

◆ Problem: Replacing a Specific Phrase in a String

The **New Yorker magazine** doesn't allow the phrase "World War II" and prefers "the Second World War". The goal is to **find and replace** all instances of "World War II" in a given text.

◆ Initial Approach: Using `slice()` in a Loop

One way to do this is by **iterating through the text** and replacing the phrase whenever it appears.

```
for (var i = 0; i < text.length; i++) {  
  if (text.slice(i, i + 12) === "World War II") {  
    text = text.slice(0, i) + "the Second World War" + text.slice(i + 12);  
  }  
}
```

◆ Step-by-Step Breakdown

1. **Loop through the text:** `for (var i = 0; i < text.length; i++)`
2. **Check if a 12-character segment** matches "World War II":
`if (text.slice(i, i + 12) === "World War II")`
3. **Replace the phrase** by:
 - Keeping all characters **before** "World War II" → `text.slice(0, i)`
 - Adding **"the Second World War"**
 - Keeping all characters **after** "World War II" → `text.slice(i + 12)`

⚡ *Issue with This Approach*

This method **only replaces the first occurrence** inside the loop. If "World War II" appears multiple times, we need another solution.

◆ More Efficient Approach: Using `indexOf()`

Instead of looping manually, JavaScript provides `indexOf()` to find the position of "World War II".

◆ Code Using `indexOf()`

```
var firstChar = text.indexOf("World War II");  
if (firstChar !== -1) {  
  text = text.slice(0, firstChar) + "the Second World War" + text.slice(firstChar + 12);  
}
```

◆ How It Works

Line	Code	Explanation
1	<code>var firstChar = text.indexOf("World War II");</code>	Finds the first occurrence of "World War II" and stores its position in firstChar.
2	<code>if (firstChar !== -1) {</code>	If "World War II" is found, firstChar will be a valid index (not -1).
3	<code>text = text.slice(0, firstChar) + "the Second World War" + text.slice(firstChar + 12);</code>	Replaces the phrase while keeping the surrounding text unchanged.

⚡ *Limitation of indexOf()*

- **indexOf()** only finds the **first occurrence** of "World War II".
- If the text contains multiple instances, only the **first one is replaced**.

◆ Replacing Multiple Occurrences: Using a Loop

To replace **every** occurrence, we use a **while loop**:

```
var bannedPhrase = "World War II";
var replacement = "the Second World War";
var firstChar = text.indexOf(bannedPhrase);

while (firstChar !== -1) {
  text = text.slice(0, firstChar) + replacement + text.slice(firstChar + bannedPhrase.length);
  firstChar = text.indexOf(bannedPhrase); // Find the next occurrence
}
```

◆ How It Works

1. **Finds the first instance** of "World War II" using `indexOf()`.
2. **Replaces the instance** using string slicing.
3. **Repeats the process** until there are no more occurrences.

◆ Finding the Last Occurrence: `lastIndexOf()`

If we only need to replace the **last occurrence** of a phrase, we can use `lastIndexOf()`.

◆ Example

```
var text = "To be or not to be.";
var lastOccurrence = text.lastIndexOf("be"); // Finds the last "be"
```

```
console.log(lastOccurrence); // Output: 16 (position of last "be")
```

◆ Difference Between `indexOf()` and `lastIndexOf()`

Method	Finds
<code>indexOf("be")</code>	First occurrence (3)
<code>lastIndexOf("be")</code>	Last occurrence (16)

◆ Using `replace()` Instead

A simpler and more modern way to **replace all occurrences** is by using **`replaceAll()`** (or `replace()` with a global regex).

◆ Using `replaceAll()`

```
text = text.replaceAll("World War II", "the Second World War");
```

◆ Using `replace()` with Regular Expressions

```
text = text.replace(/World War II/g, "the Second World War");
```

- `/World War II/g` → A **regular expression** that replaces **all** occurrences (g flag for "global").
-

◆ Summary of Key Concepts

Concept	Explanation
<code>slice(start, end)</code>	Extracts a substring from a string.
<code>indexOf("phrase")</code>	Finds the first occurrence of "phrase".
<code>lastIndexOf("phrase")</code>	Finds the last occurrence of "phrase".
<code>replace("old", "new")</code>	Replaces only the first occurrence of "old".
<code>replaceAll("old", "new")</code>	Replaces all occurrences of "old".
Regex <code>replace(/old/g, "new")</code> Another way to replace all occurrences .	

🔪 Best Approach for Replacing Multiple Occurrences

For modern JavaScript, the **best** and **simplest** solution is:

```
text = text.replaceAll("World War II", "the Second World War");
```

or, if `replaceAll()` is not available:

```
text = text.replace(/World War II/g, "the Second World War");
```