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React, Angular, Vue를 한 번에 지원하기 위한 설계
(Cross Framework Component)

최연규
FE-Platform

NAVER

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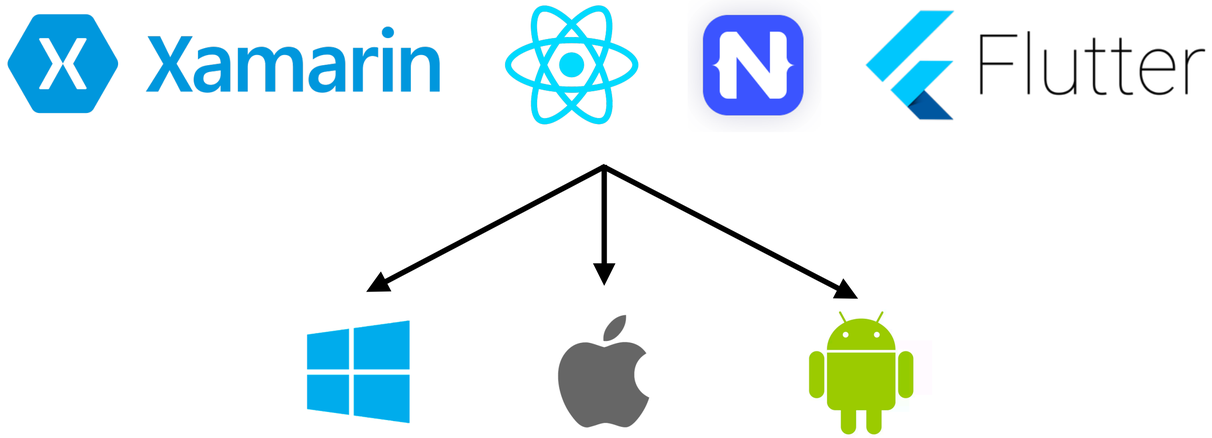
1. Cross Framework Component

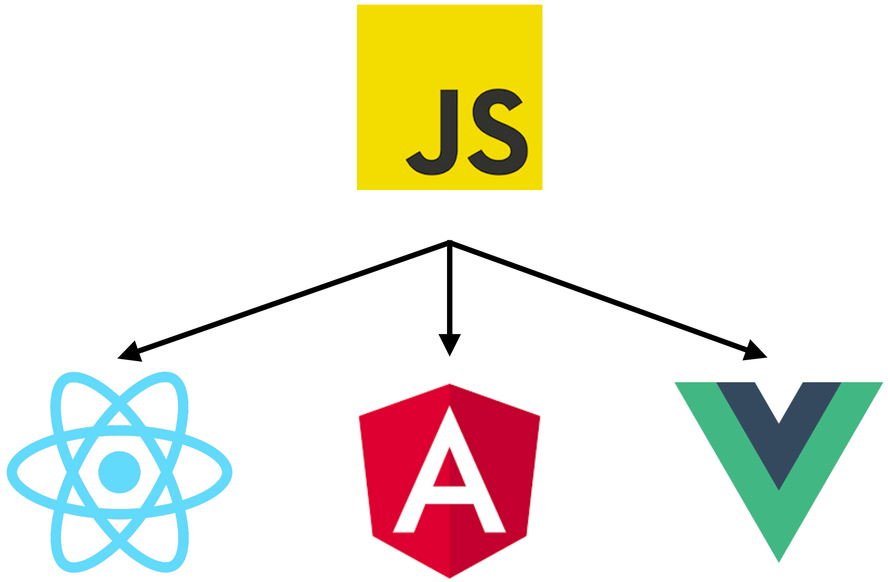
Cross Platform?

크로스 플랫폼(Cross Platform)은 하나의 소스코드를
다양한 플랫폼(운영체제, 기기)에서 사용할 수 있는 뜻을 가진 용어



Cross Framework Component

하나의 공통 모듈 기반으로 다양한 프레임워크를 지원하기 위해
효과적인 구조를 가진 컴포넌트



egjs의 바닐라 컴포넌트들

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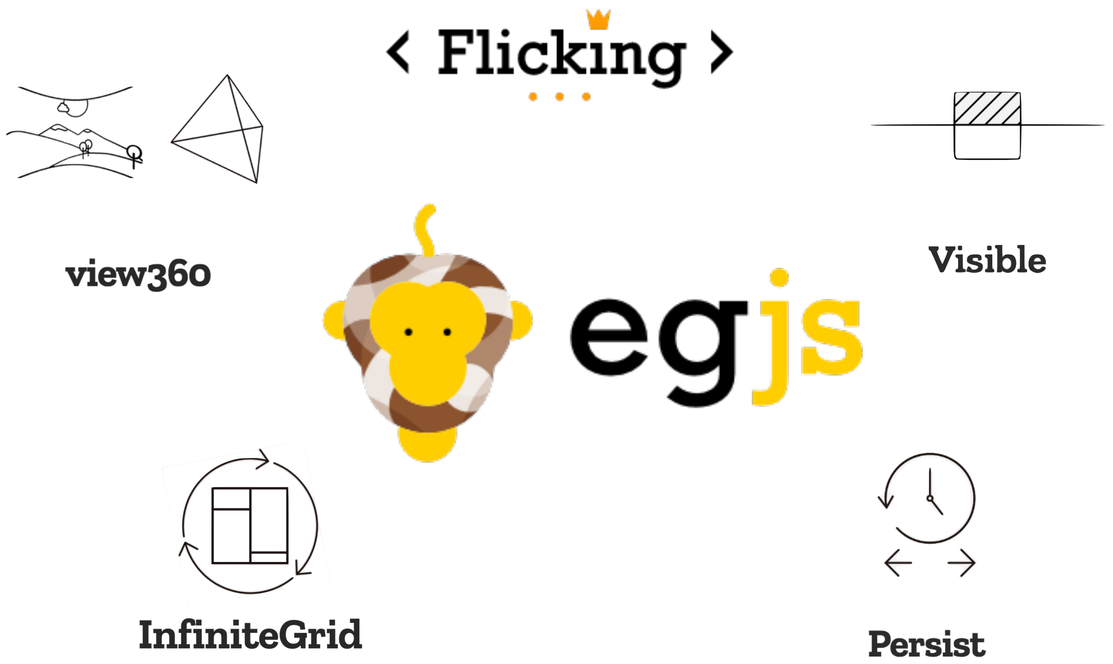

