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How does useEffect work?

A Beginner's Guide

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🛠️ What is useEffect ?

useEffect is a React hook that lets you perform side effects in function components, like:

- Fetching data
- Updating the DOM
- Setting up subscriptions

🔍 Basic Syntax :

App.jsx

```
useEffect(() ⇒ {
  // Effect code here
  return () ⇒ {
    // Cleanup code here (optional)
  };
}, [dependencies]);
```

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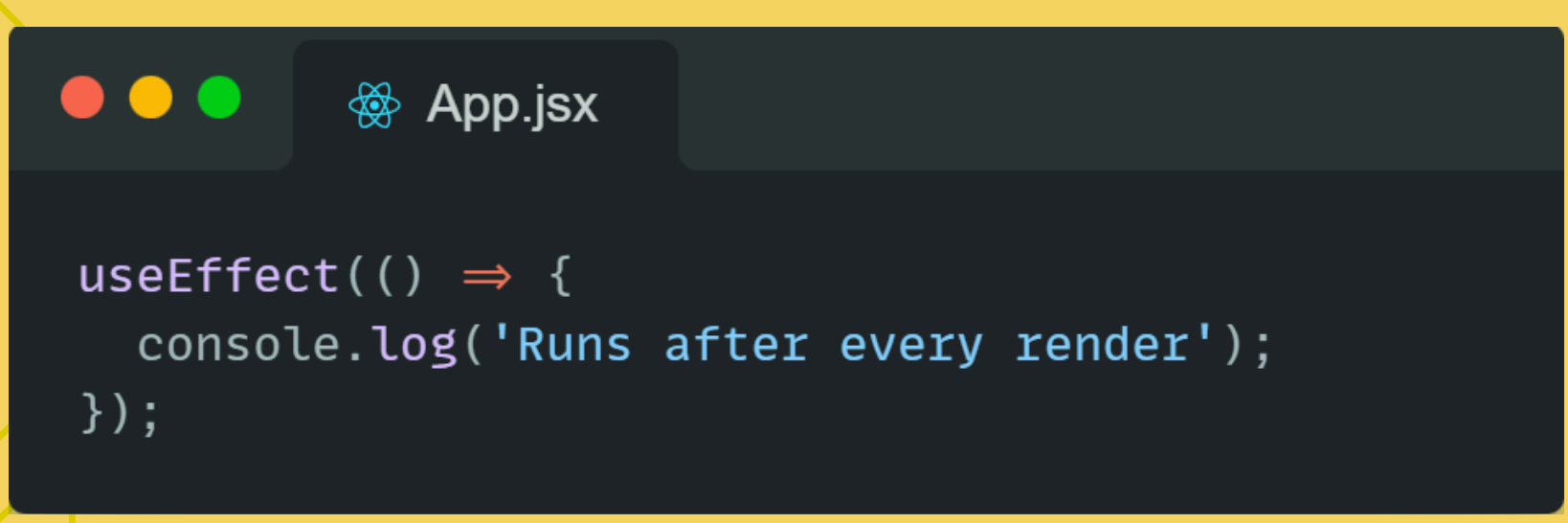
🕒 When Does useEffect Run ?

1. After Every Render (No Dependency Array)

If you call useEffect without a dependency array (no [] at the end), the effect will run after every render of the component. This means that useEffect will execute its code every single time the component updates.



When This Runs:

- Runs after the component initially mounts.
- Runs after every update caused by changes in state or props.

Use Case:

This is useful if you want something to happen every time the component re-renders, but it's generally avoided in favor of more specific dependency triggers (to avoid performance issues).

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2. On Mount and Unmount (Empty Dependency Array [])

If you provide an empty dependency array ([]), useEffect will run only once, right after the initial render, and then never again unless the component unmounts (in which case, it'll run any cleanup code).

App.jsx

```
useEffect(() ⇒ {
  console.log('Runs only once on mount');

  return () ⇒ console.log('Runs cleanup on unmount');
}, []);
```

When This Runs:

- **On Mount**: Right after the component mounts (first render).
- **On Unmount:** Any return function will run as cleanup when the component unmounts.

Use Case:

This is ideal for things you only want to set up once, like:

- Fetching initial data.
- Setting up a subscription or WebSocket connection.
- Initializing a timer or interval.

3. Dependencies Change (Specified Dependency Array)

If you provide a dependency array with specific values (like [count, user]), useEffect will only re-run if any of these dependencies change. React will compare each item in the dependency array to its previous value; if any value has changed, useEffect will run again.

App.jsx

```
useEffect(() => {
  console.log('Runs when `count` changes');
}, [count]);
```

When This Runs:

- Runs initially on mount (first render).
- Runs any time a dependency changes.

Use Case:

This approach allows you to control exactly when useEffect should re-run, which is efficient and powerful. Common uses include:

- Re-fetching data whenever a specific value changes (e.g., a userId or a page number).
- Re-calculating values when one of your dependencies updates.

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⚡ Side Effects Examples :

- **Data Fetching**

App.jsx

```
useEffect(() => {
  async function fetchData() {
    const data = await fetch('/api/data');
    // handle data
  }
  fetchData();
}, []); // Only on mount
```

- **Setting Timers**

App.jsx

```
useEffect(() => {
  const timer = setInterval(() => {
    console.log('Timer is running');
  }, 1000);

  return () => clearInterval(timer); // Cleanup on unmount
}, []);
```

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🧹 Cleanup Function :

- **Purpose:** Used to clear resources (like subscriptions or timers) when the component unmounts or dependencies change.
- **When to Use:** Useful for cleanup like unsubscribing from a data source, clearing timers, etc.

👀 Common Pitfalls :

- **Infinite Loops:** Avoid leaving out dependencies that should be included; otherwise, the effect could cause infinite re-renders.
- **Updating State in useEffect:** Be cautious with setting state in useEffect, as it can trigger additional renders.

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