

🚀 Where to Use Throttling and Debouncing?

✅ Use Throttling When: (Do try it:) 1. Scroll events (Only trigger function once every X ms while scrolling). 2. Window resize (Prevent continuous function execution on resize). 3. Button clicks (Limit how often a button can be clicked). 4. API requests (Limit the number of API calls in a given time). 5. Mouse move events (Track mouse position but not too frequently).

✅ Use Debouncing When: (Do try it:) 1. Search input field (Wait until the user stops typing before running search). 2. Form validation (Only validate after the user stops typing). 3. Autosave in a text editor (Save only after a pause). 4. Resizing event (Wait until user stops resizing before recalculating layout). 5. Click events (Ignore accidental rapid clicks, like a "Submit" button).

💡 Practice Questions:

◆ Throttling Questions 1. Create a throttled function that tracks the user's mouse movement and logs the coordinates, but updates only once every 500ms. 2. Build a scroll event listener that logs "User is scrolling" but only once every second, even if scrolling continuously. 3. Make a button that fetches data from an API, but can be clicked only once every 3 seconds to avoid excessive API calls. 4. Throttle window resize event so that when the user resizes the window, a function runs at most once every 2 seconds. 5. Limit keypress events in a text field so that it logs the pressed key only every 700ms, even if the user keeps typing.

◆ Debouncing Questions 1. Create a debounced search bar that only fetches search results 500ms after the user stops typing. 2. Build a form validation function that validates an email input only after the user stops typing for 800ms. 3. Make a button that updates a counter, but if clicked multiple times quickly, only the last click after 1 second is counted. 4. Debounce window resizing so that after the user stops resizing the window for 1.5 seconds, a function logs "Resizing complete!". 5. Create an autosave function for a text area that saves the content only after the user stops typing for 2 seconds.

📝 Bonus Challenge

Mix throttling and debouncing: • Create a real-time typing indicator for a chat app: • Throttle function to send "User is typing..." every 1 second. • Debounce function to send "User stopped typing" after 2 seconds of inactivity.