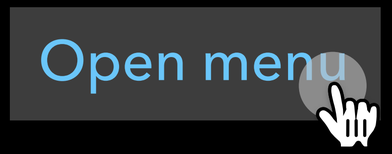
REINFORCING YOUR BLOCKS

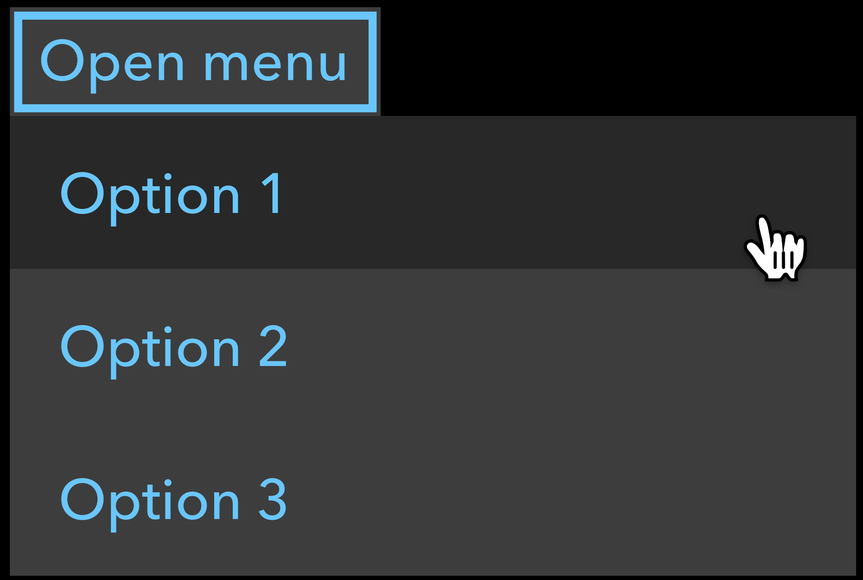
A practical guide to UI component testing with Jest and Storybook

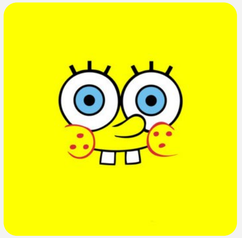
Hi. I'm Diego.