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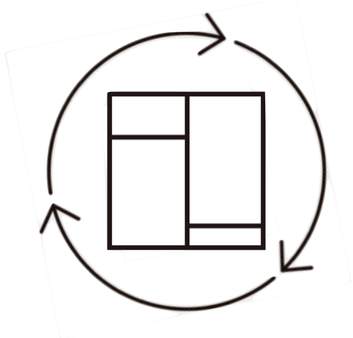
2. 기존 바닐라 컴포넌트를 프레임워크에 적용한 사례와 문제점

2. 프레임워크에 적용한 사례와 문제점



InfiniteGrid

‹ Flicking ›

문항	O / X
1. DOM을 추가/삭제하는 메서드가 있습니까?	O
2. DOM의 순서가 바뀔 수 있습니까?	O

2. 프레임워크에 적용한 사례와 문제점

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	단순하게 래핑하는 방법	별도로 만드는 방법
대표 모듈	react-flicking	react-infinitegrid
특징	단순하고 DOM의 변화가 없는 가장 많이 사용하는 방법	해당 프레임워크에 최적화된 컴포넌트를 만드는 방법
장점	쉽고 간단하다.	원하는 기능들이 동작을 할 수 있다.
단점	DOM의 추가/삭제/이동이 어렵다.	유지보수가 매우 어렵다. (처음 만들 때 많이 사용하는 방법)

2.1 단순하게 래핑하는 방법의 문제점

인스턴스만 초기화한 방법인 react-flicking 0.0.X

```
public componentDidMount() {
  this.flicking = new NativeFlicking(
    findDOMNode(this) as HTMLElement,
    this.options,
  );
}
```

2.1 단순하게 래핑하는 방법의 문제점

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내부 변수 접근해서 동적 추가/삭제를 지원한 react-flicking 0.0.X

```
const flicking = (this.flicking as any);
const panel = flicking._conf.panel;
panel.$list = [].slice.call(flicking.$container.children);
flicking._arrangePanels();
flicking._movePanelPosition();
```

내부 변수 접근

2.2 별도로 만드는 방법의 문제점

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React 전용 컴포넌트로 새로 만든 react-infinitegrid 1.x.x

Vanilla

```
this._items = new ItemManager();
this._renderer = new DOMRenderer(viewer, {
    container: isOverflowScroll ? this._container : null,
    isEqualSize,
    isConstantSize,
    horizontal,
});
this._watcher = new Watcher(
    this._renderer.view,
    {
        isOverflowScroll,
        horizontal,
        container: this._renderer.container,
        resize: () => setTimeout(() => { this.setState({layout: true}); }),
        check: param => this._onCheck(param),
    });
this._infinite = new Infinite(this._items, {
    horizontal,
    threshold,
    useRecycle: true,
    append: param => this._requestAppend(param),
    prepend: param => this._requestPrepend(param),
    recycle: param => this._recycle(param),
});
this._manager = new LayoutManager(this._items, this._renderer, {
    isEqualSize,
    isConstantSize,
});

this._manager.setLayout(this._layout);
this._updateLayout();
this._setSize(this._renderer.getViewportSize());
this._updateGroups();
this._watcher.setScrollPos();
```

React

```
this._items = new ItemManager();
this._renderer = new DOMRenderer(viewer, {
    container: isOverflowScroll ? this._container : null,
    isEqualSize,
    isConstantSize,
    horizontal,
});
this._watcher = new Watcher(
    this._renderer.view,
    {
        isOverflowScroll,
        horizontal,
        container: this._renderer.container,
        resize: () => setTimeout(() => { this.setState({layout: true}); }),
        check: param => this._onCheck(param),
    });
this._infinite = new Infinite(this._items, {
    horizontal,
    threshold,
    useRecycle: true,
    append: param => this._requestAppend(param),
    prepend: param => this._requestPrepend(param),
    recycle: param => this._recycle(param),
});
this._manager = new LayoutManager(this._items, this._renderer, {
    isEqualSize,
    isConstantSize,
});

this._manager.setLayout(this._layout);
this._updateLayout();
this._setSize(this._renderer.getViewportSize());
this._updateGroups();
this._watcher.setScrollPos();
```

비슷한 코드 X 2

2.2 별도로 만드는 방법의 문제점

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다른 프레임워크에도 지원을 하게 된다면?

Vanilla

```
this._items = new ItemManager();
this._renderer = new DOMRenderer(viewer, {
    container: isOverflowScroll ? this._container : null,
    isEqualSize,
    isConstantSize,
    horizontal,
});
this._watcher = new Watcher(
    this._renderer.view,
    {
        isOverflowScroll,
        horizontal,
        container: this._renderer.container,
        resize: () => setTimeout(() => { this.setState({layout: true}); }),
        check: param => this._onCheck(param),
    });
this._infinite = new Infinite(this._items, {
    horizontal,
    threshold,
    useRecycle: true,
    append: param => this._requestAppend(param),
    prepend: param => this._requestPrepend(param),
    recycle: param => this._recycle(param),
});
this._manager = new LayoutManager(this._items, this._renderer, {
    isEqualSize,
    isConstantSize,
});

this._manager.setLayout(this._layout);
this._updateLayout();
this._setSize(this._renderer.getViewportSize());
this._updateGroups();
this._watcher.setScrollPos();
```

React

```
this._items = new ItemManager();
this._renderer = new DOMRenderer(viewer, {
    container: isOverflowScroll ? this._container : null,
    isEqualSize,
    isConstantSize,
    horizontal,
});
this._watcher = new Watcher(
    this._renderer.view,
    {
        isOverflowScroll,
        horizontal,
        container: this._renderer.container,
        resize: () => setTimeout(() => { this.setState({layout: true}); }),
        check: param => this._onCheck(param),
    });
this._infinite = new Infinite(this._items, {
    horizontal,
    threshold,
    useRecycle: true,
    append: param => this._requestAppend(param),
    prepend: param => this._requestPrepend(param),
    recycle: param => this._recycle(param),
});
this._manager = new LayoutManager(this._items, this._renderer, {
    isEqualSize,
    isConstantSize,
});

this._manager.setLayout(this._layout);
this._updateLayout();
this._setSize(this._renderer.getViewportSize());
this._updateGroups();
this._watcher.setScrollPos();
```

