

Memoization

Shawn Leberknight

Software Engineer - **Somo Global**

So what is it?

Memoization is an optimization technique used in many programming languages to reduce the number of redundant, expensive function calls.

How does it work?

- Caching the values that the function returns after its initial execution.
- If the input values remain the same, the memoized function returns the cached response.
- The program does not have to recalculate anything.

Simple Example

Before memoization

```
function sum(a, b) {  
  console.log('add')  
  return a + b  
}  
console.log(sum(1, 2))  
console.log(sum(1, 2))  
  
// will output the following:  
// add  
// 3  
// add  
// 3
```

After memoization

```
function sum(a, b) {  
  console.log('add')  
  return a + b  
}
```

```
const memSum = memoize(sum)  
console.log(memSum(1, 2))  
console.log(memSum(1, 2))
```

```
// will output the following:  
// add  
// 3  
// 3
```

Some live coding!!!

Some other things to remember

Network & database calls

- Be wary of using memoization for this and know the possible issues
- Expire cache after given period of time
- Clear cache manually if needed

React.memo & useMemo

React.memo

```
const MyComponent = React.memo(function MyComponent(props) {  
  /* render using props */  
})
```

useMemo

```
const memoizedValue = useMemo(() => {  
  return computeExpensiveValue(a, b), [a, b]  
})
```

useMemo example

```
const List = useMemo(  
  () =>  
    list0fItems.map(item => ({  
      ...item,  
      itemProp1: expensiveFunction(props.first),  
      itemProp2: anotherPriceyFunction(props.second)  
    })),  
  [list0fItems]  
)
```

Resources

- <https://dev.to/nas5w/what-is-memoization-4lod>
- <https://medium.com/better-programming/react-memo-vs-memoize-71f85eb4e1a>
- <https://codeburst.io/understanding-memoization-in-3-minutes-2e58daf33a19>
- <https://reactjs.org/docs/hooks-reference.html#usememo>
- <https://reactjs.org/docs/react-api.html#reactmemo>
- <https://www.digitalocean.com/community/tutorials/react-usememo>
- <https://www.digitalocean.com/community/tutorials/react-learning-react-memo>