UI components

Open menu


Open menu


Open menu
Option 1
Option 2
Option 3

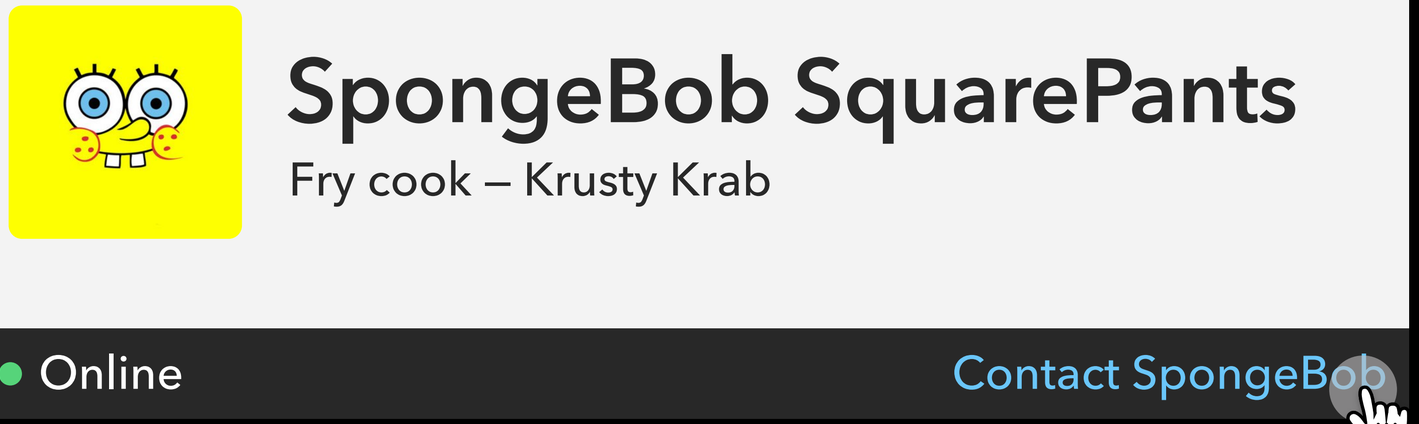


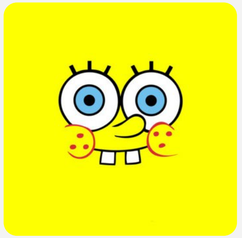
SpongeBob SquarePants

Fry cook – Krusty Krab

Online

Contact SpongeBob


SpongeBob SquarePants
Fry cook – Krusty Krab
Online
Contact SpongeBob



SpongeBob SquarePants

Fry cook – Krusty Krab

Online

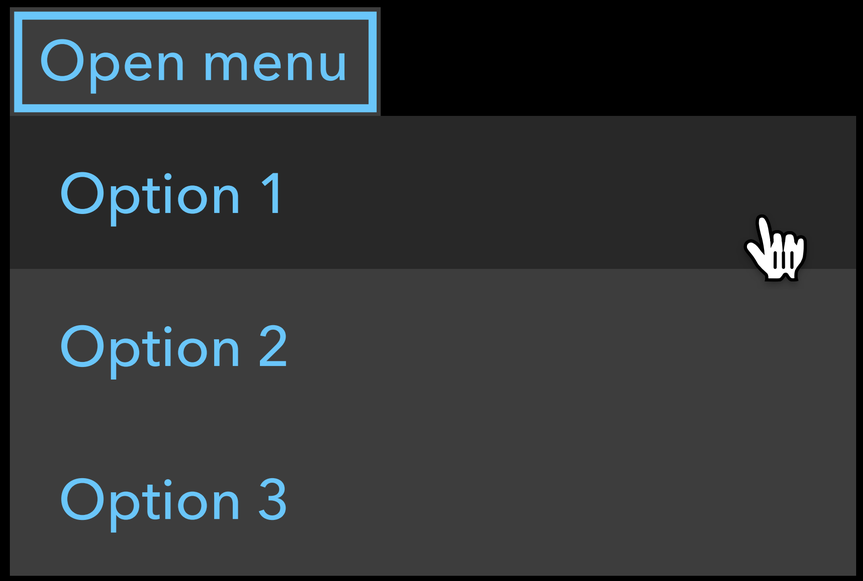
Contact SpongeBob

Start chat

Start voice call

Start video call

Does the UI work for the end-user?


Open menu
Option 1
Option 2
Option 3

Manual testing with Storybook

Automated unit testing
with Jest and DOM Testing Library

This talk is for all JS frameworks

React Vue Angular

Manual Testing with Storybook

package.json

```
{
  "devDependencies": {
    "@storybook/react": "^5.0.0",
    ...
  },
  "scripts": {
    "storybook": "start-storybook",
    ...
  },
  ...
}
```

```
.storybook
  └── config.js

src
 └── OverflowMenu
      ├── OverflowMenu.stories.js
      ├── OverflowMenu.test.js
      └── index.js
 └── setupTests.js
```

.storybook/config.js

```
import { configure } from '@storybook/react';

const loadStories = () => {
  const req = require.context(
    '../src', true, /\.stories\.js$/
  );
  req.keys().forEach(filename => req(filename));
}

configure(loadStories, module);
```

.storybook/config.js

```
import { configure } from '@storybook/react';

const loadStories = () => {
  const req = require.context(
    '../src', true, /\.stories\.js$/
  );
  req.keys().forEach(filename => req(filename));
}

configure(loadStories, module);
```

```
$ npm run storybook
```

```
Storybook 5.1.9 started
7.2 s for manager and 6.8 s for preview

Local:            http://localhost:9000/
On your network:  http://192.168.1.66:9000/
```

```
$ npm run storybook
```

```
Storybook 5.1.9 started
7.2 s for manager and 6.8 s for preview

Local:            http://localhost:9000/
On your network:  http://192.168.1.66:9000/
```

Storybook

No Preview

Sorry, but you either have no stories or none are selected somehow.

- Please check the Storybook config.
- Try reloading the page.

If the problem persists, check the browser console, or the terminal you've run Storybook from.


.storybook
└── config.js
src
└── OverflowMenu
├── OverflowMenu.stories.js
└── index.js
└── setupTests.js

src/OverflowMenu/OverflowMenu.stories.js

src/OverflowMenu/OverflowMenu.stories.js

```
import React from 'react';
import { storiesOf } from '@storybook/react';
import { OverflowMenu, MenuItem } from './OverflowMenu.js';
```

src/OverflowMenu/OverflowMenu.stories.js

```
import React from 'react';
import { storiesOf } from '@storybook/react';
import { OverflowMenu, MenuItem } from './OverflowMenu.js';

const stories = storiesOf('OverflowMenu', module);
```

src/OverflowMenu/OverflowMenu.stories.js

```
import React from 'react';
import { storiesOf } from '@storybook/react';
import { OverflowMenu, MenuItem } from './OverflowMenu.js';

const stories = storiesOf('OverflowMenu', module);

stories.add('default', () => (




));
```

src/OverflowMenu/OverflowMenu.stories.js

```
import React from 'react';
import { storiesOf } from '@storybook/react';
import { OverflowMenu, MenuItem } from './OverflowMenu.js';

const stories = storiesOf('OverflowMenu', module);

stories.add('default', () => (
  <OverflowMenu toggleText="Open menu">
    <MenuItem>Option 1</MenuItem>
    <MenuItem>Option 2</MenuItem>
    <MenuItem>Option 3</MenuItem>
  </OverflowMenu>
));
```

src/OverflowMenu/OverflowMenu.stories.js

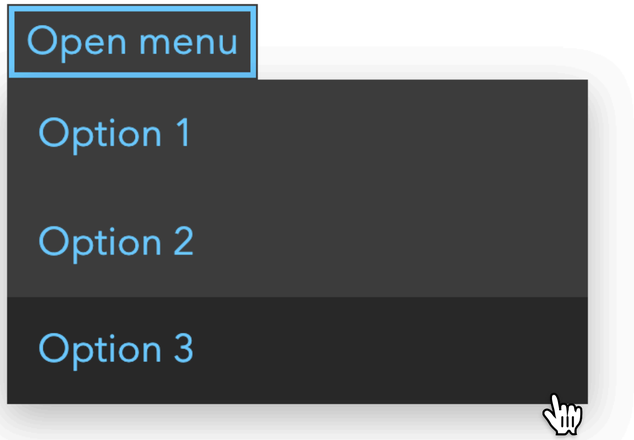
```
import React from 'react';
import { storiesOf } from '@storybook/react';
import { OverflowMenu, MenuItem } from './OverflowMenu.js';

const stories = storiesOf('OverflowMenu', module);

stories.add('default', () => (
  <OverflowMenu toggleText="Open menu">
    <MenuItem>Option 1</MenuItem>
    <MenuItem>Option 2</MenuItem>
    <MenuItem>Option 3</MenuItem>
  </OverflowMenu>
));
```

Storybook

Press "/" to search...