Angular

```
this._items = new ItemManager();
this._renderer = new DOMRenderer(viewer, {
    container: isOverflowScroll ? this._container : null,
    isEqualSize,
    isConstantSize,
    horizontal,
});
this._watcher = new Watcher(
    this._renderer.view,
    {
        isOverflowScroll,
        horizontal,
        container: this._renderer.container,
        resize: () => setTimeout(() => { this.setState({layout: true}); }),
        check: param => this._onCheck(param),
    });
this._infinite = new Infinite(this._items, {
    horizontal,
    threshold,
    useRecycle: true,
    append: param => this._requestAppend(param),
    prepend: param => this._requestPrepend(param),
    recycle: param => this._recycle(param),
});
this._manager = new LayoutManager(this._items, this._renderer, {
    isEqualSize,
    isConstantSize,
});

this._manager.setLayout(this._layout);
this._updateLayout();
this._setSize(this._renderer.getViewportSize());
this._updateGroups();
this._watcher.setScrollPos();
```

Vue

```
this._items = new ItemManager();
this._renderer = new DOMRenderer(viewer, {
    container: isOverflowScroll ? this._container : null,
    isEqualSize,
    isConstantSize,
    horizontal,
});
this._watcher = new Watcher(
    this._renderer.view,
    {
        isOverflowScroll,
        horizontal,
        container: this._renderer.container,
        resize: () => setTimeout(() => { this.setState({layout: true}); }),
        check: param => this._onCheck(param),
    });
this._infinite = new Infinite(this._items, {
    horizontal,
    threshold,
    useRecycle: true,
    append: param => this._requestAppend(param),
    prepend: param => this._requestPrepend(param),
    recycle: param => this._recycle(param),
});
this._manager = new LayoutManager(this._items, this._renderer, {
    isEqualSize,
    isConstantSize,
});

this._manager.setLayout(this._layout);
this._updateLayout();
this._setSize(this._renderer.getViewportSize());
this._updateGroups();
this._watcher.setScrollPos();
```

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2.3 고민과 해결

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모든 문제가 다 DOM

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3. 프레임워크 돔 렌더링 원리 (key & DOM Diff)

3.1 프레임워크별 사용법

React JSX

```
<Flicking gap={10} onMove={...}>
  <div className="panel"></div>
  <div className="panel"></div>
  <div className="panel"></div>
</Flicking>
```

Angular Template

```
<ngx-flicking [options]="{ gap: 10 }" (move)="...">
   <ng-template>
     <div class="panel"></div>
     <div class="panel"></div>
     <div class="panel"></div>
  </ng-template>
 </ngx-flicking>
```

Vue Template

```
<flicking :options="{ gap: 10 }" @move="...">
    <div class="panel"></div>
    <div class="panel"></div>
    <div class="panel"></div>
</flicking>
```

3.2 프레임워크 렌더링 원리 - key


```
<Flicking>
  <div className="item" key={1}>1</div>
  <div className="item" key={2}>2</div>
  <div className="item" key={3}>3</div>
  <div className="item" key={4}>4</div>
  <div className="item" key={5}>5</div>
  <div className="item" key={6}>6</div>
</Flicking>
```

3.2 프레임워크 렌더링 원리 - key

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React에서 key를 미설정시 뜨는 경고 메시지

```
▶Warning: Each child in an array or iterator should have a unique "key"
prop.
```

```
<Flicking>
  {[1, 2, 3, 4, 5].map(i => (
    <div className="item">{i}</div>
  ))}
</Flicking>
```

3.3 프레임워크 렌더링 원리 - DOM Diff

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1, 2, 3, 4, 5, 6

```
<Flicking>
  <div className="item" key={1}>1</div>
  <div className="item" key={2}>2</div>
  <div className="item" key={3}>3</div>
  <div className="item" key={4}>4</div>
  <div className="item" key={5}>5</div>
  <div className="item" key={6}>6</div>
</Flicking>
```

1, 2, 6, 5, 3

```
<Flicking>
  <div className="item" key={1}>1</div>
  <div className="item" key={2}>2</div>
  <div className="item" key={6}>6</div>
  <div className="item" key={5}>5</div>
  <div className="item" key={3}>3</div>
</Flicking>
```

3.3 프레임워크 렌더링 원리 - DOM Diff

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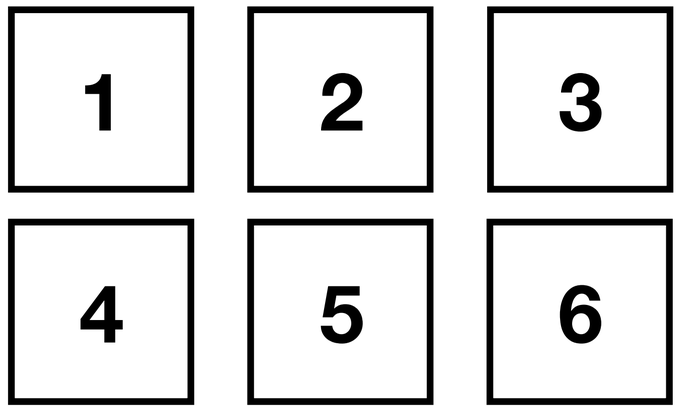
Framework

```
<Flicking>
  <div className="item" key={1}>1</div>
  <div className="item" key={2}>2</div>
  <div className="item" key={3}>3</div>
  <div className="item" key={4}>4</div>
  <div className="item" key={5}>5</div>
  <div className="item" key={6}>6</div>
</Flicking>
```

