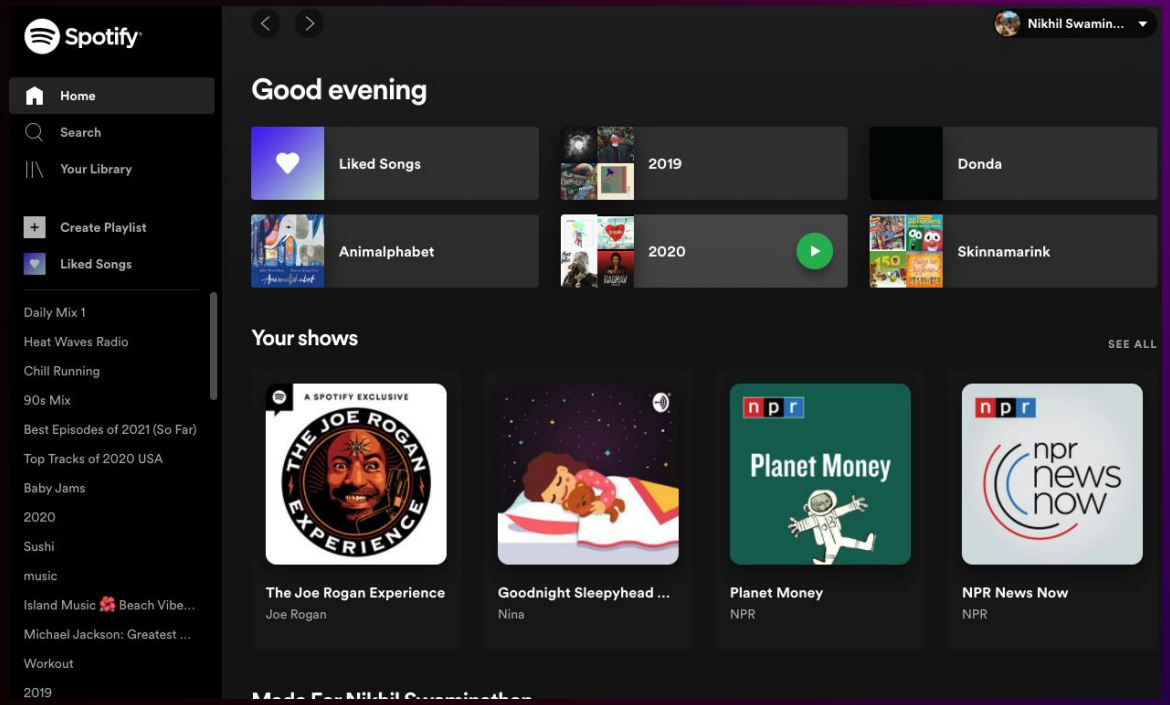


Static content with hyperlinks

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2010 to the present

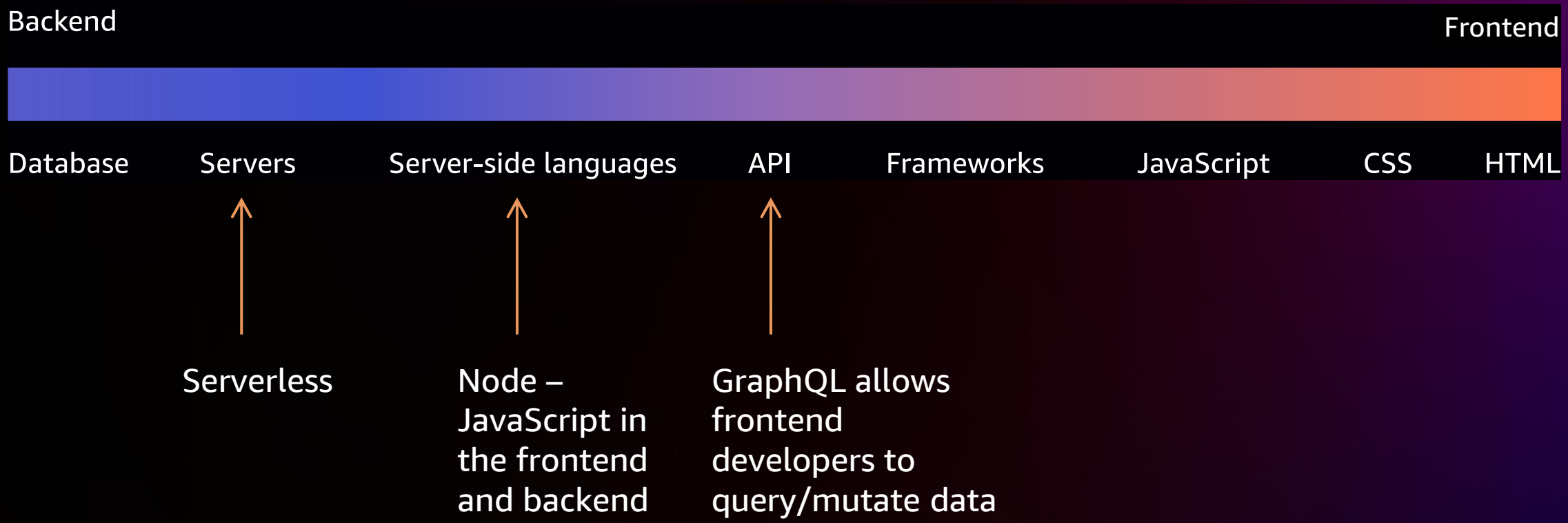




Web apps – responsive, performant, feature-rich

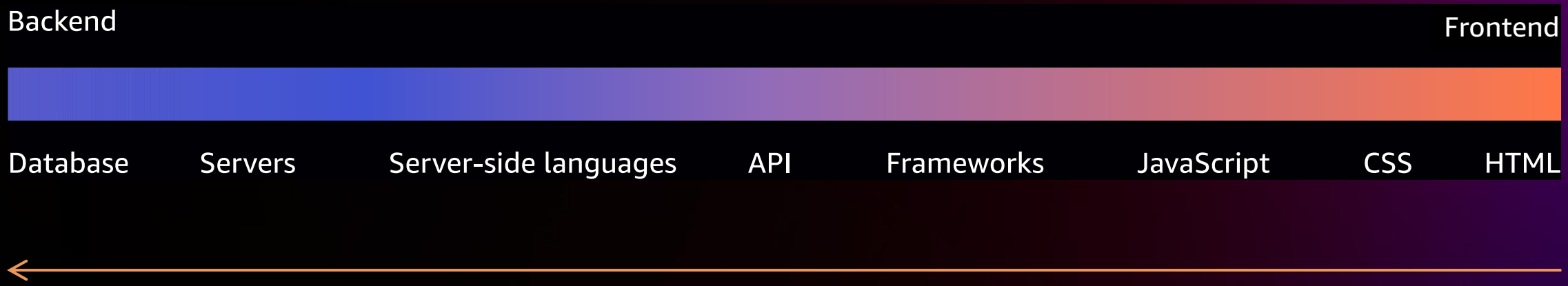
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Full-stack app



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Full-stack app



Frontend developers are increasingly responsible for building full-stack functionality

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We built Amplify to make it easy for frontend developers to build full-stack apps