OverflowMenu

default



Guide 1

Test component variations

src/OverflowMenu/OverflowMenu.stories.js

```
stories.add('flipped', () => (
  <OverflowMenu
    toggleText="Open menu"
    flipped={true}
   >
    <MenuItem>Option 1</MenuItem>
    <MenuItem>Option 2</Item>
    <MenuItem>Option 3</MenuItem>
  </OverflowMenu>
));
```

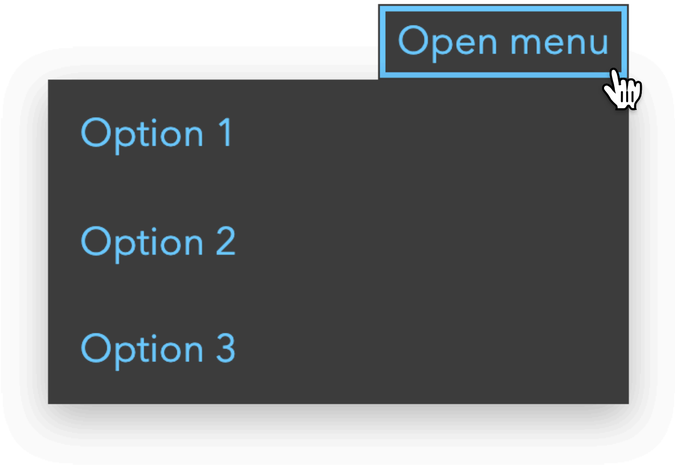
src/OverflowMenu/OverflowMenu.stories.js

```
stories.add('flipped', () => (
  <OverflowMenu
    toggleText="Open menu"
    flipped={true}
  >
    <MenuItem>Option 1</MenuItem>
    <MenuItem>Option 2</Item>
    <MenuItem>Option 3</MenuItem>
  </OverflowMenu>
));
```

Storybook

Press "/" to search...

- OverflowMenu
  - default
  - **flipped**



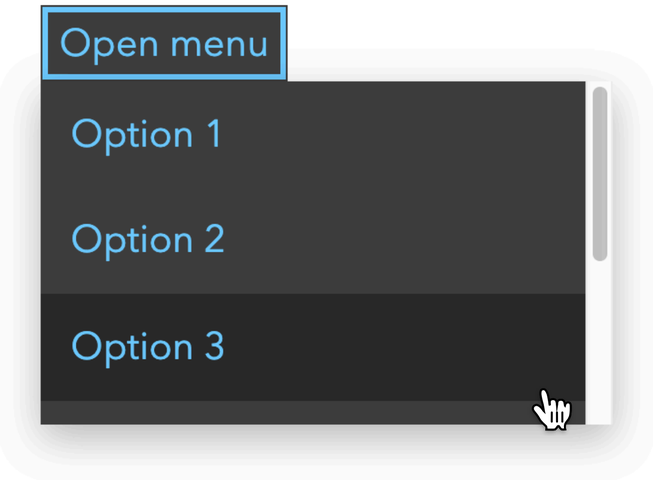
Guide 2

Include Storybook addons

Storybook

Press "/" to search...

- ContactCard
- OverflowMenu
  - default
  - flipped
  - **with lots of items**
  - with long toggle text



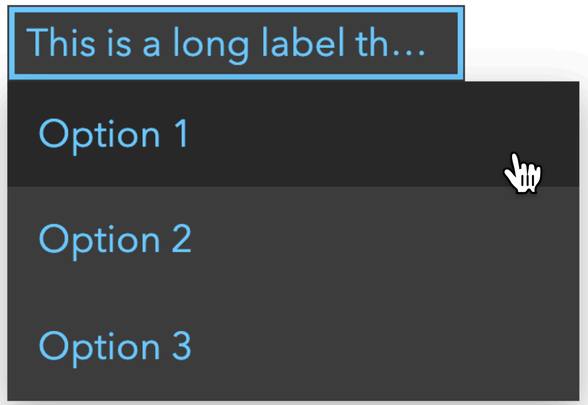
Guide 3

Test edge cases

Storybook

Press "/" to search...

- ContactCard
- OverflowMenu
  - default
  - flipped
  - with lots of items
  - **with long toggle text**



Guide 4

Add tests for fixed bugs

Why is testing with Storybook beneficial?

