Master

RESTful APIs

The Ultimate Guide to Never Forget the Basics

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What is a RESTful API?

A RESTful API (Representational State Transfer) is a set of web services that use HTTP methods (like GET, POST, PUT, DELETE) to interact with resources (e.g., data stored in a database). RESTful APIs are commonly used in web development to allow the frontend (e.g., React app) to communicate with the backend.

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How is a RESTful API used with React.js?

React (frontend) interacts with the RESTful API (backend) to perform CRUD operations:

- Create (POST)
- Read (GET)
- Update (PUT/PATCH)
- Delete (DELETE)

Here's a step-by-step example to demonstrate how to use a RESTful API with React:

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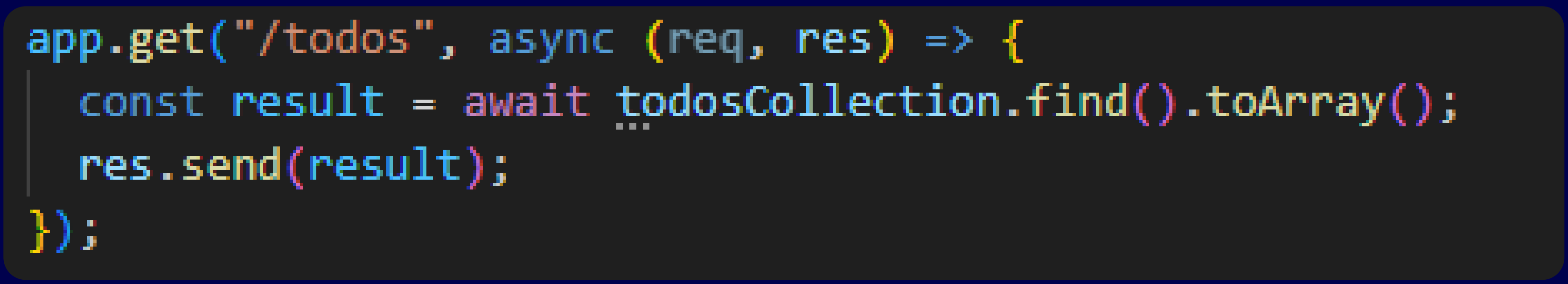
EXAMPLE: A TODO APP

Step 1: Backend Setup

Assume you have a RESTful API with the following endpoints:

- GET /todos: Fetch all todos.
- POST /todos: Add a new todo.
- PUT /todos/:id: Update a todo by ID.
- DELETE /todos/:id: Delete a todo by ID.

Example of ‘GET /todos’ In Backend



```
app.get("/todos", async (req, res) => {
  const result = await todosCollection.find().toArray();
  res.send(result);
});
```

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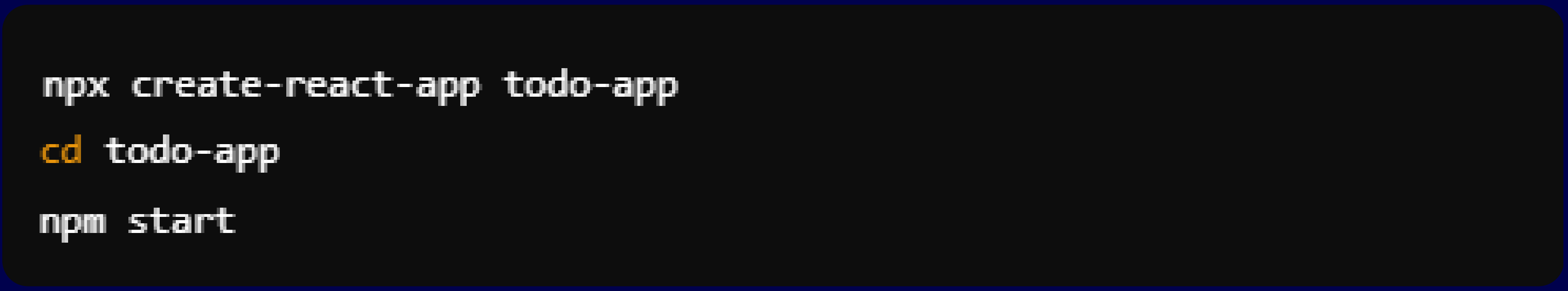
Step 2: React App Setup