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Amplify – Quick tour

Build



Configure UI components and AWS backends fast



Seamlessly connect frontends

Ship



Deploy your app frontend and backend

Scale

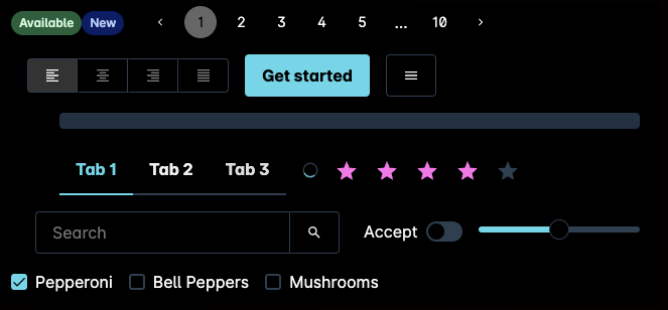


Use CDK to override, add, and export infrastructure

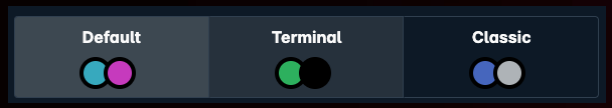
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Build beautiful UIs

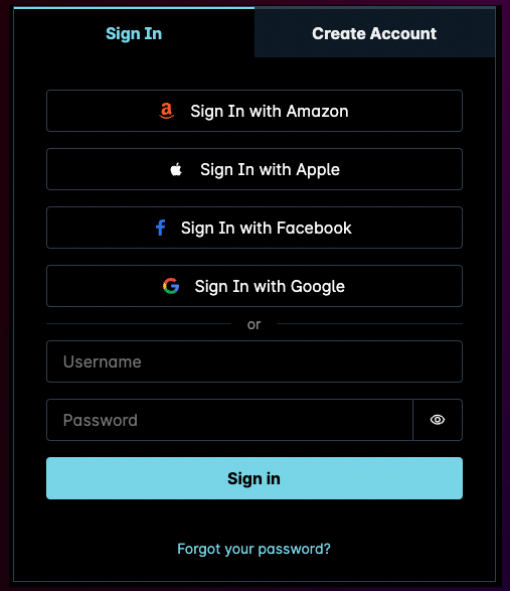
UI primitives



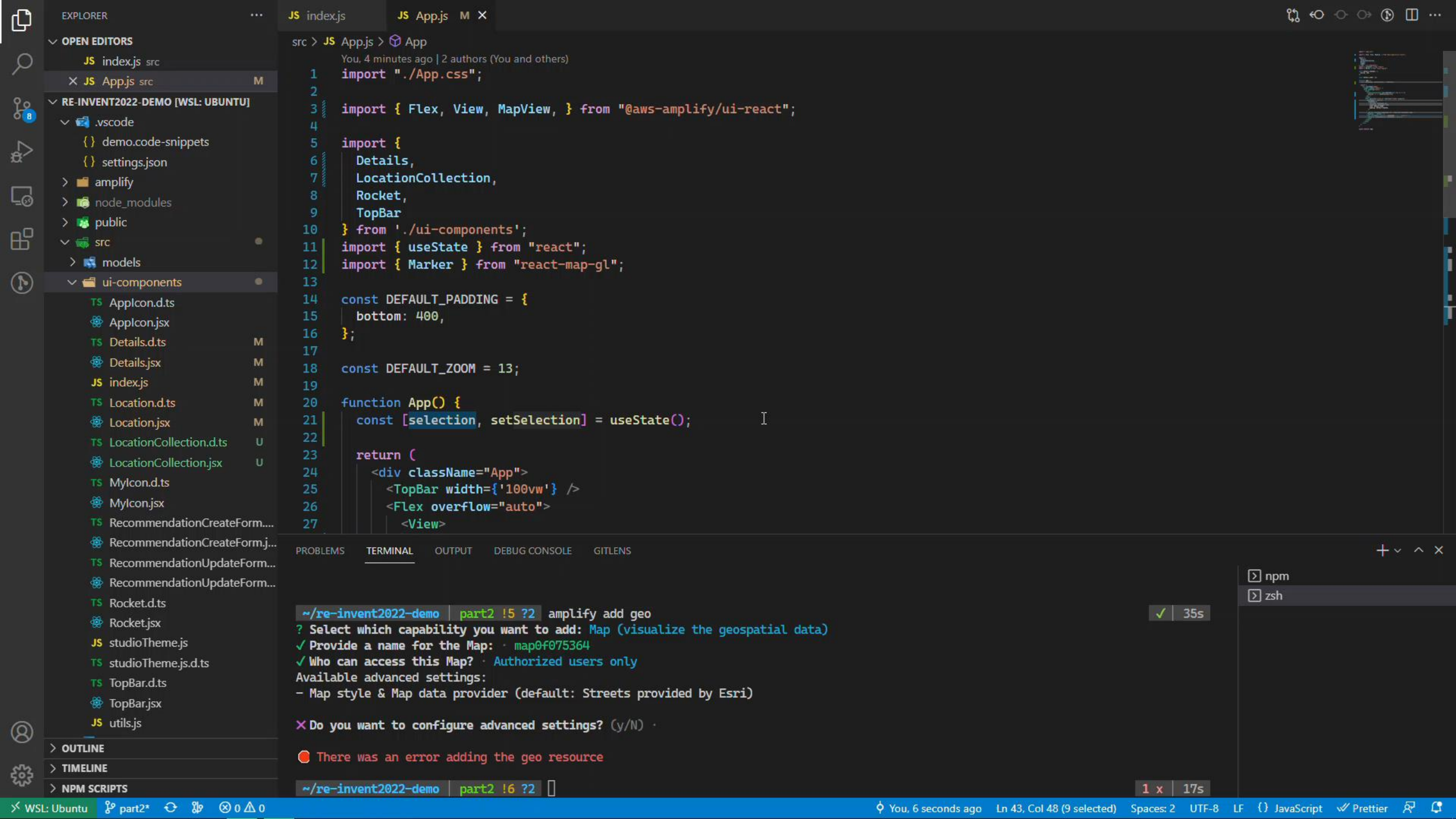
Theming



Cloud-connected components

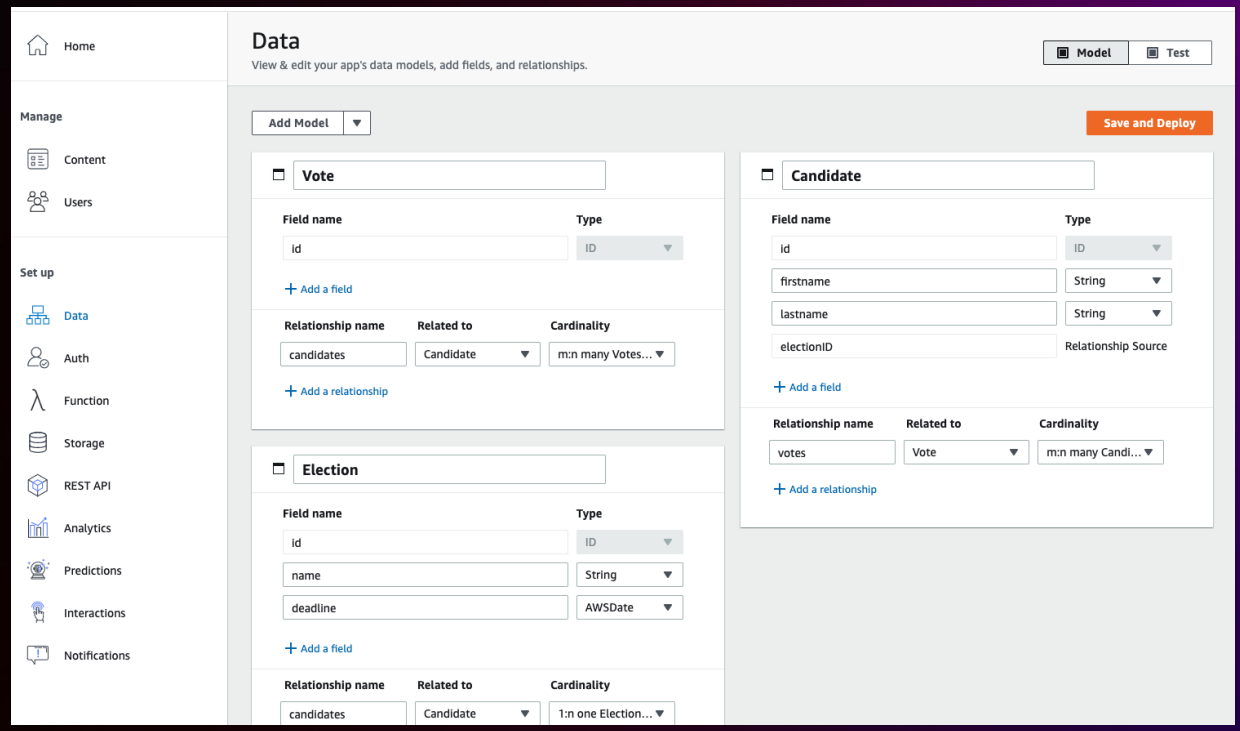


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EXPLORER
OPEN EDITORS
index.js src
App.js src M
RE-INVENT2022-DEMO [WSL: UBUNTU]
.vscode
demo.code-snippets
settings.json
amplify
node_modules
public
src
models
ui-components
AppIcon.d.ts
AppIcon.jsx
Details.d.ts M
Details.jsx M
index.js M
Location.d.ts M
Location.jsx M
LocationCollection.d.ts U
LocationCollection.jsx U
MyIcon.d.ts
MyIcon.jsx
RecommendationCreateForm....
RecommendationCreateForm.j...
RecommendationUpdateForm...
RecommendationUpdateForm...
Rocket.d.ts
Rocket.jsx
studioTheme.js
studioTheme.js.d.ts
TopBar.d.ts
TopBar.jsx
utils.js
OUTLINE
TIMELINE
NPM SCRIPTS
index.js
App.js M
src > App.js > App
You, 4 minutes ago | 2 authors (You and others)
1 import "./App.css";
2
3 import { Flex, View, MapView, } from "@aws-amplify/ui-react";
4
5 import {