Render working isolated UI

Render working isolated UI

Preview UI in hard-to-replicate states

Render working isolated UI

Preview UI in hard-to-replicate states

Verify styles, animation, and interactions

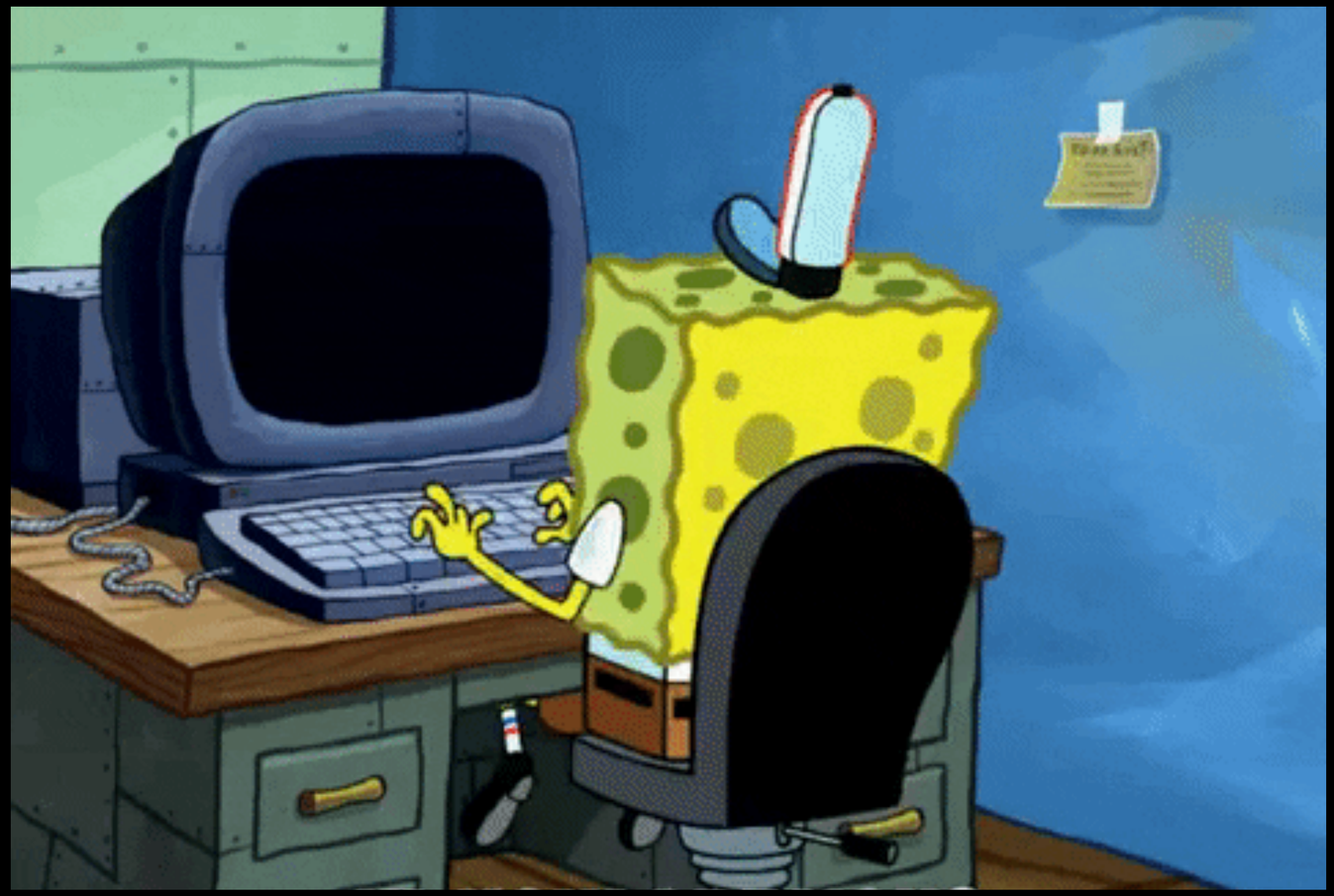
Render working isolated UI

Preview UI in hard-to-replicate states

Verify styles, animation, and interactions

Spot accessibility violations


Automated testing
with Jest and
DOM Testing Library



package.json

```
{
  "devDependencies": {
    "@testing-library/jest-dom": "^4.0.0",
    "@testing-library/react": "^8.0.0",
    "jest": "^24.0.0",
    ...
  },
  "scripts": {
    "test": "jest",
    ...
  },
  ...
}
```

```
.storybook
  └── config.js

src
 └── OverflowMenu
      ├── OverflowMenu.stories.js
      └── index.js
 └── setupTests.js
```

src/setupTests.js

```
import '@testing-library/jest-dom/extend-expect';
import '@testing-library/react/cleanup-after-each';
```

Jest UI tests run in a simulated browser

Assert DOM element data

```
<OverflowMenu toggleText="Open menu">
  <MenuItem>Option 1</MenuItem>
</OverflowMenu>
```

```
<OverflowMenu toggleText="Open menu">
  <MenuItem>Option 1</MenuItem>
</OverflowMenu>
```


