

React useRef Guide for Beginners

1. What is the DOM?

DOM stands for Document Object Model. It is how the browser represents a webpage as a tree of elements.

For example, if your HTML contains:

```
<body>  
  <h1>Hello</h1>  
  <button>Click</button>  
</body>
```

The DOM will represent it as:

```
Document  
  body  
    h1 'Hello'  
    button 'Click'
```

Whenever you interact with a web page (click, type, scroll), you're interacting with the DOM.

2. What is Render and Re-render?

Render: When React shows the component on the screen for the first time.

Re-render: When a component updates and React redraws it, usually due to state or props changing.

Example:

```
const [count, setCount] = useState(0);
```

Render shows 'Click 0'

Click button count becomes 1 Re-render shows 'Click 1'

3. What is a Mutable Value?

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Mutable means something that can be changed.

In React, changing state causes a re-render:

```
const [count, setCount] = useState(0);
```

But refs are mutable and do not cause re-renders:

```
const myRef = useRef(0);
```

```
myRef.current = 100;
```

4. What is useRef?

useRef is a React hook that lets you:

- Reference DOM elements directly
- Store mutable values across renders without causing re-render

Syntax:

```
const ref = useRef(initialValue);
```

ref.current gives access to the element or value.

5. Example 1: Focus an input on load

```
import React, { useRef, useEffect } from 'react';
```

```
export default function App() {
```

```
  const inputRef = useRef(null);
```

```
  useEffect(() => {
```

```
    inputRef.current.focus();
```

```
  }, []);
```

React useRef Guide for Beginners

```
return <input ref={inputRef} placeholder='Type here' />;  
}
```

6. Example 2: Store value without re-render

```
import React, { useRef, useState } from 'react';  
  
export default function App() {  
  const renderCount = useRef(1);  
  const [count, setCount] = useState(0);  
  
  const increase = () => {  
    setCount(count + 1);  
    renderCount.current++;  
  };  
  
  return (  
    <div>  
      <p>Button clicked: {count}</p>  
      <p>Component re-rendered: {renderCount.current} times</p>  
      <button onClick={increase}>Click Me</button>  
    </div>  
  );  
}
```

7. Summary

- DOM is the live tree of elements in the browser
- Render: when React shows component first time
- Re-render: when component updates
- Mutable = changeable without triggering re-render (in useRef)

React useRef Guide for Beginners

- useRef is best for DOM access, storing values, and avoiding unnecessary re-renders