6 Details,
7 LocationCollection,
8 Rocket,
9 TopBar
10 } from './ui-components';
11 import { useState } from "react";
12 import { Marker } from "react-map-gl";
13
14 const DEFAULT_PADDING = {
15 bottom: 400,
16 };
17
18 const DEFAULT_ZOOM = 13;
19
20 function App() {
21 const [selection, setSelection] = useState();
22
23 return (
24
25 <TopBar width={'100vw'} />
26 <Flex overflow="auto">
27 <View>
PROBLEMS
TERMINAL
OUTPUT
DEBUG CONSOLE
GITLENS
npm
zsh
~/re-invent2022-demo | part2 !5 ?2 amplify add geo
✓ 35s
? Select which capability you want to add: Map (visualize the geospatial data)
✓ Provide a name for the Map: · map0f075364
✓ Who can access this Map? · Authorized users only
Available advanced settings:
- Map style & Map data provider (default: Streets provided by Esri)
✗ Do you want to configure advanced settings? (y/N) ·
There was an error adding the geo resource
~/re-invent2022-demo | part2 !6 ?2
1 x 17s
WSL: Ubuntu
part2*
0 0
You, 6 seconds ago
Ln 43, Col 48 (9 selected)
Spaces: 2
UTF-8
LF
JavaScript
Prettier

Build – Set up data model/GraphQL API

- Model data and relationships to set up a GraphQL API
- Set up authorization rules
- Manage app data
- Connect to UI components



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René's recommendations for Seattle

Sign out

Name
Description

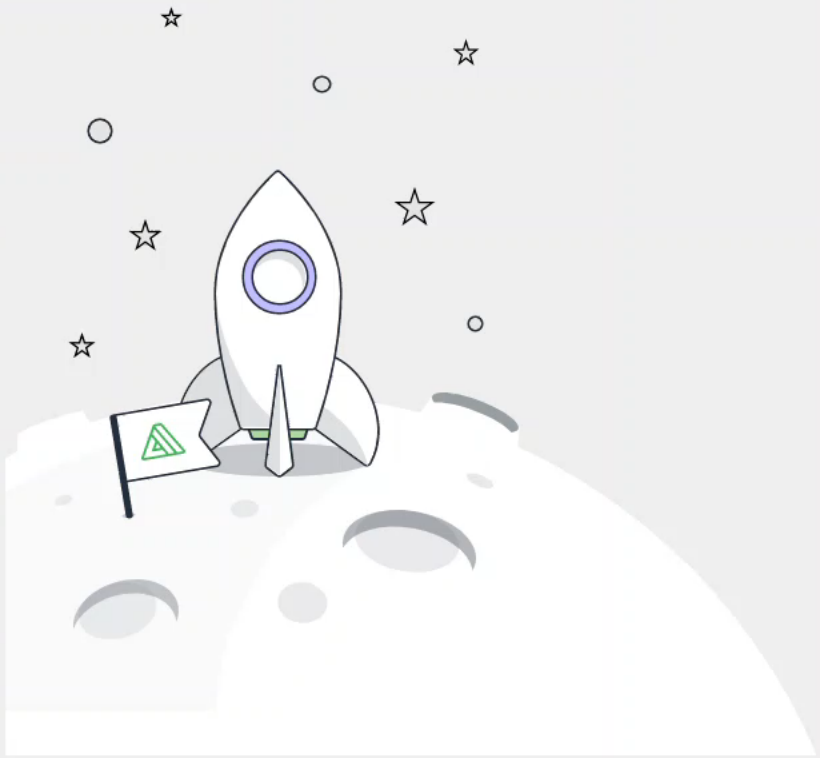
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Description

