1)The List component is a React component that renders a list of items with selectable items. Each item in the list is represented by a SingleListItem component that receives the text to be displayed and a boolean value that indicates whether the item is currently selected or not. When an item is clicked, its index is recorded and used to highlight the selected item.

2)There are several problems and warnings in the code:

The setSelectedIndex hook is being called with a null value, which is not a valid state value. It should be initialized with a default value or undefined.

The isSelected prop passed to SingleListItem is always set to a truthy value, instead of a boolean indicating whether the item is selected or not.

The PropTypes validation for the items prop of WrappedListComponent is incorrect. The array type should be defined as PropTypes.arrayOf, and the shape of each item should be defined using PropTypes.shape.

3)Here's an optimized and modified version of the List component with the necessary fixes:

import React, { useState, useEffect, memo } from 'react';

import PropTypes from 'prop-types';

// Single List Item

const SingleListItem = memo(({ index, isSelected, onClickHandler, text }) => {

const handleClick = () => onClickHandler(index);

return (

<li style={{ backgroundColor: isSelected ? 'green' : 'red' }} onClick={handleClick}>

{text}

</li>

);

});

SingleListItem.propTypes = {

index: PropTypes.number.isRequired,

isSelected: PropTypes.bool.isRequired,

onClickHandler: PropTypes.func.isRequired,

text: PropTypes.string.isRequired,

};

// List Component

const List = memo(({ items }) => {

const [selectedIndex, setSelectedIndex] = useState(undefined);

useEffect(() => {

setSelectedIndex(undefined);

}, [items]);

const handleClick = (index) => setSelectedIndex(index);

return (

<ul style={{ textAlign: 'left' }}>

{items?.map((item, index) => (

<SingleListItem

key={index}

onClickHandler={handleClick}

text={item.text}

index={index}

isSelected={selectedIndex === index}

/>

))}

</ul>

);

});

List.propTypes = {

items: PropTypes.arrayOf(

PropTypes.shape({

text: PropTypes.string.isRequired,

})

),

};

List.defaultProps = {

items: null,

};

export default List;

The setSelectedIndex hook is initialized with undefined instead of null.

The isSelected prop passed to SingleListItem is now a boolean that checks whether the item's index matches the selectedIndex state value.

The PropTypes validation for the items prop of List uses PropTypes.arrayOf and defines the shape of each item with PropTypes.shape.

Added key prop to SingleListItem component to prevent React warnings when rendering a list of items.