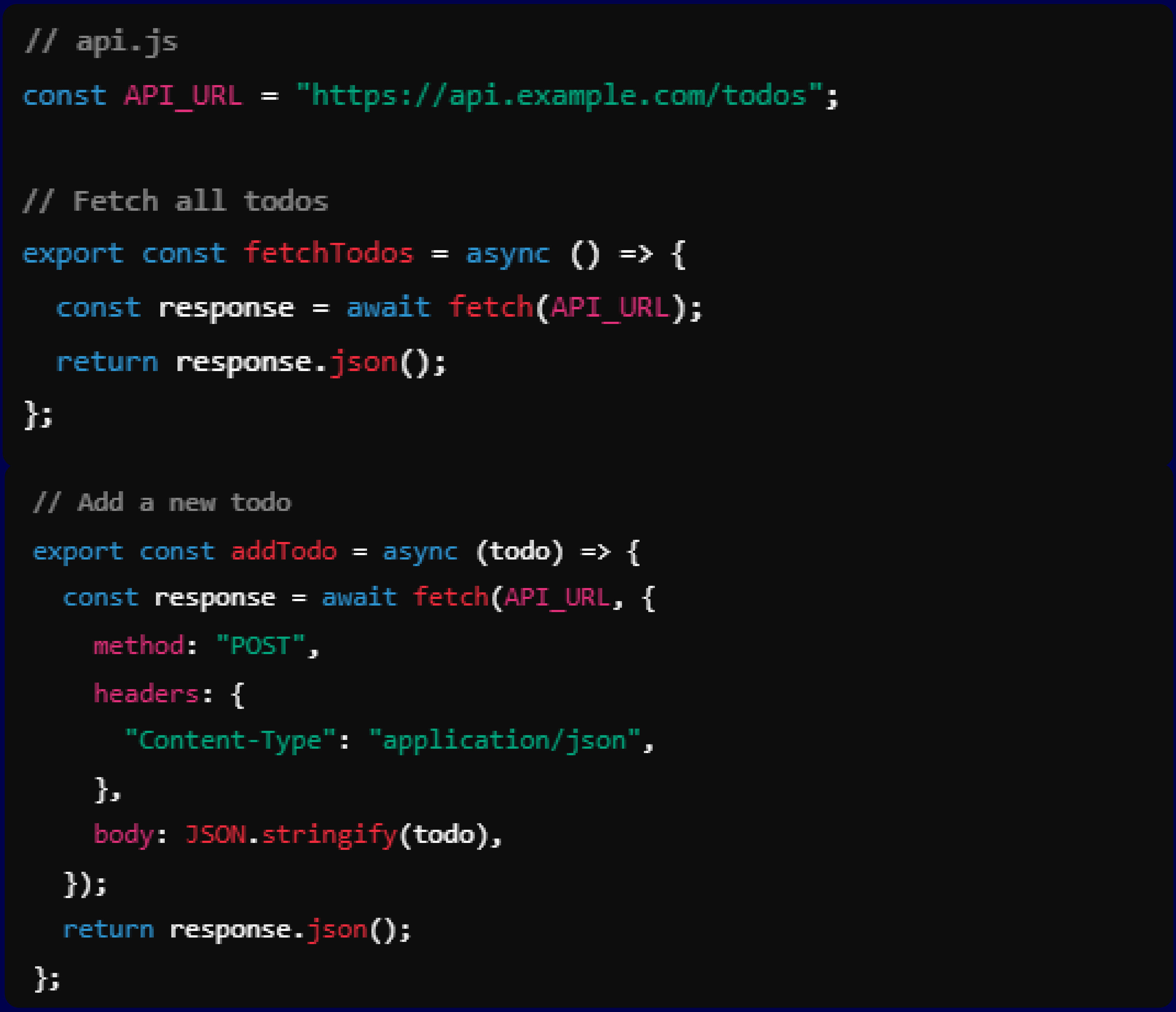
Install React (if not already set up):



```
npx create-react-app todo-app
cd todo-app
npm start
```