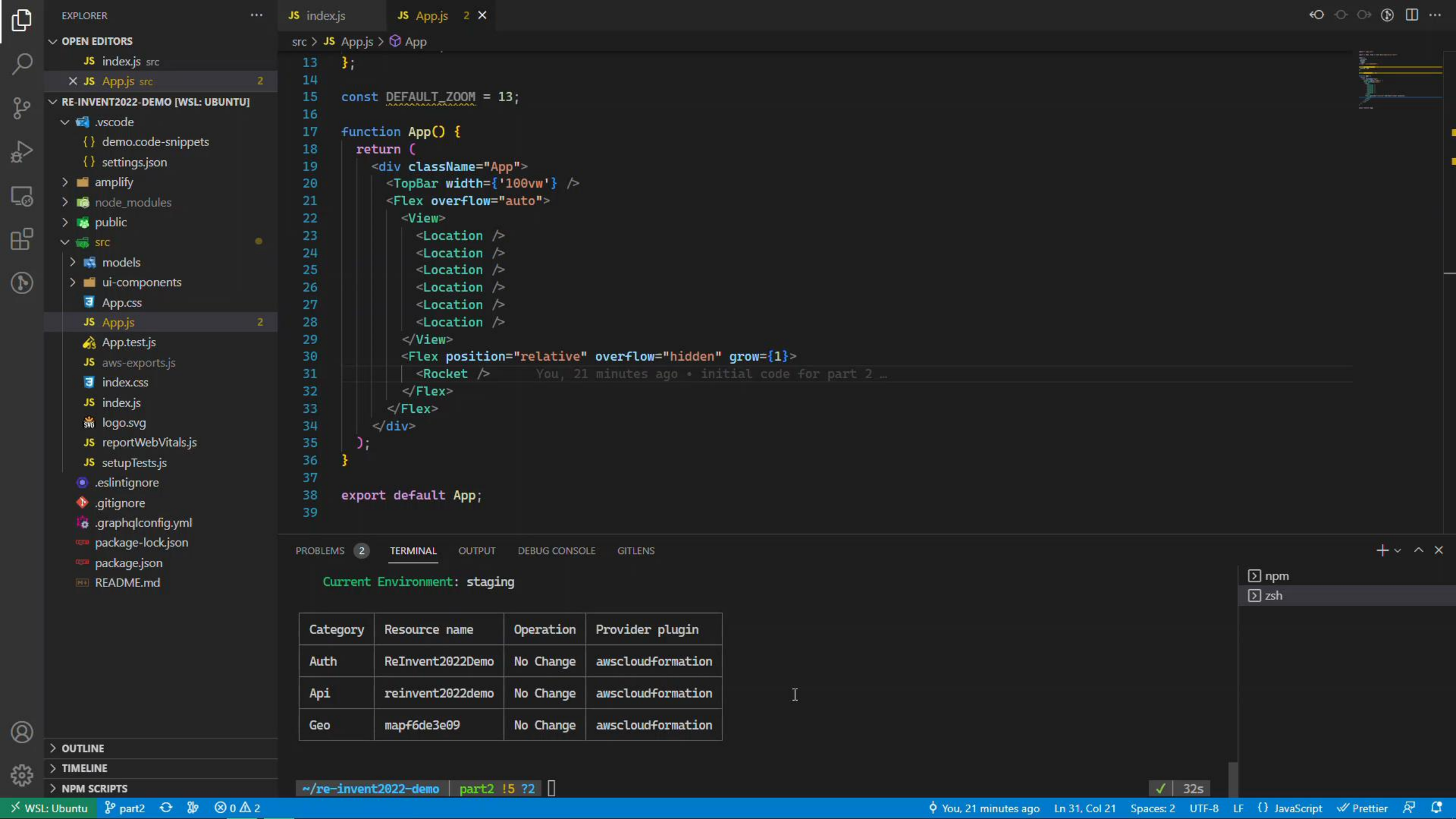
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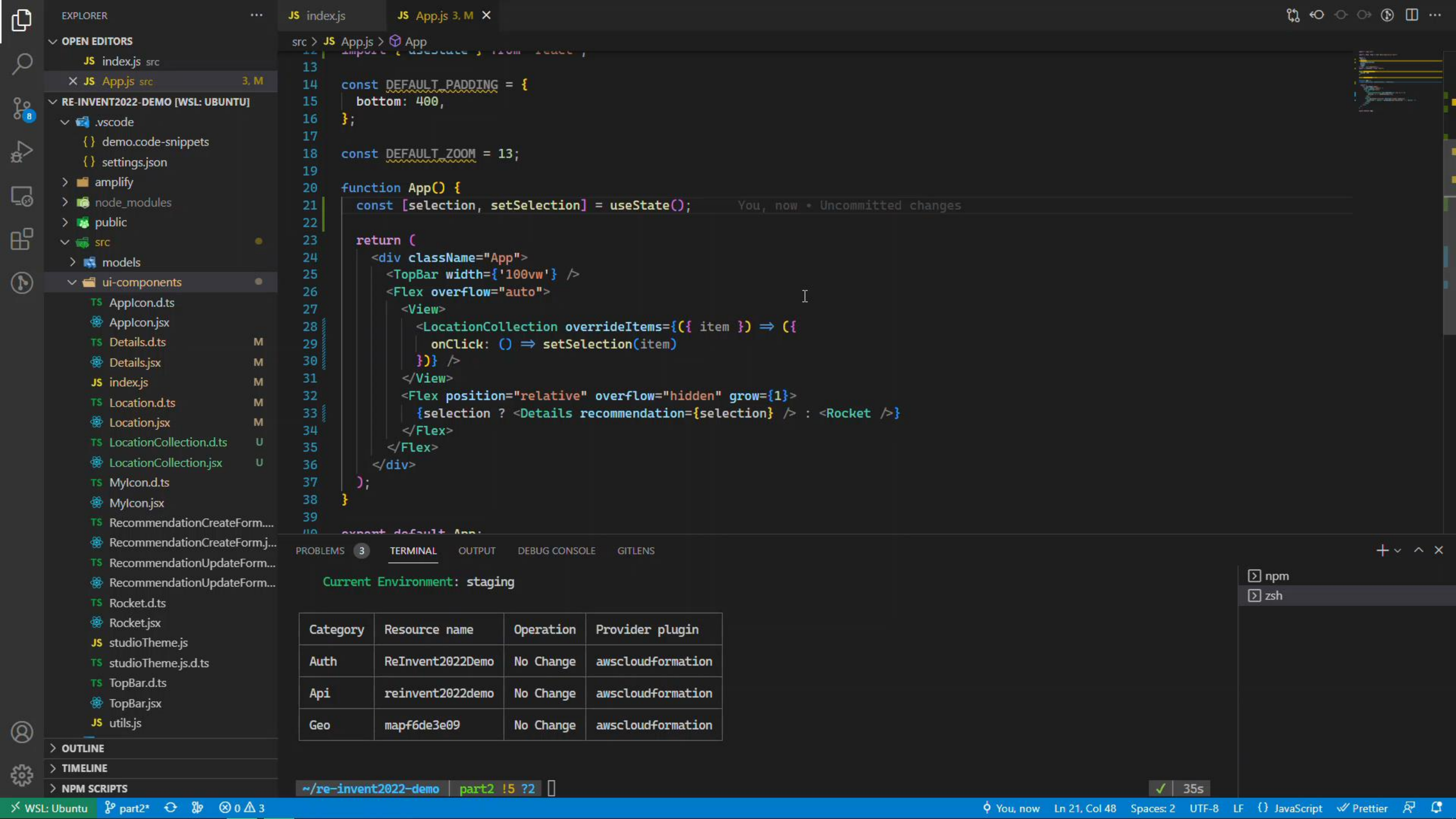
Name
Description

