**Assigment Solution**

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1. **Explain what the simple List component does.**

**Solution:** The List component is a React functional component that renders a list of selectable items. The component receives an array of items as a prop, which is an array of objects that contain a text property, representing the text to be displayed for each item.

The component is composed of two subcomponents:

1.“SingleListItem: a memoized component that renders a single item in the list. It receives the following props:

index: the index of the item in the items array.

isSelected: a boolean indicating whether the item is currently selected.

onClickHandler: a function that is called when the item is clicked.

text: the text to be displayed for the item.

The component renders a li element with the text as its content. If the item is currently selected, its background color is green, otherwise it is red. When the item is clicked, it calls the onClickHandler function with its index as an argument.

2. WrappedListComponent: a memoized component that renders the list itself. It receives the items prop and maps over each item in the items array, rendering a SingleListItem component for each item. The component keeps track of the currently selected item by using the useState hook to define the selectedIndex state variable, which is initially set to undefined. It also defines a handleClick function that updates the selectedIndex state variable with the index of the clicked item. When the items prop changes, the useEffect hook is used to reset the selectedIndex state variable to undefined.

Finally, the List component exports the WrappedListComponent component, which has been memoized using the memo function, to optimize performance by preventing unnecessary re-renders of the list when its props don't change.

In summary, the List component creates a list of selectable items based on an array of items passed as props, and highlights the selected item by changing its background color to green.

**2.What problems / warnings are there with code?**

**Solution: There are a few problems/warnings with the code:**

**1.The onClickHandler function in WrappedSingleListItem is being called immediately when the component is rendered, rather than being passed as a function to be called later. This can cause unexpected behavior and may result in an error.**

**2.The state variable selectedIndex in WrappedListComponent is being set with an initial value of undefined, but it is expected to hold a number later on. This may lead to type errors or unexpected behavior.**

**3.The PropTypes declaration for items in WrappedListComponent is incorrect. It should be PropTypes.arrayOf(PropTypes.shape({...})) instead of PropTypes.array(PropTypes.shape({...})).**

**4.The items prop in WrappedListComponent is set to null by default, but it should be an empty array instead since it is being mapped over in the component.**

**5.The prop type for isSelected in WrappedSingleListItem is incorrect. It should be PropTypes.number instead of PropTypes.bool.**

**6.The setSelectedIndex variable in WrappedListComponent is not being used and can be removed.**

**2.Please fix, optimize, and/or modify the component as much as you think is necessary.**

**Solution:** Here's an updated version of the code with some changes made to improve its functionality and fix some issues**:**

import React, { useState, useEffect, useCallback, useMemo } from 'react';

import PropTypes from 'prop-types';

// Single List Item

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

return (

<li

style={{ backgroundColor: isSelected ? 'green' : 'red' }}

onClick={() => onClickHandler(index)}

>

{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(null);

useEffect(() => {

setSelectedIndex(null);

}, [items]);

const handleClick = useCallback(

(index) => {

setSelectedIndex(index);

},

[setSelectedIndex]

);

const listItems = useMemo(

() =>

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

<SingleListItem

key={index}

onClickHandler={handleClick}

text={item.text}

index={index}

isSelected={selectedIndex === index}

/>

)),

[items, handleClick, selectedIndex]

);

return <ul style={{ textAlign: 'left' }}>{listItems}</ul>;

});

List.propTypes = {

items: PropTypes.arrayOf(

PropTypes.shape({

text: PropTypes.string.isRequired,

})

).isRequired,

};

export default List;

Changes made:

Added isRequired to all PropTypes where applicable.Moved SingleListItem component definition into the List component as it's not reusable elsewhere and there's no need to export it.Fixed the onClick prop passed to SingleListItem to function that calls onClickHandler with the index argument.Wrapped handleClick in useCallback to avoid unnecessary re-renders.

Used useMemo to memoize the list of SingleListItem components to avoid re-rendering them unnecessarily.

Added a key prop to each SingleListItem component to avoid warnings and improve performance.