DOM



3.3 프레임워크 렌더링 원리 - DOM Diff

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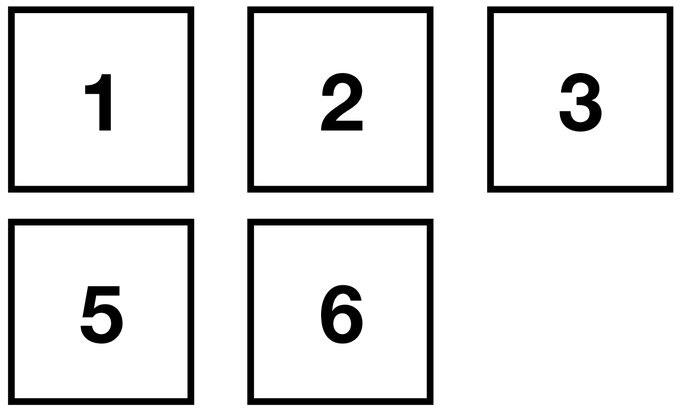
4번 데이터 삭제

Framework

```
<Flicking>
  <div className="item" key={1}>1</div>
  <div className="item" key={2}>2</div>
  <div className="item" key={3}>3</div>
  <div className="item" key={5}>5</div>
  <div className="item" key={6}>6</div>
</Flicking>
```

DOM



3.3 프레임워크 렌더링 원리 - DOM Diff

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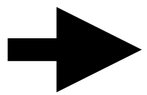
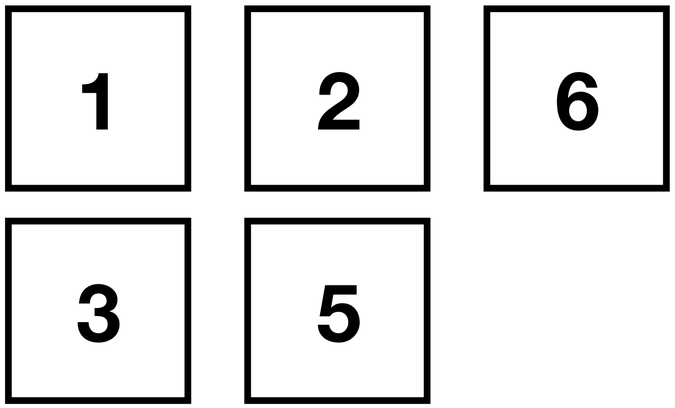
6번 데이터가 3번 데이터 앞으로 이동

Framework

```
<Flicking>
  <div className="item" key={1}>1</div>
  <div className="item" key={2}>2</div>
  <div className="item" key={6}>6</div>
  <div className="item" key={3}>3</div>
  <div className="item" key={5}>5</div>
</Flicking>
```



DOM



3.3 프레임워크 렌더링 원리 - DOM Diff

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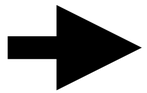
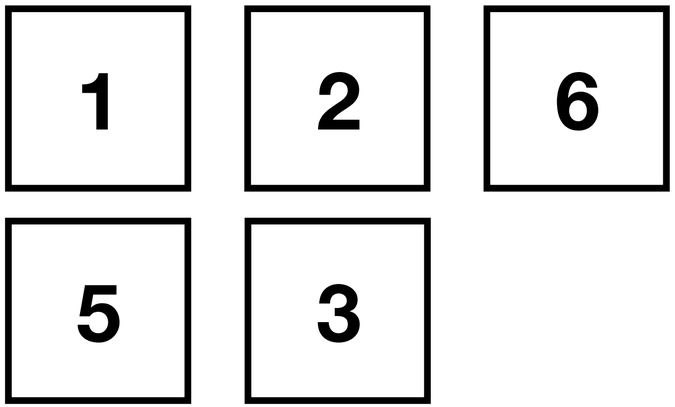
5번 데이터가 3번 데이터 앞으로 이동

Framework

```
<Flicking>
  <div className="item" key={1}>1</div>
  <div className="item" key={2}>2</div>
  <div className="item" key={6}>6</div>
  <div className="item" key={5}>5</div>
  <div className="item" key={3}>3</div>
</Flicking>
```



DOM



3.4 DOM을 조작하게 되면?

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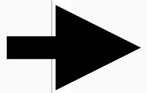
1, 2, 3, 4, 5, 6

```
<Flicking>
  <div className="item" key={1}>1</div>
  <div className="item" key={2}>2</div>
  <div className="item" key={3}>3</div>
  <div className="item" key={4}>4</div>
  <div className="item" key={5}>5</div>
  <div className="item" key={6}>6</div>
</Flicking>
```



1, 2, 6, 5, 3

```
<Flicking>
  <div className="item" key={1}>1</div>
  <div className="item" key={2}>2</div>
  <div className="item" key={6}>6</div>
  <div className="item" key={5}>5</div>
  <div className="item" key={3}>3</div>
</Flicking>
```

3.4 DOM을 조작하게 되면?

사용자가 removeChild를 호출해서 발생하는 에러

```
▶Uncaught DOMException: Failed to execute 'insertBefore' on 'Node':
inserted is not a child of this node.
    at insertBefore (http://localhost:3000/static/js/0.chunk.js:1467
    at commitPlacement (http://localhost:3000/static/js/0.chunk.js:2
    at commitAllHostEffects (http://localhost:3000/static/js/0.chunk
    at HTMLUnknownElement.callCallback (http://localhost:3000/static
    at Object.invokeGuardedCallbackDev (http://localhost:3000/static
    at invokeGuardedCallback (http://localhost:3000/static/js/0.chun
```

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4. Cross Framework Component 원리