Name
Description

Name
Description




EXPLORER
OPEN EDITORS
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App.js src 2
RE-INVENT2022-DEMO [WSL: UBUNTU]
.vscode
demo.code-snippets
settings.json
amplify
node_modules
public
src
models
ui-components
App.css
App.js 2
App.test.js
aws-exports.js
index.css
index.js
logo.svg
reportWebVitals.js
setupTests.js
.eslintignore
.gitignore
.graphqlconfig.yml
package-lock.json
package.json
README.md
OUTLINE
TIMELINE
NPM SCRIPTS
index.js
App.js 2
src > App.js > App
13 };
14
15 const DEFAULT_ZOOM = 13;
16
17 function App() {
18 return (
19
20 <TopBar width={'100vw'} />
21 <Flex overflow="auto">
22 <View>
23 <Location />
24 <Location />
25 <Location />
26 <Location />
27 <Location />
28 <Location />
29 </View>
30 <Flex position="relative" overflow="hidden" grow={1}>
31 <Rocket /> You, 21 minutes ago • initial code for part 2 …
32 </Flex>
33 </Flex>
34
35);
36 }
37
38 export default App;
39
PROBLEMS 2
TERMINAL
OUTPUT
DEBUG CONSOLE
GITLENS
Current Environment: staging
Category | Resource name | Operation | Provider plugin
Auth | ReInvent2022Demo | No Change | awscloudformation
Api | reinvent2022demo | No Change | awscloudformation
Geo | mapf6de3e09 | No Change | awscloudformation
~/re-invent2022-demo | part2 !5 ?2
32s
npm
zsh
WSL: Ubuntu
part2
0 2
You, 21 minutes ago
Ln 31, Col 21
Spaces: 2
UTF-8
LF
JavaScript
Prettier


EXPLORER
OPEN EDITORS
index.js src
App.js src 3, M
RE-INVENT2022-DEMO [WSL: UBUNTU]
.vscode
demo.code-snippets
settings.json
amplify
node_modules
public
src
models
ui-components
AppIcon.d.ts
AppIcon.jsx
Details.d.ts M
Details.jsx M
index.js M
Location.d.ts M
Location.jsx M
LocationCollection.d.ts U
LocationCollection.jsx U
MyIcon.d.ts
MyIcon.jsx
RecommendationCreateForm....
RecommendationCreateForm.j...
RecommendationUpdateForm...
RecommendationUpdateForm...
Rocket.d.ts
Rocket.jsx
studioTheme.js
studioTheme.js.d.ts
TopBar.d.ts
TopBar.jsx
utils.js
OUTLINE
TIMELINE
NPM SCRIPTS
index.js
App.js 3, M
src > App.js > App
const DEFAULT_PADDING = {
bottom: 400,
};
const DEFAULT_ZOOM = 13;
function App() {
const [selection, setSelection] = useState();
You, now • Uncommitted changes
return (

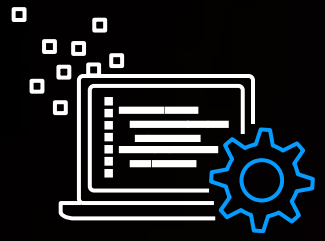
<TopBar width={'100vw'} />
<Flex overflow="auto">
<View>
<LocationCollection overrideItems={({ item }) => ({
onClick: () => setSelection(item)
})} />
</View>
<Flex position="relative" overflow="hidden" grow={1}>
{selection ? <Details recommendation={selection} /> : <Rocket />}
</Flex>
</Flex>

);
}
PROBLEMS 3
TERMINAL
OUTPUT
DEBUG CONSOLE
GITLENS
Current Environment: staging
Category
Resource name
Operation
Provider plugin
Auth
ReInvent2022Demo
No Change
awscloudformation
Api
reinvent2022demo
No Change
awscloudformation
Geo
mapf6de3e09
No Change
awscloudformation
~/re-invent2022-demo
part2 !5 ?2
35s
npm
zsh
WSL: Ubuntu
part2*
0 3
You, now
Ln 21, Col 48
Spaces: 2
UTF-8
LF
JavaScript
Prettier

Amplify Studio form builder

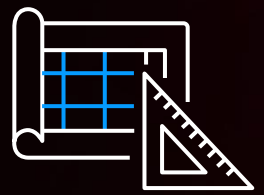
BUILD, DESIGN, AND RENDER CLOUD CONNECTED FORMS FOR ANY API WITH NEW REACT FORM BUILDER