.storybook
└── config.js
src
└── OverflowMenu
├── OverflowMenu.stories.js
├── OverflowMenu.test.js
└── index.js
└── setupTests.js

src/OverflowMenu/OverflowMenu.test.js

src/OverflowMenu/OverflowMenu.test.js

```
import React from 'react';
import { render } from '@testing-library/react';
import { OverflowMenu, MenuItem } from './OverflowMenu.js';
```

src/OverflowMenu/OverflowMenu.test.js

```
import React from 'react';
import { render } from '@testing-library/react';
import { OverflowMenu, MenuItem } from './OverflowMenu.js';

test('options are not visible by default', () => {




});
```

src/OverflowMenu/OverflowMenu.test.js

```
import React from 'react';
import { render } from '@testing-library/react';
import { OverflowMenu, MenuItem } from './OverflowMenu.js';

test('options are not visible by default', () => {
  const { queryByText } = render(
    <OverflowMenu toggleText="Open menu">
      <MenuItem>Option 1</MenuItem>
    </OverflowMenu>
  );

});
```

src/OverflowMenu/OverflowMenu.test.js

```
import React from 'react';
import { render } from '@testing-library/react';
import { OverflowMenu, MenuItem } from './OverflowMenu.js';

test('options are not visible by default', () => {
  const { queryByText } = render(
    <OverflowMenu toggleText="Open menu">
      <MenuItem>Option 1</MenuItem>
    </OverflowMenu>
  );
  expect(queryByText('Option 1')).not.toBeInTheDocument();
});
```

src/OverflowMenu/OverflowMenu.test.js

```
import React from 'react';
import { render } from '@testing-library/react';
import { OverflowMenu, MenuItem } from './OverflowMenu.js';

test('options are not visible by default', () => {
  const { queryByText } = render(
    <OverflowMenu toggleText="Open menu">
      <MenuItem>Option 1</MenuItem>
    </OverflowMenu>
  );
  expect(queryByText('Option 1')).not.toBeInTheDocument();
});
```

```
$ npm run test

 PASS  src/OverflowMenu/OverflowMenu.test.js
   ✓ options are not visible by default (20ms)

Test Suites: 1 passed, 1 total
Tests:       1 passed, 1 total
Snapshots:   0 total
Time:        20ms, estimated 1s
```

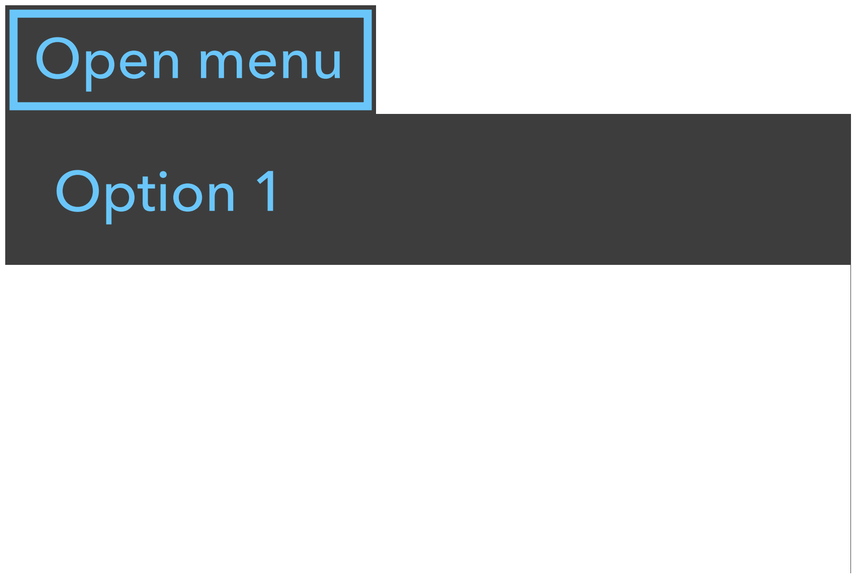
Guide 5

Use UI labels to find DOM elements

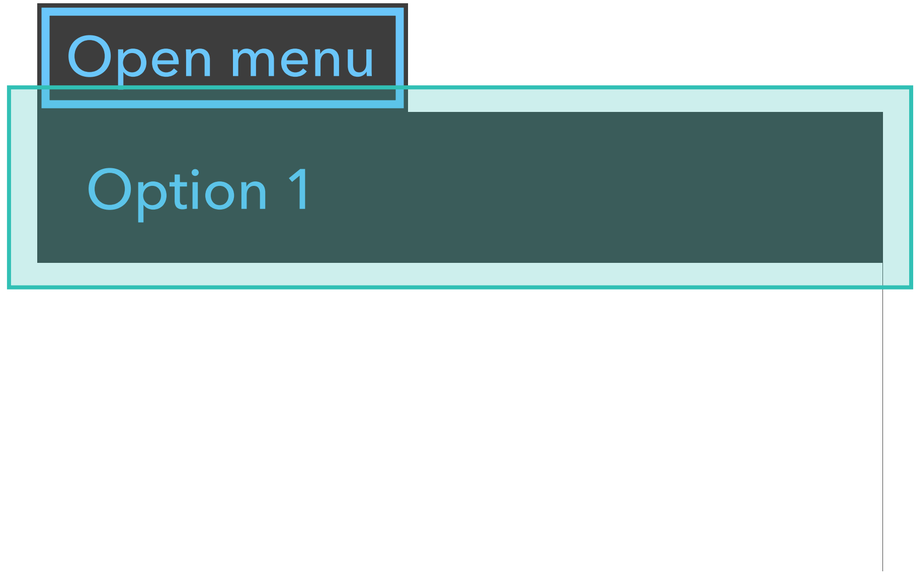
src/OverflowMenu/OverflowMenu.test.js

```
import React from 'react';
import { render } from '@testing-library/react';
import { OverflowMenu, MenuItem } from './OverflowMenu.js';

test('options are not visible by default', () => {
  const { queryByText } = render(
    <OverflowMenu toggleText="Open menu">
      <MenuItem>Option 1</MenuItem>
    </OverflowMenu>
  );
  expect(queryByText('Option 1')).not.toBeInTheDocument();
});
```

```
<OverflowMenu toggleText="Open menu">
  <MenuItem>Option 1</MenuItem>
</OverflowMenu>
```



```
<OverflowMenu toggleText="Open menu">
  <MenuItem>Option 1</MenuItem>
</OverflowMenu>
```



src/OverflowMenu/OverflowMenu.test.js

```
test('options are visible when toggle is clicked', () => {
  const { getByText } = render(
    <OverflowMenu toggleText="Open menu">
      <MenuItem>Option 1</MenuItem>
    </OverflowMenu>
  );
  expect(getByText('Option 1')).toBeVisible();
});
```

