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# Department of Computing

**CS-213: Advanced Programming**

# Lab 09: React JS

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# Lab 09: React JS

**Introduction**

**React.js** allows us to express how our app should look at any given point in time. React will automatically manage all UI updates when you’re underlying data changes.

**Objectives**

This lab will get students familiar with the ReactJS by creating a web application.

**Tools/Software Requirement**

ReactJs, ExpressJs

**Lab Tasks**

Build a simple shopping cart prototype that shows how React components can be used to build a friendly user experience with instant visual updates and scalable code in ecommerce applications.

**Features**

* Add and remove products from the floating cart
* Sort products by highest to lowest and lowest to highest price

**Hint:**

You can use React.js as the front-end framework, and a backend server built using Node.js and Express.js.

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| --- |
| Solution |
| Task Code: data.js const products = [  {  id: 01,  name: 'Product 1',  available\_quantity: 5,  price: 150  },  {  id: 02,  name: 'Product 2',  available\_quantity: 7,  price: 450  },  {  id: 03,  name: 'Product 3',  available\_quantity: 0,  price: 1000  },  ];  module.exports = { 'products': products } App.js import React, { Component } from 'react';  import Products from './components/ProductList';  import Cart from './components/Cart';  import Checkout from './components/Checkout';  import { BrowserRouter as Router, Link, Route } from 'react-router-dom';  class App extends Component {    render() {  return (  <Router>  <div>  <nav className="navbar navbar-expand-lg navbar-dark bg-dark">  <div className="container">  <Link className="navbar-brand" to="/">ShoppingCart</Link>  <button className="navbar-toggler" type="button" data-toggle="collapse" data-target="#navbarNavAltMarkup" aria-controls="navbarNavAltMarkup" aria-expanded="false" aria-label="Toggle navigation">  <span className="navbar-toggler-icon"></span>  </button>  <div className="collapse navbar-collapse" id="navbarNavAltMarkup">  <div className="navbar-nav">  <Link className="nav-item nav-link" to="/">Products</Link>  <Link className="nav-item nav-link" to="/cart">Cart</Link>      </div>  </div>  </div>  </nav>  <div className="container">  <br/>  <Route exact path="/" component={Products} />  <Route exact path="/cart" component={Cart} />  <Route exact path="/checkout" component={Checkout} />    </div>  </div>  </Router>  );  }  }  export default App; ProductList.js import React from 'react';  import ProductItem from './ProductItem';  import { getProducts } from '../repository';  import { Link } from 'react-router-dom';  export default class ProductList extends React.Component {  constructor(props) {  super(props);  this.state = {  products: []  }  }  componentWillMount() {  getProducts().then((products) => {  this.setState({ products });  });  }  render() {  const { products } = this.state;  return (  <div className=" container">  <h3 className="card-title">List of Available Products</h3>  <hr/>  {  products.map((product, index) => <ProductItem product={product} key={index}/>)  }  <hr/>  <Link to="/checkout"><button className="btn btn-success float-right">Checkout</button></Link>  <Link to="/cart"><button className="btn btn-primary float-right" style={{ marginRight: "10px" }}>View Cart</button></Link>  <br/><br/><br/>  </div>  );  }  } ProductItem.js import React from 'react';  export default class ProductItem extends React.Component {  constructor(props) {  super(props);  this.state = {  quantity: 1  }  }  handleInputChange = event => this.setState({[event.target.name]: event.target.value})  addToCart = () => {  let cart = localStorage.getItem('cart') ? JSON.parse(localStorage.getItem('cart')) : {};  let id = this.props.product.id.toString();  cart[id] = (cart[id] ? cart[id]: 0);  let qty = cart[id] + parseInt(this.state.quantity);  if (this.props.product.available\_quantity < qty) {  cart[id] = this.props.product.available\_quantity;  } else {  cart[id] = qty  }  localStorage.setItem('cart', JSON.stringify(cart));  }  render(){  const { product } = this.props;  return (  <div className="card" style={{ marginBottom: "10px"}}>  <div className="card-body">  <h4 className="card-title">{product.name}</h4>  <p className="card-text">{product.description}</p>  <h5 className="card-text"><small>price: </small>${product.price}</h5>  <span className="card-text"><small>Available Quantity: </small>{product.available\_quantity}</span>    { product.available\_quantity > 0 ?  <div>  <button className="btn btn-sm btn-warning float-right" onClick={this.addToCart}>Add to cart</button>  <input type="number" value={this.state.quantity} name="quantity" onChange={this.handleInputChange} className="float-right" style={{ width: "60px", marginRight: "10px", borderRadius: "3px"}}/>  </div> :  <p className="text-danger"> product is out of stock </p>  }  </div>  </div>  )  }  } Checkout.js import React from 'react';  import { Redirect, Link } from 'react-router-dom';  export default class Checkout extends React.Component {  constructor(props) {  super(props);  this.state = {  products: [],  total: 0  }  }  componentWillMount() {  let cart = localStorage.getItem('cart');  if (!cart) return;  getCartProducts(cart).then((products) => {  let total = 0;  for (var i = 0; i < products.length; i++) {  total += products[i].price \* products[i].qty;  }  this.setState({ products, total });  });  }  render() {    const { products, total } = this.state;  return (  <div className=" container">  <h3 className="card-title">Checkout</h3>  <hr/>  {  products.map((product, index) =>  <div key={index}>  <p>  {product.name}  <small> (quantity: {product.qty})</small>  <span className="float-right text-primary">${product.qty \* product.price}</span>  </p><hr/>  </div>  )  }  <hr/>  { products.length ? <div><h4><small>Total Amount:</small><span className="float-right text-primary">${total}</span></h4><hr/></div>: ''}  { !products.length ? <h3 className="text-warning">No item on the cart</h3>: ''}  { products.length ? <button className="btn btn-success float-right" onClick={() => alert('Proceed to Pay')}>Pay</button>: '' }  <Link to="/"><button className="btn btn-danger float-right" style={{ marginRight: "10px" }}>Cancel</button></Link>  <br/><br/><br/>  </div>  );  }  } Cart.js import React from 'react';  import { Link } from 'react-router-dom';  import { getCartProducts } from '../repository';  import CartItem from './CartItem';  export default class Cart extends React.Component {  constructor(props) {  super(props);  this.state = {  products: [],  total: 0  }  }  componentWillMount() {  let cart = localStorage.getItem('cart');  if (!cart) return;  getCartProducts(cart).then((products) => {  let total = 0;  for (var i = 0; i < products.length; i++) {  total += products[i].price \* products[i].qty;  }  this.setState({ products, total });  });  }  removeFromCart = (product) => {  let products = this.state.products.filter((item) => item.id !== product.id);  let cart = JSON.parse(localStorage.getItem('cart'));  delete cart[product.id.toString()];  localStorage.setItem('cart', JSON.stringify(cart));  let total = this.state.total - (product.qty \* product.price)  this.setState({products, total});  }  clearCart = () => {  localStorage.removeItem('cart');  this.setState({products: []});  }  render() {  const { products, total } = this.state;  return (  <div className=" container">  <h3 className="card-title">Cart</h3>  <hr/>  {  products.map((product, index) => <CartItem product={product} remove={this.removeFromCart} key={index}/>)  }  <hr/>  { products.length ? <div><h4><small>Total Amount:</small><span className="float-right text-primary">${total}</span></h4><hr/></div>: ''}  { !products.length ? <h3 className="text-warning">No item on the cart</h3>: ''}  <Link to="/checkout"><button className="btn btn-success float-right">Checkout</button></Link>  <button className="btn btn-danger float-right" onClick={this.clearCart} style={{ marginRight: "10px" }}>Clear Cart</button>  <br/><br/><br/>  </div>  );  }  } CartItem.js import React from 'react';  export default class CartItem extends React.Component {  constructor(props) {  super(props);  this.state = {  quantity: 1  }  }  render(){  const { product } = this.props;  return (  <div className="card" style={{ marginBottom: "10px"}}>  <div className="card-body">  <h4 className="card-title">{product.name}</h4>  <h5 className="card-text"><small>price: </small>${product.price}</h5>  <span className="card-text text-success"><small>Quantity: </small>{product.qty}</span>    <button className="btn btn-sm btn-warning float-right" onClick={() => this.props.remove(product)}>Remove from cart</button>  </div>  </div>  )  }  } **Task Output Screenshots:** |

### Deliverable

Compile a single word document by filling in the solution part and submit this Word file on LMS. This lab grading policy is as follows: The lab is graded between 0 to 10 marks. The submitted solution can get a maximum of 5 marks. At the end of each lab or in the next lab, there will be a viva/quiz related to the tasks. You must show the implementation of the tasks in the designing tool, along with your complete Word document to get your work graded. You must also submit this Word document on the LMS. In case of any problems with submissions on LMS, submit your Lab assignments by emailing it to Ms. Ayesha Asif: [ayesha.asif@seecs.edu.pk](mailto:ayesha.asif@seecs.edu.pk).