NEW



Forms for any API

Generate forms from an API definition or create new forms from scratch



Design visually

Save time by visually configuring common validation rules

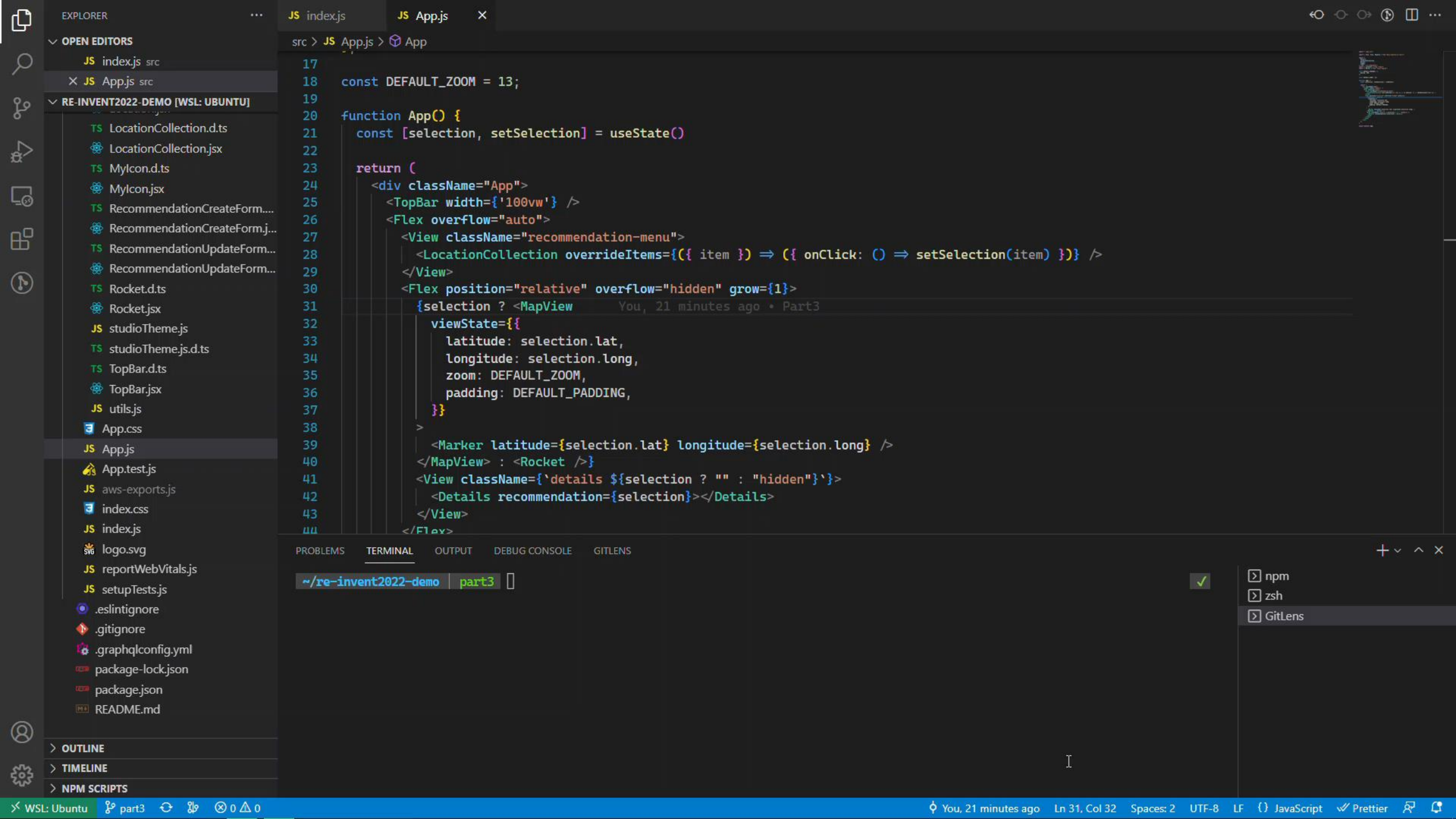


Extend via code

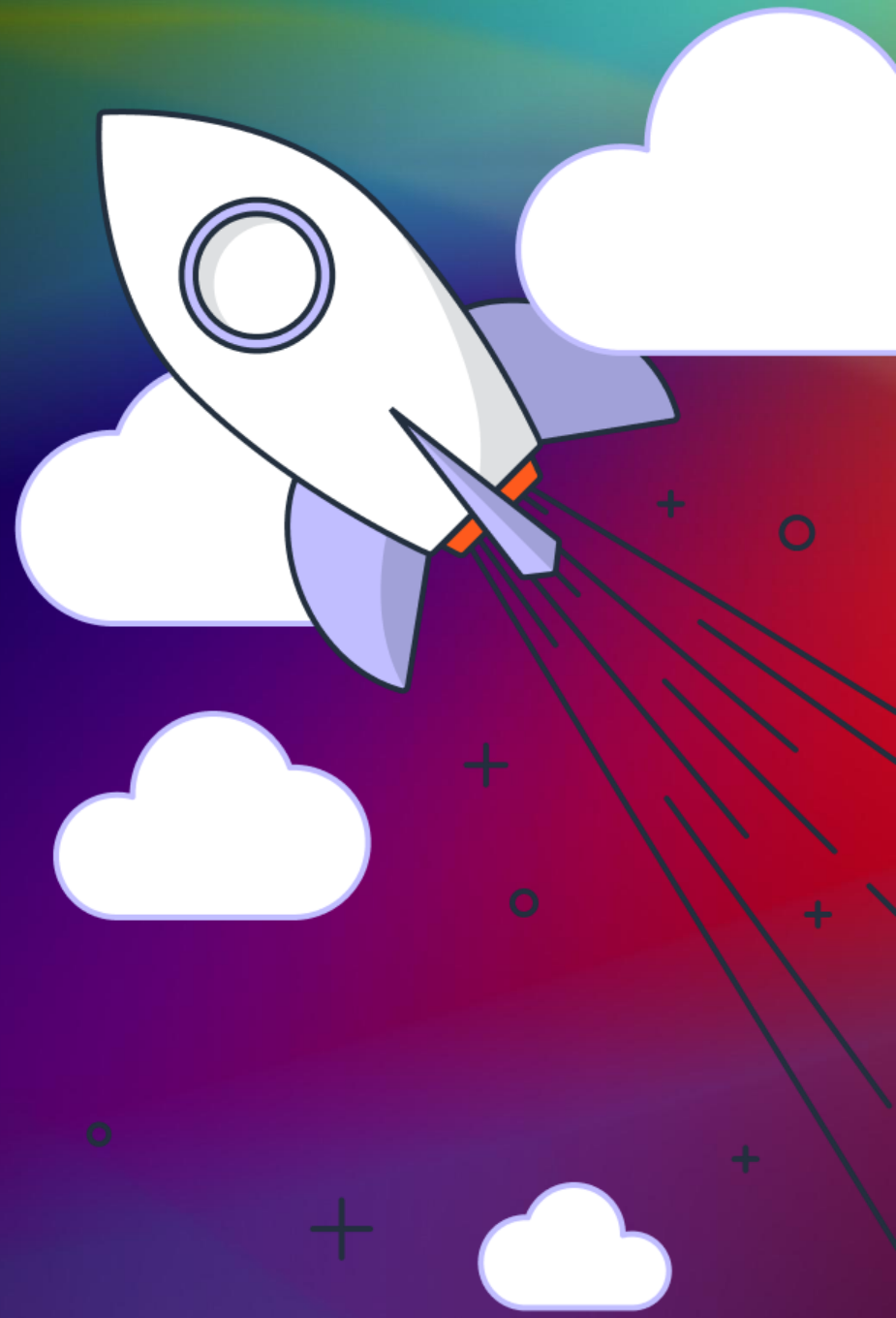
Customize validation rules and form styling in code

aws

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EXPLORER
OPEN EDITORS
index.js src
App.js src
RE-INVENT2022-DEMO [WSL: UBUNTU]
LocationCollection.d.ts
LocationCollection.jsx
MyIcon.d.ts
MyIcon.jsx
RecommendationCreateForm....
RecommendationCreateForm.j...
RecommendationUpdateForm...
RecommendationUpdateForm...
Rocket.d.ts
Rocket.jsx
studioTheme.js
studioTheme.js.d.ts
TopBar.d.ts
TopBar.jsx
utils.js
App.css
App.js
App.test.js
aws-exports.js
index.css
index.js
logo.svg
reportWebVitals.js
setupTests.js
.eslintignore
.gitignore
.graphqlconfig.yml
package-lock.json
package.json
README.md
OUTLINE
TIMELINE
NPM SCRIPTS
index.js
App.js
src > App.js > App
17
18 const DEFAULT_ZOOM = 13;
19
20 function App() {
21 const [selection, setSelection] = useState()
22
23 return (
24
25 <TopBar width={'100vw'} />
26 <Flex overflow="auto">
27 <View className="recommendation-menu">
28 <LocationCollection overrideItems={({ item }) => ({ onClick: () => setSelection(item) })} />
29 </View>
30 <Flex position="relative" overflow="hidden" grow={1}>
31 {selection ? <MapView You, 21 minutes ago • Part3
32 viewState={{
33 latitude: selection.lat,
34 longitude: selection.long,
35 zoom: DEFAULT_ZOOM,
36 padding: DEFAULT_PADDING,
37 }}
38 >
39 <Marker latitude={selection.lat} longitude={selection.long} />
40 </MapView> : <Rocket />}
41 <View className={`details ${selection ? "" : "hidden"}`}>
42 <Details recommendation={selection}></Details>
43 </View>
PROBLEMS
TERMINAL
OUTPUT
DEBUG CONSOLE
GITLENS
~/re-invent2022-demo | part3
npm
zsh
GitLens
WSL: Ubuntu
part3
0 0
You, 21 minutes ago
Ln 31, Col 32
Spaces: 2
UTF-8
LF
JavaScript
Prettier