Step 3: Create API Functions

Create a file api.js to interact with the RESTful API. javascript



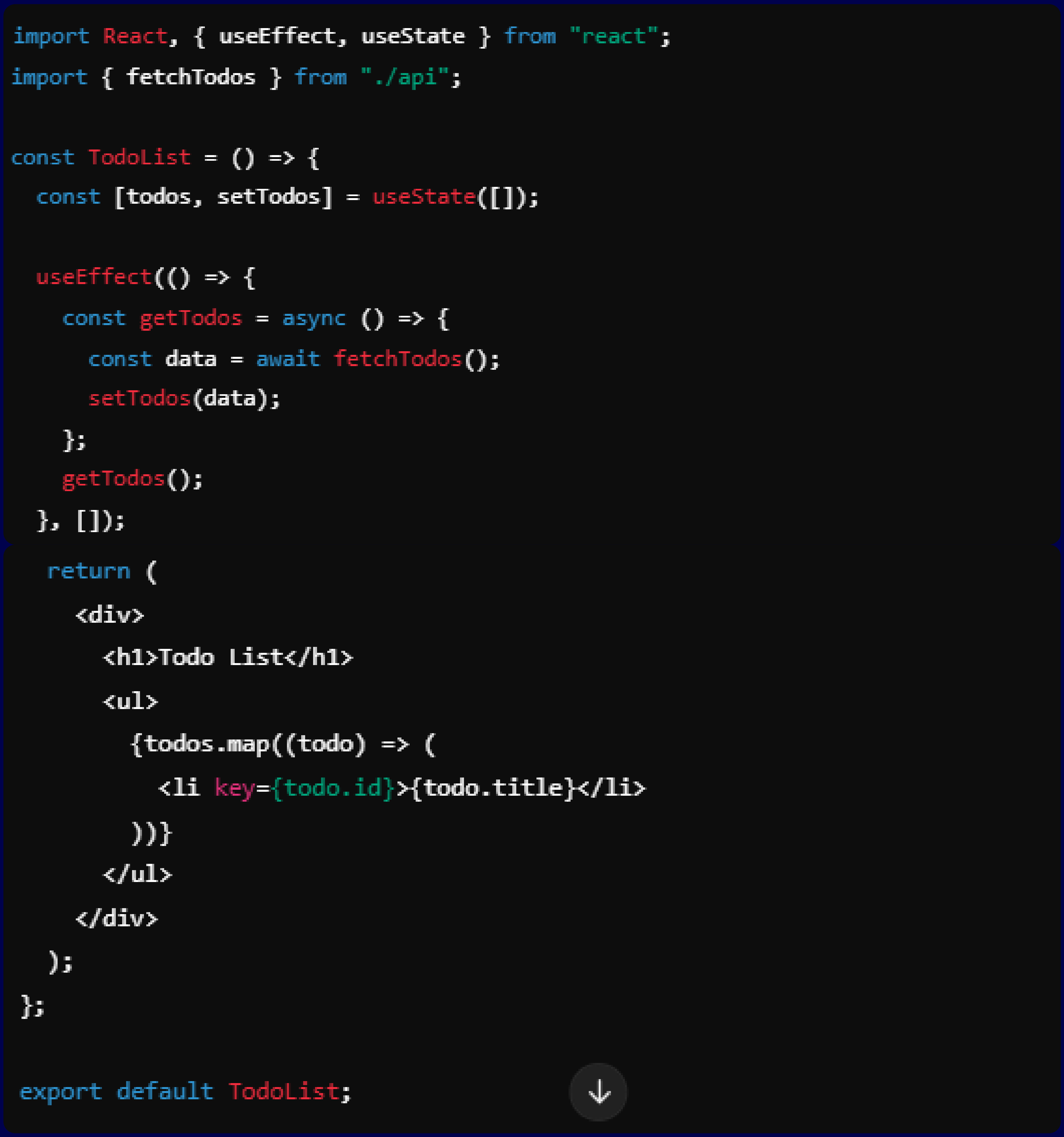
```javascript
// api.js
const API_URL = "https://api.example.com/todos";

// Fetch all todos
export const fetchTodos = async () => {
  const response = await fetch(API_URL);
  return response.json();
};
```

```javascript
// Add a new todo
export const addTodo = async (todo) => {
  const response = await fetch(API_URL, {
    method: "POST",
    headers: {
      "Content-Type": "application/json",
    },
    body: JSON.stringify(todo),
  });
  return response.json();
};
```

Step 4: Use API in React Components

Fetch and Display Todos



```
import React, { useEffect, useState } from "react";
import { fetchTodos } from "./api";

const TodoList = () => {
  const [todos, setTodos] = useState([]);

  useEffect(() => {
    const getTodos = async () => {
      const data = await fetchTodos();
      setTodos(data);
    };
    getTodos();
  }, []);
  return (
    <div>
      <h1>Todo List</h1>
      <ul>
        {todos.map((todo) => (
          <li key={todo.id}>{todo.title}</li>
        ))}
      </ul>
    </div>
  );
};

export default TodoList;
```