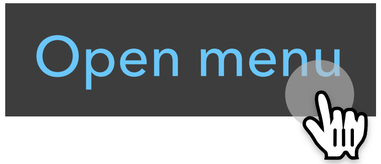
src/OverflowMenu/OverflowMenu.test.js

```
test('options are visible when toggle is clicked', () => {
  const { getByText } = render(
    <OverflowMenu toggleText="Open menu">
      <MenuItem>Option 1</MenuItem>
    </OverflowMenu>
  );
  expect(getByText('Option 1')).toBeVisible();
});
```

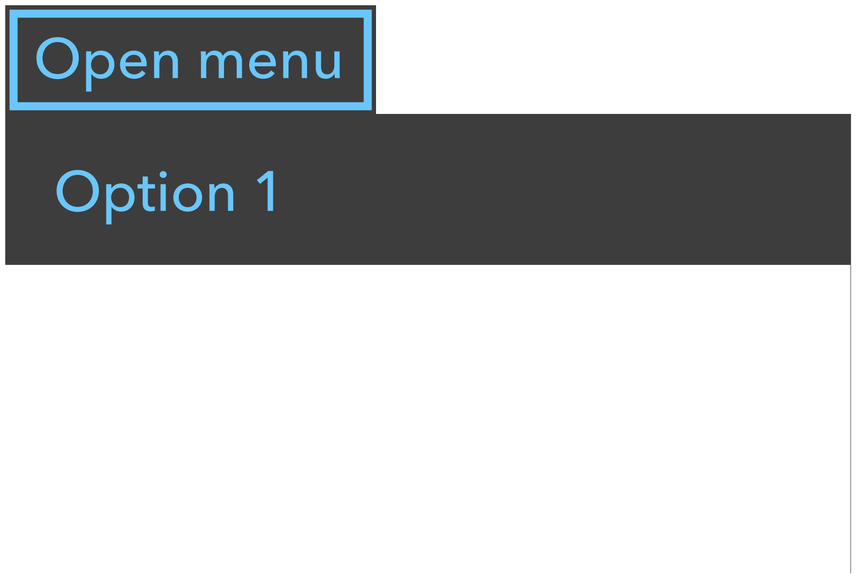
```
 FAIL  src/OverflowMenu/OverflowMenu.test.js
  ● options are visible when toggle is clicked

    Unable to find an element with the text: Option 1.
This could be because the text is broken up by multiple
elements. In this case, you can provide a function for
your text matcher to make your matcher more flexible.

      <body>
        <div>
          <div
            class="sc-bdVaJa huqire"
          >
            <button
```

```
 FAIL  src/OverflowMenu/OverflowMenu.test.js
  ● options are visible when toggle is clicked

    Unable to find an element with the text: Option 1.
This could be because the text is broken up by multiple
elements. In this case, you can provide a function for
your text matcher to make your matcher more flexible.

      <body>
        <div>
          <div
            class="sc-bdVaJa huqire"
          >
            <button
```

```
<OverflowMenu toggleText="Open menu">
  <MenuItem>Option 1</MenuItem>
</OverflowMenu>
```



```
<OverflowMenu toggleText="Open menu">
  <MenuItem>Option 1</MenuItem>
</OverflowMenu>
```



src/OverflowMenu/OverflowMenu.test.js

```
import { render, fireEvent } from '@testing-library/react';

test('options are visible when toggle is clicked', () => {
  const { getByText } = render(
    <OverflowMenu toggleText="Open menu">
      <MenuItem>Option 1</MenuItem>
    </OverflowMenu>
  );
  fireEvent.click(getByText('Open menu'));
  expect(getByText('Option 1')).toBeVisible();
});
```

src/OverflowMenu/OverflowMenu.test.js

```
import { render, fireEvent } from '@testing-library/react';

test('options are visible when toggle is clicked', () => {
  const { getByText } = render(
    <OverflowMenu toggleText="Open menu">
      <MenuItem>Option 1</MenuItem>
    </OverflowMenu>
  );
  fireEvent.click(getByText('Open menu'));
  expect(getByText('Option 1')).toBeVisible();
});
```

src/OverflowMenu/OverflowMenu.test.js

```
import { render, fireEvent } from '@testing-library/react';

test('options are visible when toggle is clicked', () => {
  const { getByText } = render(
    <OverflowMenu toggleText="Open menu">
      <MenuItem>Option 1</MenuItem>
    </OverflowMenu>
  );
  fireEvent.click(getByText('Open menu'));
  expect(getByText('Option 1')).toBeVisible();
});
```