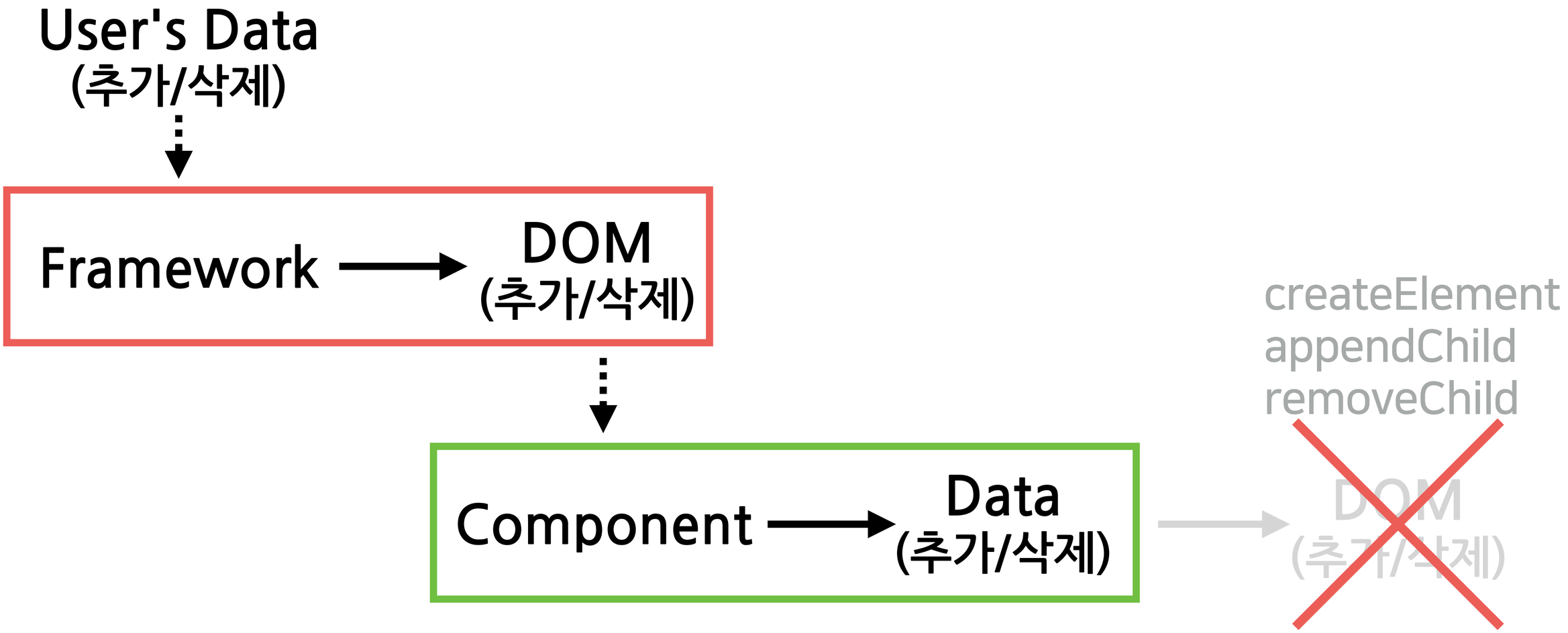
4.1 CFC 원리 - DOM 조작 외부화

DOM을 추가/삭제하는 방법

DOM	Component	Framework
추가 (insertBefore)	추가 메서드 호출	배열 데이터 추가
삭제 (removeChild)	삭제 메서드 호출	배열 데이터 삭제

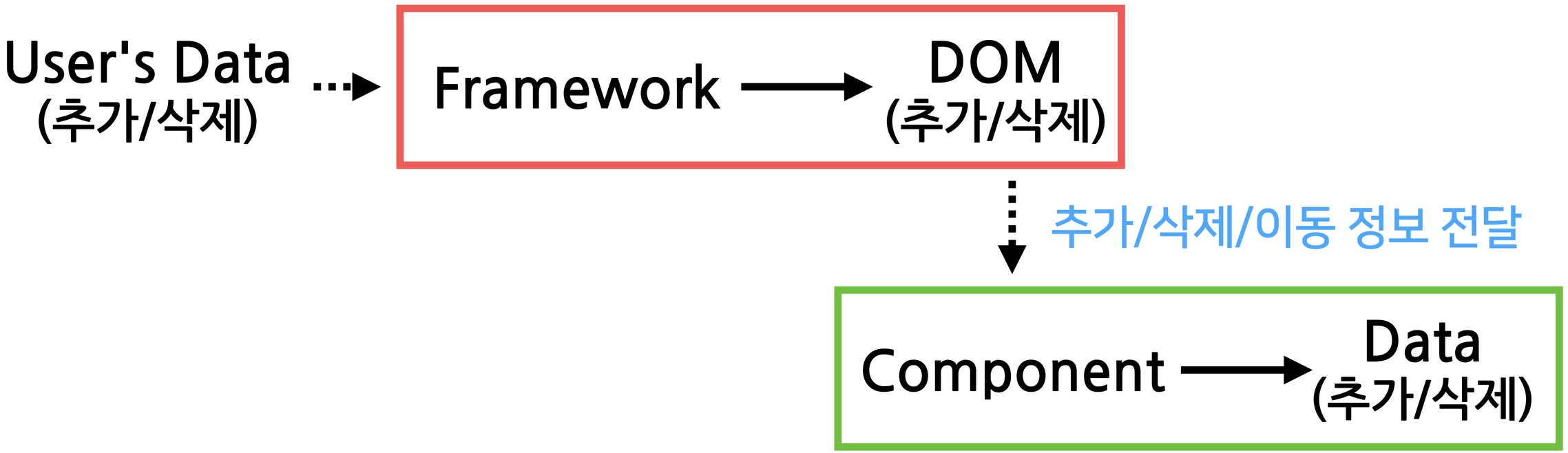
4.1 CFC 원리 - DOM 조작 외부화

4.1 CFC 원리 - DOM 조작 외부화



4.2 CFC 원리 - 추가/삭제 메서드 호출 원리

추가/삭제 메서드를 통한 데이터 동기화



4.3 CFC 원리 - ListDiffer

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ListDiffer

4.3 CFC 원리 - ListDiffer

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1. 추가(added):
추가된 요소의 인덱스 집합