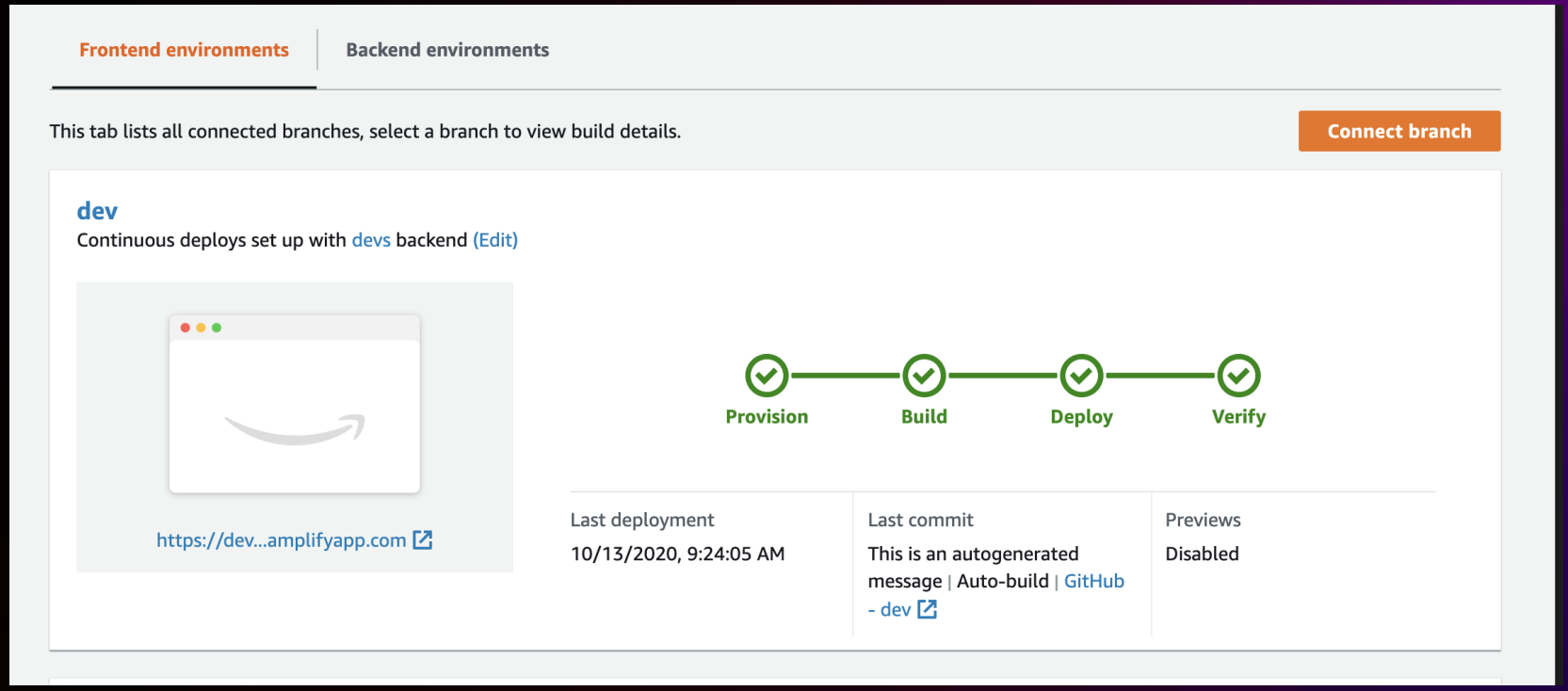
How do I ship it?



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Ship faster with Amplify Hosting

- Fully managed hosting service for modern web apps
- Full-stack continuous deployments
- Easy custom domain setup
- PR previews



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AWS Amplify

Fastest, easiest way to develop mobile and web apps that scale.

GET STARTED

AWS Amplify is a set of products and tools that enable mobile and front-end web developers to build and deploy secure, scalable full-stack applications, powered by AWS.



Build

1 Configure backend

STUDIO-BACKEND

2 Add UI components

STUDIO-UI

3 Connect UI to backend

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AWS Amplify
All apps
re-invent2022-demo
App settings
General
Amplify Studio settings
Domain management
Build settings
Previews
Notifications
Environment variables
Access control
Monitoring
Rewrites and redirects
Custom headers
finished
History
Documentation
Support

All apps > re-invent2022-demo > finished

finished

View latest build | View build history

Build 2

Redeploy this version

Provision ✓ — Build ✓ — Deploy ✓

Domain
https://finished.dshqtig8yaii.amplifyapp.com

Started at
11/30/2022, 3:00:19 PM

Build duration
5 minutes 56 seconds

Source repository
https://github.com/cwoolum/re-invent2022-demo/tree/finished

Last commit message
Inital Commit

Provision | Build | Test | Deploy

Build successfully completed — Download

Cloning repository ✓

Backend ✓

```
1                              ## Checking for associated backend environment...
2                              ## No backend environment association found, continuing...
3  ons may use Math.random() in certain circumstances, which is known to be problematic.  See https://v8.dev/blog/math-random for details.
4  2022-11-30T23:03:45.923Z [WARNING]: npm
5  2022-11-30T23:03:45.923Z [WARNING]: WARN deprecated uuid@3.4.0: Please upgrade  to version 7 or higher.  Older versions may use Math.random() in certain circumstances, which is
       known to be problematic.  See https://v8.dev/blog/math-random for details.
6  2022-11-30T23:03:45.923Z [WARNING]: npm
```


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How do I scale it?



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But is it production-ready?

Frontend

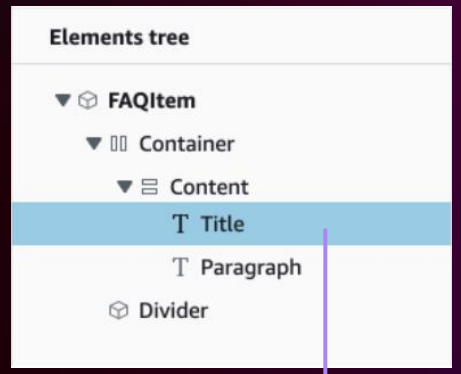
- ✓ UI primitives
- ✓ Customize generated components (incl. child elements!)
- ✓ UI event handler support
- ✓ Theming to match your brand
- ✓ Responsive components

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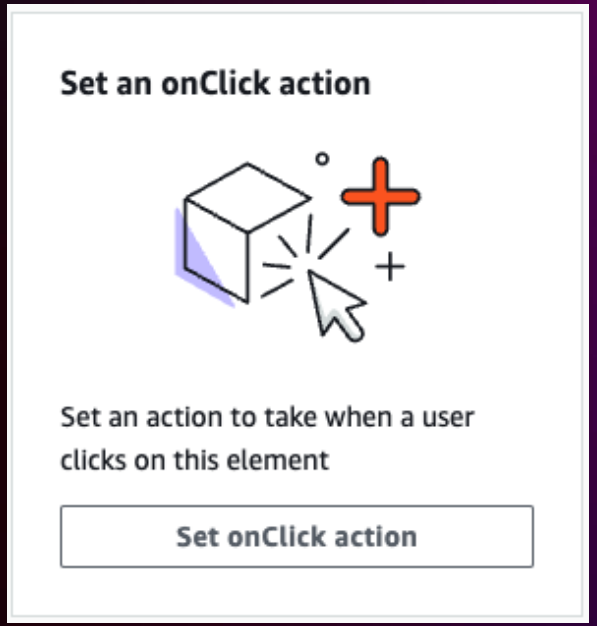

```
1  import {FAQItem} from './ui-components'
2  ...
3  ...
4  <FAQItem overrides={{"Title": { color: "red" } }}/>
```

aws
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But is it production-ready?

