

Web Engineering (SE3003)

Date: April 12th 2025

Course Instructor(s)

Mr. Syed Ayaz Gillani

Sessional-II Exam

Total Time (Hrs): 1

Total Marks: 40

Total Questions: 2

726-7983

Roll No

BSE-6A

Section



Student Signature

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Attempt all the questions. Write your answers to Question 1, and Question 2 on the answer sheet in the same order as they appear on the question paper. No cheat sheet is allowed.

CLO #: 3

Q1 Problem Solving

[20 marks]

Set up a Redux store (without using React) to manage a simple task management system. Your implementation should support the following actions:

- **ADD_TASK**: Adds a task to the list. Each task should include an id and a description.
- **REMOVE_TASK**: Removes a task based on its id.

You must:

1. Define the initial state.
2. Create appropriate action creators.
3. Write the reducer to handle these actions.
4. Configure and create the Redux store.
5. Dispatch the following actions and log the state at each dispatch (you have to write the output on paper as well):

```
dispatch(addTask({ id: 1, description: 'Write report' })))  
dispatch(addTask({ id: 2, description: 'Attend meeting' })))  
dispatch(removeTask(1))
```

Note: Your code should include all the necessary steps for setting up the Redux store.

CLO #: 2

Q2 Analyze the requirements and propose the solution

[20 marks]

Build a complete **ProductDashboard** component that simulates a real-world product listing page for an e-commerce site. Your component must:

Component Requirements:

You are to build a React component named **ProductDashboard** that will:

1. Fetch product data from a remote API
 - Use the public API: <https://fakestoreapi.com/products>
 - Use the axios library inside the useEffect hook
 - Handle basic loading and error states
2. Manage component state
 - Use useState to:
 - Store the list of all products fetched
 - Store the current value of a search term entered by the user
3. Enhance UX using useRef
 - Use useRef to automatically focus the search input field when the component mounts
4. Use useMemo for performance
 - Create a memoized variable **totalProducts** to count the number of products
 - Create a memoized **filteredProducts** array based on the current search term
5. Optimize filtering logic using useCallback
 - Wrap the filtering function in useCallback to prevent unnecessary recalculations
6. Render Output:
 - A search input box with autofocus
 - Text showing: Total Products: X | Filtered Products: Y
 - A list of product titles that match the search filter

Sample data from API:

```
[{"id": 1, "title": "Fjallraven - Foldsack No. 1 Backpack, Fits 15 Laptops", "price": 109.95, "count": 120}, {"id": 2, "title": "Mens Casual Premium Slim Fit T-Shirts ", "price": 22.3, "count": 25 }]
```

Sample output:

Total Products: 20 | Filtered: 20

- Fjallraven - Foldsack No. 1 Backpack, Fits 15 Laptops
- Mens Casual Premium Slim Fit T-Shirts
- Mens Cotton Jacket
- Mens Casual Slim Fit
- John Hardy Women's Legends Naga Gold & Silver Dragon Station Chain Bracelet
- Solid Gold Petite Micropave
- White Gold Plated Princess
- Pierced Owl Rose Gold Plated Stainless Steel Double
- WD 2TB Elements Portable External Hard Drive - USB 3.0
- SanDisk SSD PLUS 1TB Internal SSD - SATA III 6 Gb/s
- Silicon Power 256GB SSD 3D NAND A55 SLC Cache Performance Boost SATA III 2.5
- WD 4TB Gaming Drive Works with Playstation 4 Portable External Hard Drive
- Acer SB220Q bi 21.5 inches Full HD (1920 x 1080) IPS Ultra-Thin
- Samsung 49-Inch CHG90 144Hz Curved Gaming Monitor (LC49HG90DMNXZA) - Super Ultrawide Screen QLED
- BIYLACLESEN Women's 3-in-1 Snowboard Jacket Winter Coats
- Lock and Love Women's Removable Hooded Faux Leather Moto Biker Jacket
- Rain Jacket Women Windbreaker Striped Climbing Raincoats
- MBJ Women's Solid Short Sleeve Boat Neck V
- Opna Women's Short Sleeve Moisture
- DANVOUY Womens T Shirt Casual Cotton Short

Total Products: 20 | Filtered: 4

- Mens Casual Premium Slim Fit T-Shirts
- Mens Cotton Jacket
- Mens Casual Slim Fit
- DANVOUY Womens T Shirt Casual Cotton Short