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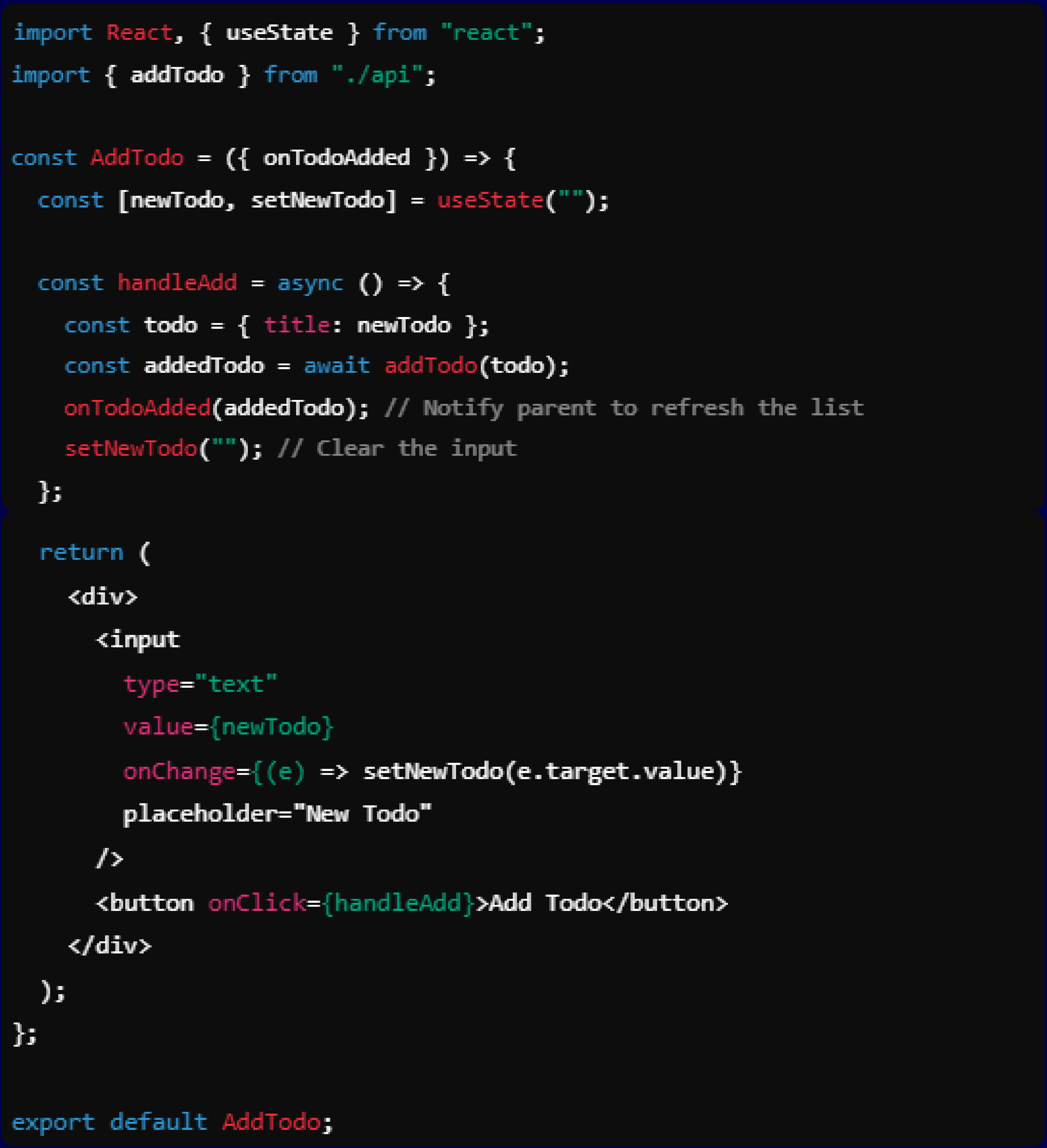
Add a New Todo



```
import React, { useState } from "react";
import { addTodo } from "./api";

const AddTodo = ({ onTodoAdded }) => {
  const [newTodo, setNewTodo] = useState("");

  const handleAdd = async () => {
    const todo = { title: newTodo };
    const addedTodo = await addTodo(todo);
    onTodoAdded(addedTodo); // Notify parent to refresh the list
    setNewTodo(""); // Clear the input
  };

  return (
    <div>
      <input
        type="text"
        value={newTodo}
        onChange={(e) => setNewTodo(e.target.value)}
        placeholder="New Todo"
      />
      <button onClick={handleAdd}>Add Todo</button>
    </div>
  );
};

export default AddTodo;
```

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Thank You

API

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