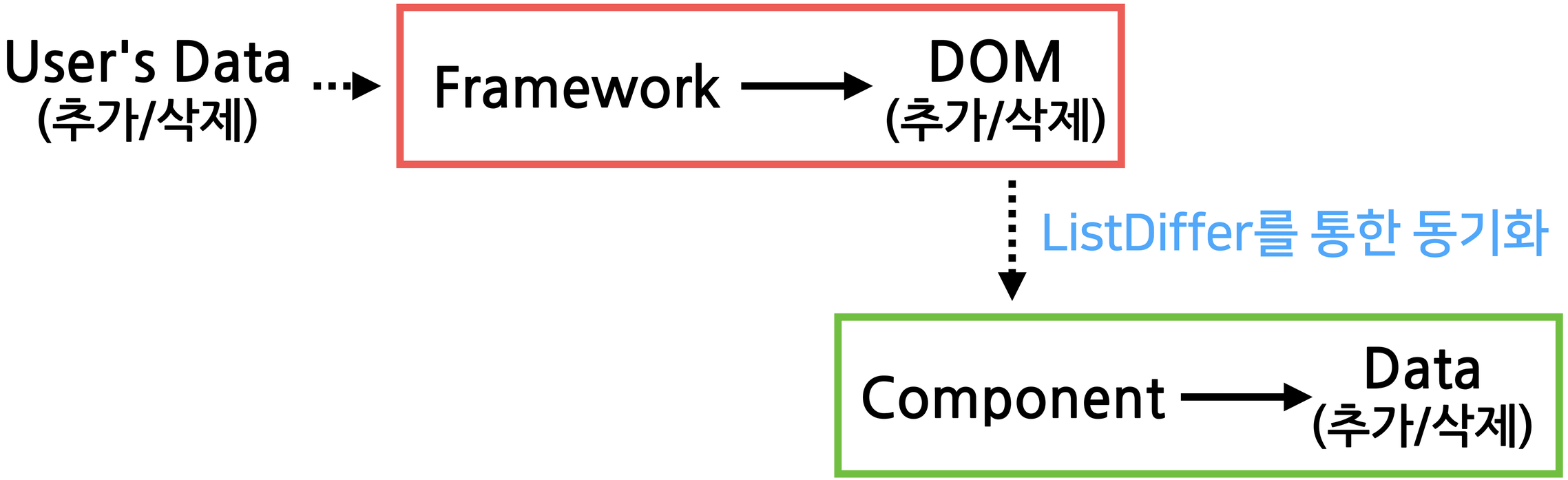
2. 삭제(removed):
삭제된 요소의 인덱스 집합

3. 유지(maintained):
이전 배열에서 삭제되지 않은 아이템들의 [이전 인덱스, 이후 인덱스] 집합

4.3 CFC 원리 - ListDiffer

삭제(removed) > 유지(maintaind) > 추가(added)

4.3 CFC 원리 - ListDiffer



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5. Cross Framework Component 적용 방법

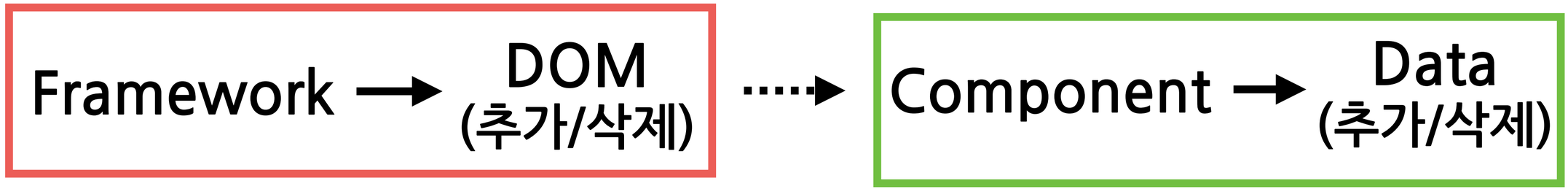
5.1 CFC 적용 방법 - 준비물

원리	준비물
기본	1. 추가 / 삭제 메서드
DOM 조작 외부화	2. 렌더링 외부화 옵션
추가/삭제 메서드 호출 원리	3. ListDiffer(diff함수)

5.2 CFC 적용 방법 - 렌더링 외부화 옵션 적용

렌더링 외부화 옵션: false

렌더링 외부화 옵션: true



5.2 CFC 적용 방법 - 렌더링 외부화 옵션 적용

렌더링 외부화 옵션 구현하기 전 코드

```
insert(data, index) {
  const el = makeDOM(data);

  this.items.splice(index, 0, el);
  document.body.insertBefore(el, this.items[index + 1]);
}
```

5.2 CFC 적용 방법 - 렌더링 외부화 옵션 적용

DEVIEW 2019

렌더링 외부화 옵션 구현한 코드

```
insert(data, index) {
  const el = this.renderExternal ? data : makeDOM(data);

  this.items.splice(index, 0, el);

  if (!this.renderExternal) {
    document.body.insertBefore(el, this.items[index + 1]);
  }
}
```

5.2 CFC 적용 방법 - 추가/삭제 메서드 호출

DEVIEW 2019

1. removed(삭제) > 2. maintained(유지) > 3. added(추가)