src/OverflowMenu/OverflowMenu.test.js

```
import { render, fireEvent } from '@testing-library/react';

test('options are visible when toggle is clicked', () => {
  const { getByText } = render(
    <OverflowMenu toggleText="Open menu">
      <MenuItem>Option 1</MenuItem>
    </OverflowMenu>
  );
  fireEvent.click(getByText('Open menu'));
  expect(getByText('Option 1')).toBeVisible();
});
```

src/OverflowMenu/OverflowMenu.test.js

```
import { render, fireEvent } from '@testing-library/react';

test('options are visible when toggle is clicked', () => {
  const { getByText } = render(
    <OverflowMenu toggleText="Open menu">
      <MenuItem>Option 1</MenuItem>
    </OverflowMenu>
  );
  fireEvent.click(getByText('Open menu'));
  expect(getByText('Option 1')).toBeVisible();
});
```

```
$ npm run test

 PASS  src/OverflowMenu/OverflowMenu.test.js
   ✓ options are not visible by default (20ms)
   ✓ options are visible when toggle is clicked (22ms)

Test Suites: 1 passed, 1 total
Tests:       2 passed, 2 total
Snapshots:   0 total
Time:        42ms, estimated 1s
```

Guide 6

Make assertions as specific as possible

src/OverflowMenu/OverflowMenu.test.js

```
import { render, fireEvent } from '@testing-library/react';

test('options are visible when toggle is clicked', () => {
  const { getByText } = render(
    <OverflowMenu toggleText="Open menu">
      <MenuItem>Option 1</MenuItem>
    </OverflowMenu>
  );
  fireEvent.click(getByText('Open menu'));
  expect(getByText('Option 1')).toBeInTheDocument();
});
```

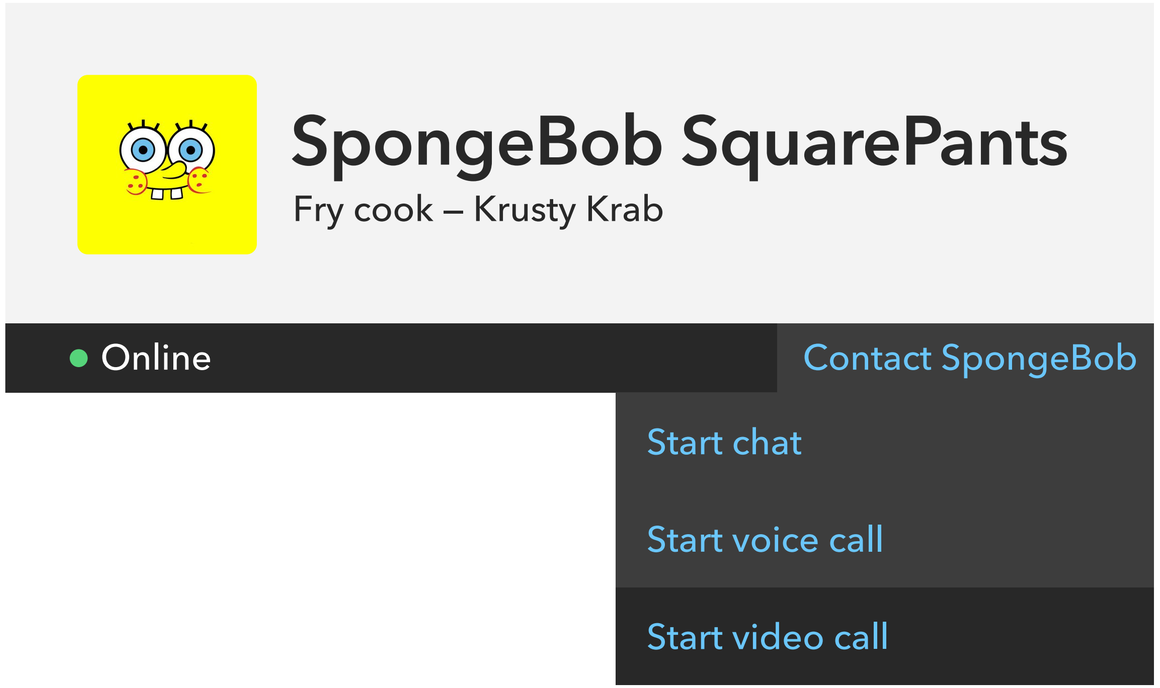
src/OverflowMenu/OverflowMenu.test.js

```
import { render, fireEvent } from '@testing-library/react';

test('options are visible when toggle is clicked', () => {
  const { getByText } = render(
    <OverflowMenu toggleText="Open menu">
      <MenuItem>Option 1</MenuItem>
    </OverflowMenu>
  );
  fireEvent.click(getByText('Open menu'));
  expect(getByText('Option 1')).toBeInTheDocument();
});
```

