# React Virtualization

In React, virtualization is a technique used to efficiently render large lists or grids by only rendering visible items on the screen. This improves performance significantly.

## Why Use Virtualization?

Rendering all items in a long list causes:  
- DOM bloating  
- Slower scrolling  
- High memory usage  
  
Virtualization solves this by only rendering the items in the viewport + buffer.

## Popular Libraries for React Virtualization

### 1. react-window

• Lightweight and simple  
• Suitable for vertical/horizontal lists and grids  
• Lazy rendering  
Installation:  
npm install react-window

Example:

import { FixedSizeList as List } from 'react-window';  
  
const MyList = () => (  
 <List  
 height={400}  
 itemCount={1000}  
 itemSize={35}  
 width={'100%'}  
 >  
 {({ index, style }) => (  
 <div style={style}>Row {index}</div>  
 )}  
 </List>  
);

### 2. react-virtualized

• More powerful and customizable  
• Supports tables, infinite scrolling, grids, etc.  
Installation:  
npm install react-virtualized

Example:

import { List } from 'react-virtualized';  
  
const rowRenderer = ({ index, key, style }) => (  
 <div key={key} style={style}>  
 Row {index}  
 </div>  
);  
  
const MyList = () => (  
 <List  
 width={300}  
 height={300}  
 rowCount={1000}  
 rowHeight={40}  
 rowRenderer={rowRenderer}  
 />  
);

## Comparison

react-window vs react-virtualized:  
| Feature | react-window | react-virtualized |  
|----------------|------------------|----------------------|  
| Bundle size | Smaller (~2 KB) | Larger (~30 KB) |  
| Performance | Very good | Very good |  
| API Complexity | Simple | More features |  
| Use case | Simple lists | Complex layouts |

## AutoSizer Example

import { FixedSizeList as List } from 'react-window';  
import AutoSizer from 'react-virtualized-auto-sizer';  
  
const MyList = () => (  
 <AutoSizer>  
 {({ height, width }) => (  
 <List height={height} width={width} itemSize={35} itemCount={1000}>  
 {({ index, style }) => <div style={style}>Row {index}</div>}  
 </List>  
 )}  
 </AutoSizer>  
);

## Use Cases

- Infinite scrolling  
- Chat apps  
- Long forms or dashboards  
- Virtualized tables or grids