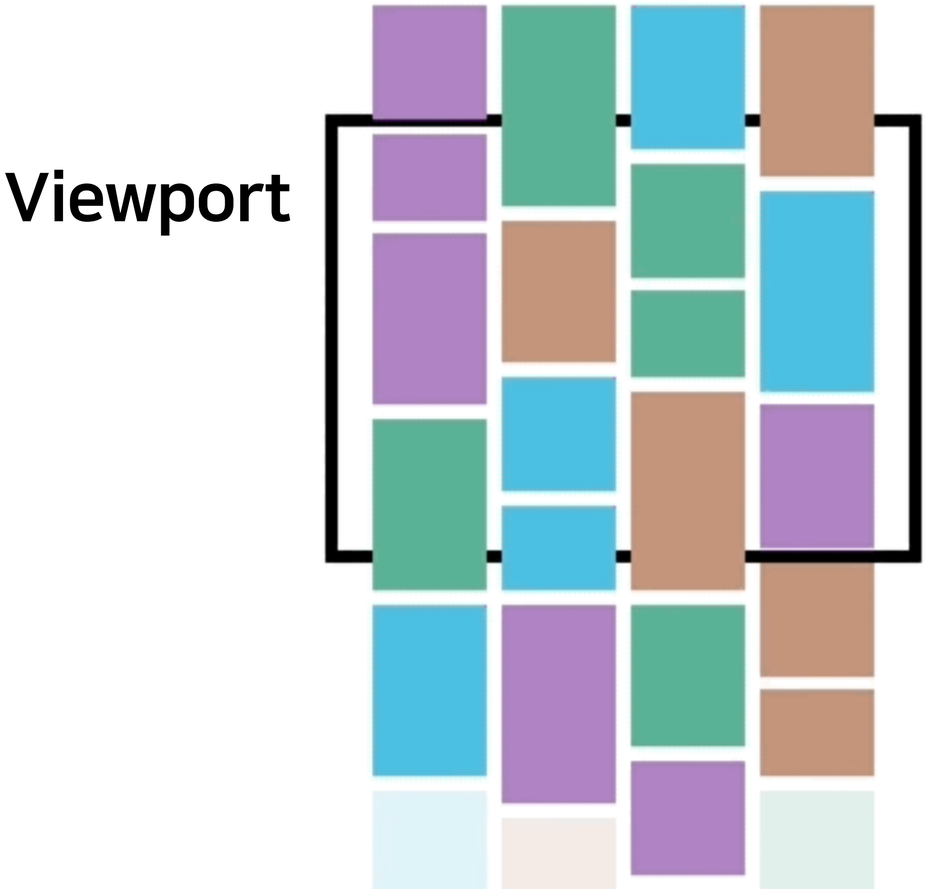
5.2 CFC 적용 방법 - 추가/삭제 메서드 호출

DEVIEW 2019

1. removed(삭제) > 2. maintained(유지) > 3. added(추가)

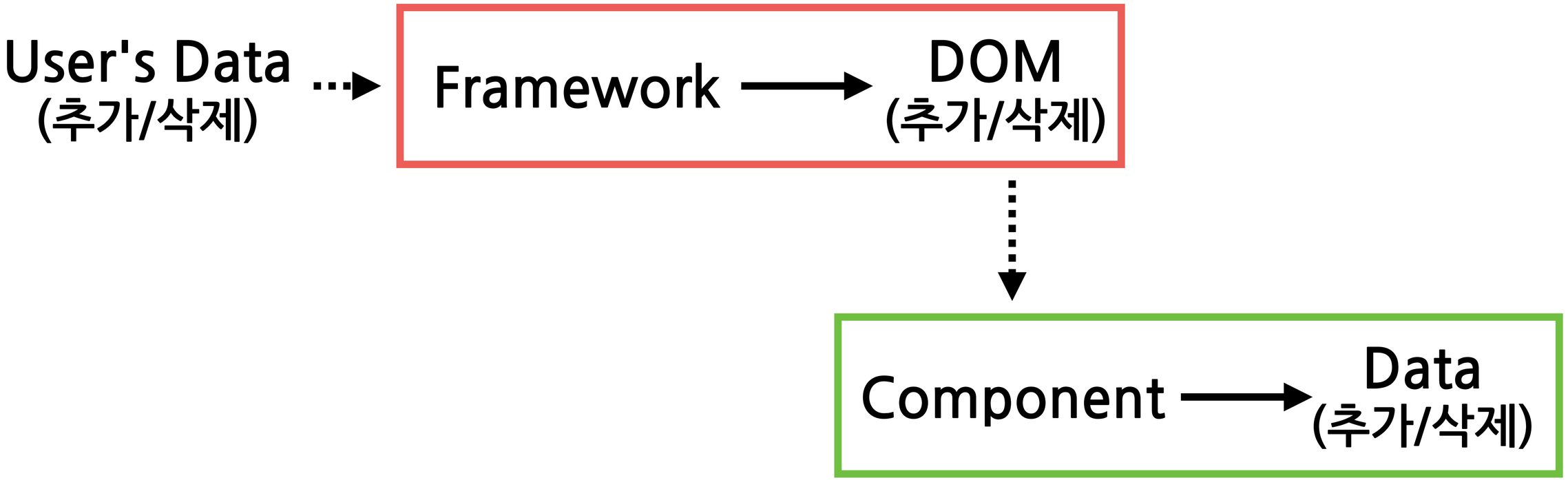
```
1  removed.forEach(index => {
     this.remove(index, list[index]);
   });

   const nextList: Item[] = [];
2  maintained.forEach(([fromIndex]) => {
     nextList.push(items[fromIndex]);
   });
   this.items = nextList;

3  added.forEach(index => {
     this.insert(index, list[index]);
   });
```