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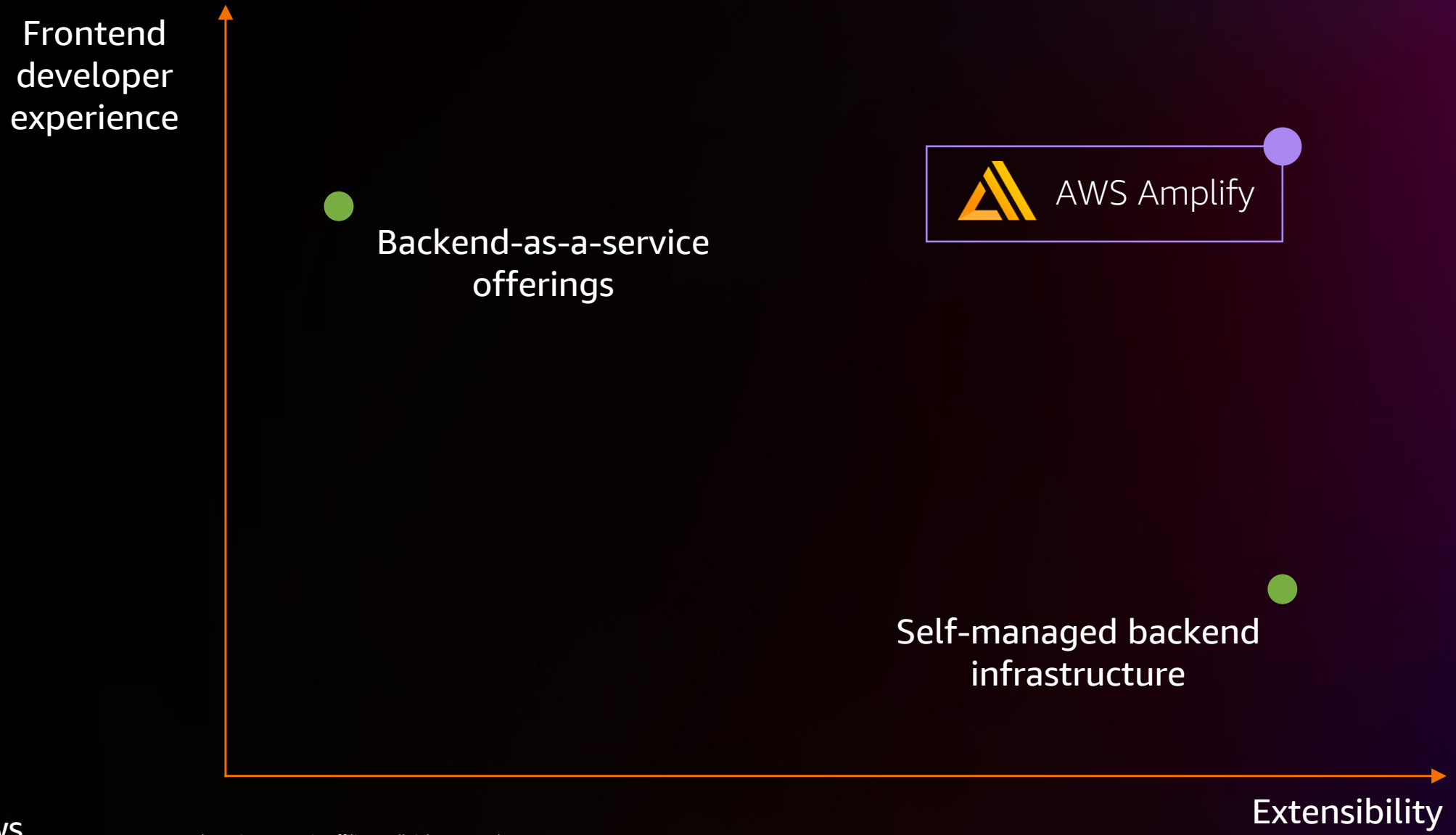


- or -

```
1  import {FAQItem} from './ui-components'
2  ...
3  ...
4  <FAQItem onClick={() => ... }/>
```

aws
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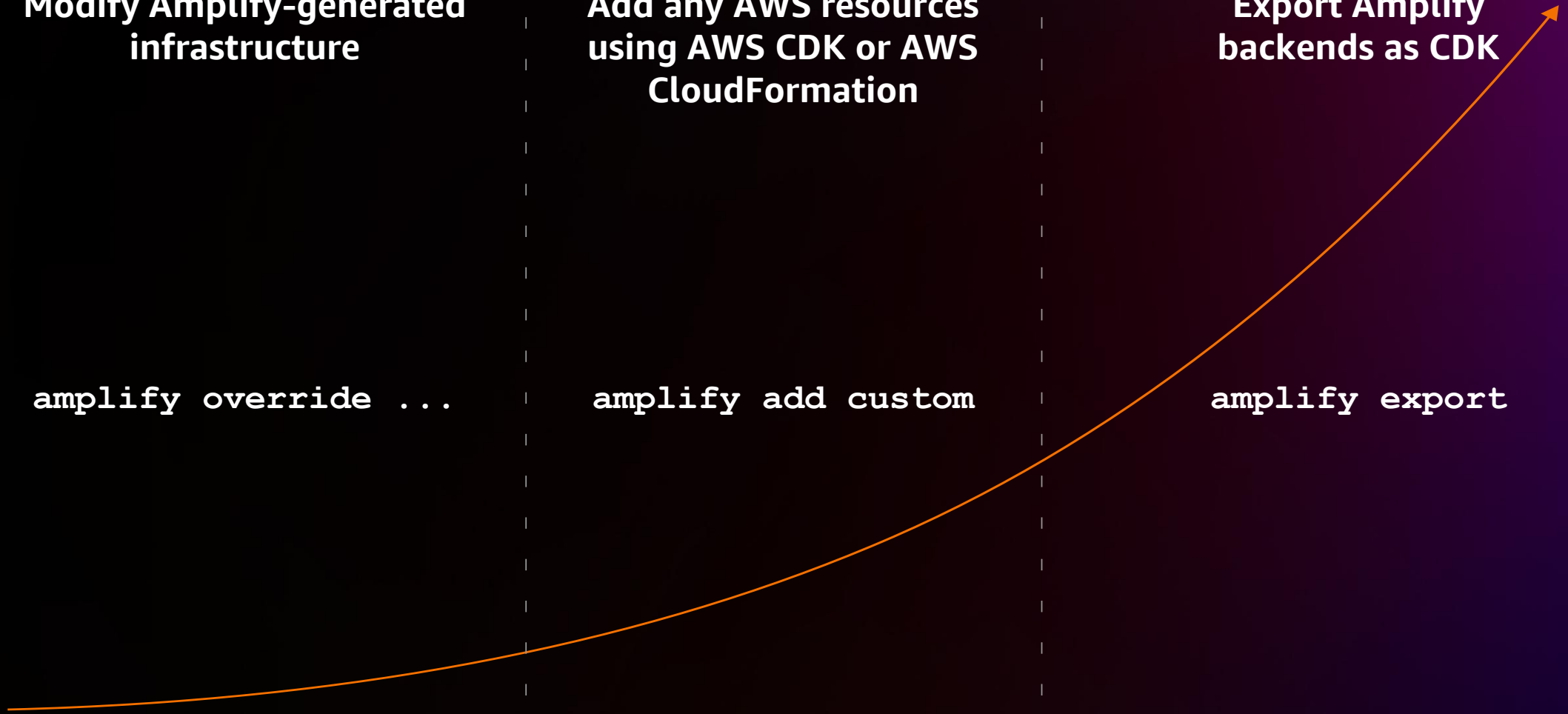
But is the backend production-ready?



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But is the backend production-ready?

Modify Amplify-generated infrastructure	Add any AWS resources using AWS CDK or AWS CloudFormation	Export Amplify backends as CDK
`amplify override ...`	`amplify add custom`	`amplify export`



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Say goodbye to the frustrating app development process

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frustrating app development process

aws

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