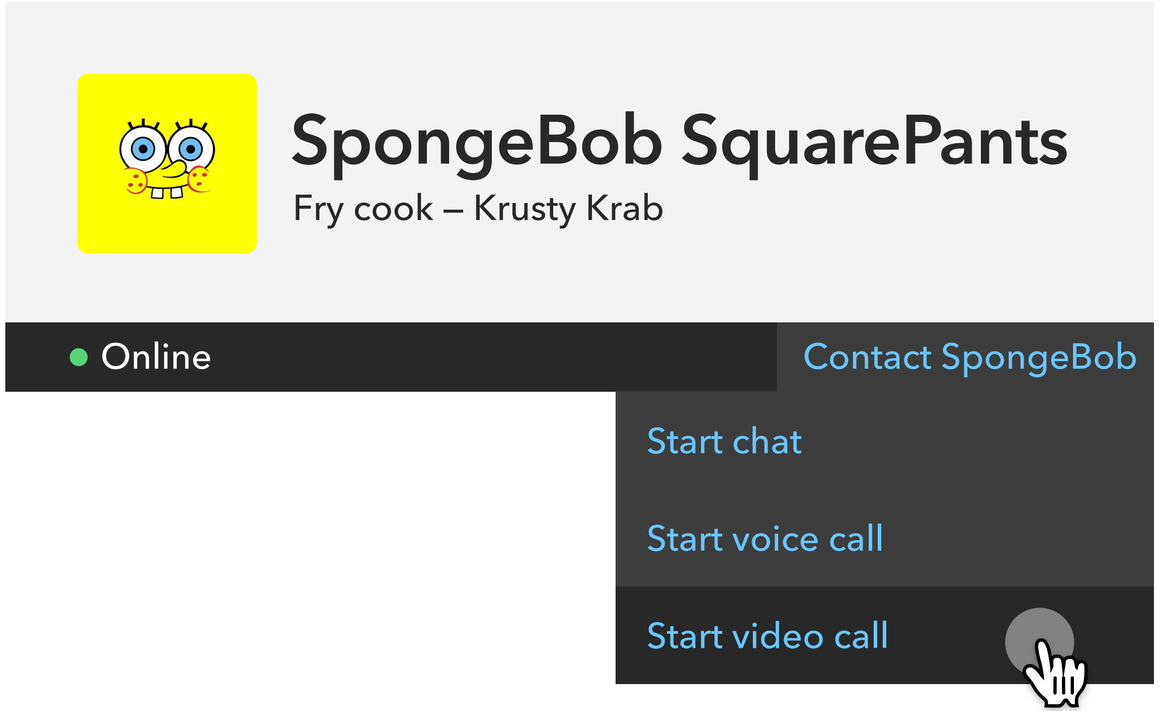
src/OverflowMenu/OverflowMenu.test.js

```
import { render, fireEvent } from '@testing-library/react';

test('options are visible when toggle is clicked', () => {
  const { getByText } = render(
    <OverflowMenu toggleText="Open menu">
      <MenuItem>Option 1</MenuItem>
    </OverflowMenu>
  );
  fireEvent.click(getByText('Open menu'));
  expect(getByText('Option 1')).toBeVisible();
});
```

```
const startVideo = () => {}

<ContactCard
  {...contactInfo}
  onVideoCall={startVideo}
/>
```



```
const startVideo = () => {}

<ContactCard
  {...contactInfo}
  onVideoCall={startVideo}
/>
```



Guide 7

Test callback props

src/ContactCard/ContactCard.test.js

```
test('initializes video call', () => {
  const onVideoMock = jest.fn();
  const { getByText } = render(
     <ContactCard onVideoCall={onVideoMock} {...contact} />
  );

  fireEvent.click(getByText(/Contact/));
  fireEvent.click(getByText('Start video call'));

  expect(onVideoMock).toHaveBeenCalledTimes(1);
});
```

src/ContactCard/ContactCard.test.js

```
test('initializes video call', () => {
  const onVideoMock = jest.fn();
  const { getByText } = render(
     <ContactCard onVideoCall={onVideoMock} {...contact} />
  );

  fireEvent.click(getByText('Contact'));
  fireEvent.click(getByText('Start video call'));

  expect(onVideoMock).toHaveBeenCalledTimes(1);
});
```

src/ContactCard/ContactCard.test.js

```
test('initializes video call', () => {
  const onVideoMock = jest.fn();
  const { getByText } = render(
    <ContactCard onVideoCall={onVideoMock} {...contact} />
  );

  fireEvent.click(getByText(/Contact/));
  fireEvent.click(getByText('Start video call'));

  expect(onVideoMock).toHaveBeenCalledTimes(1);
});
```

src/ContactCard/ContactCard.test.js

```
test('initializes video call', () => {
  const onVideoMock = jest.fn();
  const { getByText } = render(
     <ContactCard onVideoCall={onVideoMock} {...contact} />
  );

  fireEvent.click(getByText(/Contact/));
  fireEvent.click(getByText('Start video call'));

  expect(onVideoMock).toHaveBeenCalledTimes(1);
});
```

src/ContactCard/ContactCard.test.js

```
test('initializes video call', () => {
  const onVideoMock = jest.fn();
  const { getByText } = render(
     <ContactCard onVideoCall={onVideoMock} {...contact} />
  );

  fireEvent.click(getByText(/Contact/));
  fireEvent.click(getByText('Start video call'));

  expect(onVideoMock).toHaveBeenCalledTimes(1);
});
```

Why is testing with Jest beneficial?

100s of tests in seconds

100s of tests in seconds

Interact with DOM like an end-user

100s of tests in seconds

Interact with DOM like an end-user

Simulate user behavior (`fireEvent`)

100s of tests in seconds

Interact with DOM like an end-user

Simulate user behavior (`fireEvent`)

Verify callback props (`onVideoCall`)

Recap

1. Test component variations
2. Include Storybook addons
3. Test edge cases
4. Add tests for fixed bugs

5. Use UI labels to find DOM elements

6. Make assertions as specific as possible

7. Test callback props

Thank you!