5.3 CFC 적용 방법 - Recycle 구조



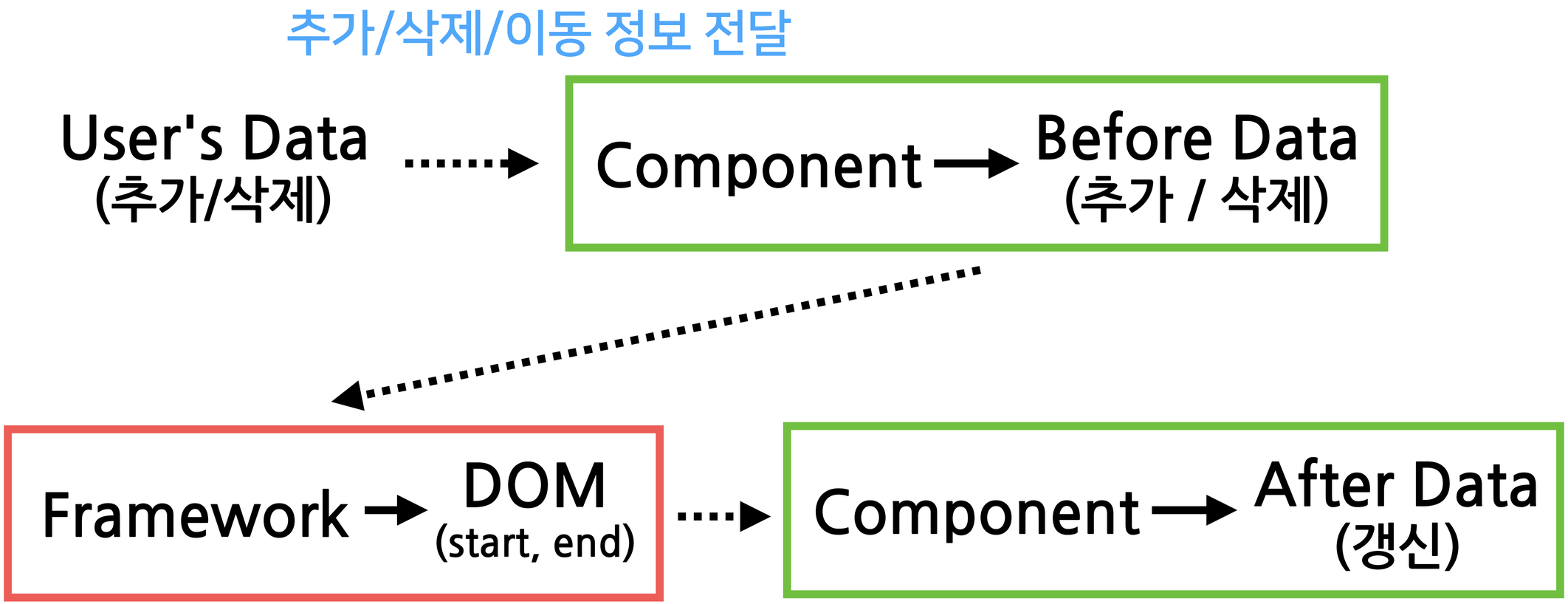
5.3 CFC 적용 방법 - Recycle 구조

No Recycle 구조



5.3 CFC 적용 방법 - Recycle 구조

Recycle 구조



DEVIEW
2019

6. 누구나 쉽게 만들 수 있는 Infinite Scroll에 CFC 적용해보기

6 CFC 예제 - Infinite Scroll

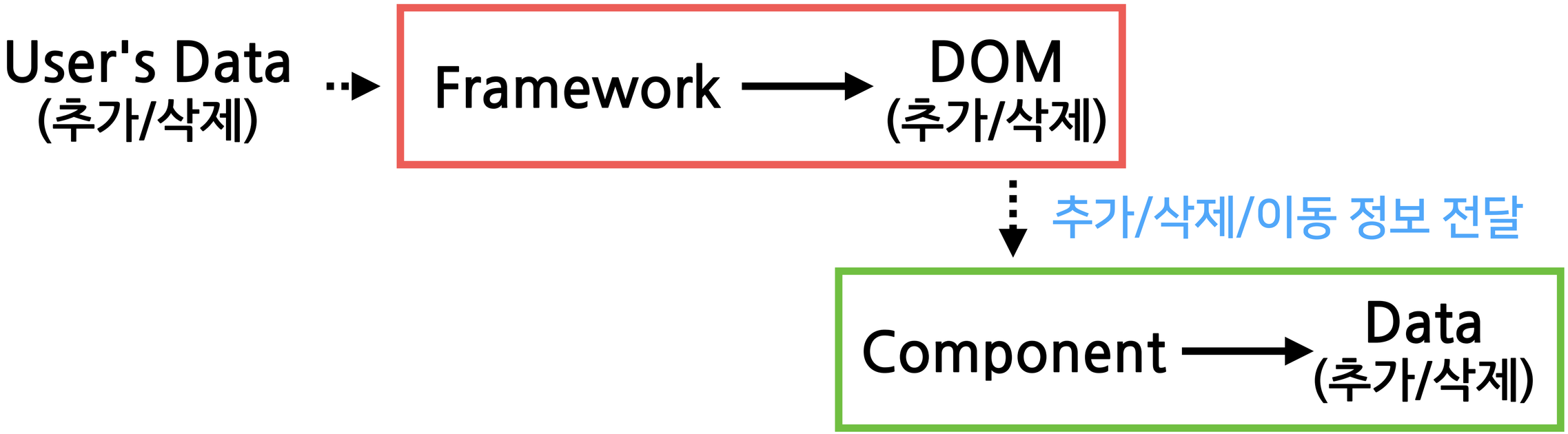
DEVIEW
2019

1. CFC 구조 컴포넌트
    1. Vanilla (@egjs/deview-infinite)
    2. React (@egjs/react-deview-infinite)
    3. Angular (@egjs/ngx-deview-infinite)
    4. Vue (@egjs/vue-deview-infinite)
2. CFC Recyle 구조 컴포넌트
    1. Vanilla (@egjs/deview-recycle)
    2. React (@egjs/react-deview-recycle)
    3. Angular (@egjs/ngx-deview-recycle)
    4. Vue (@egjs/vue-deview-recycle)

https://github.com/NAVER-FEPlatform/deview2019-demo

6.1 CFC 예제 - Infinite Scroll(No Recycle)

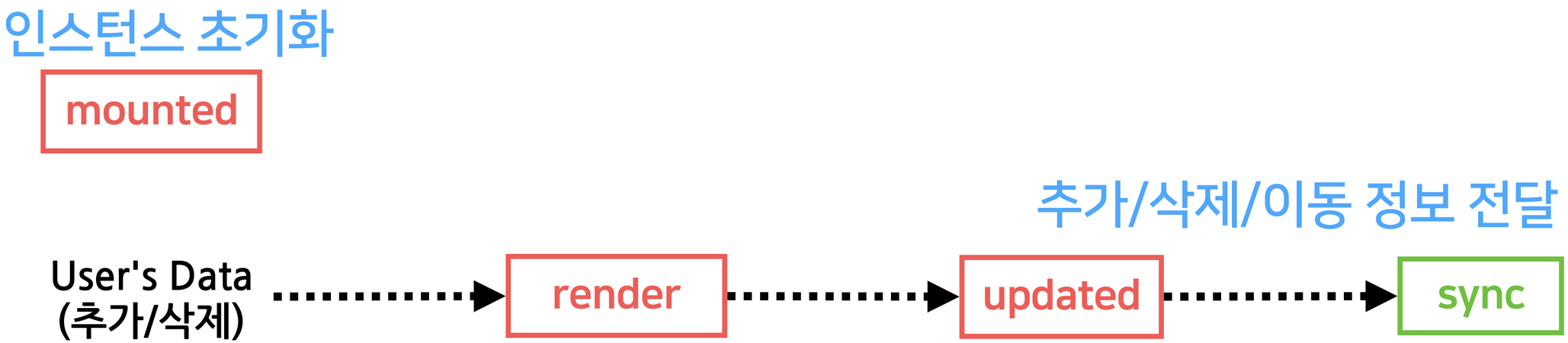
No Recycle 구조



6.1 CFC 예제 - Infinite Scroll(No Recycle)

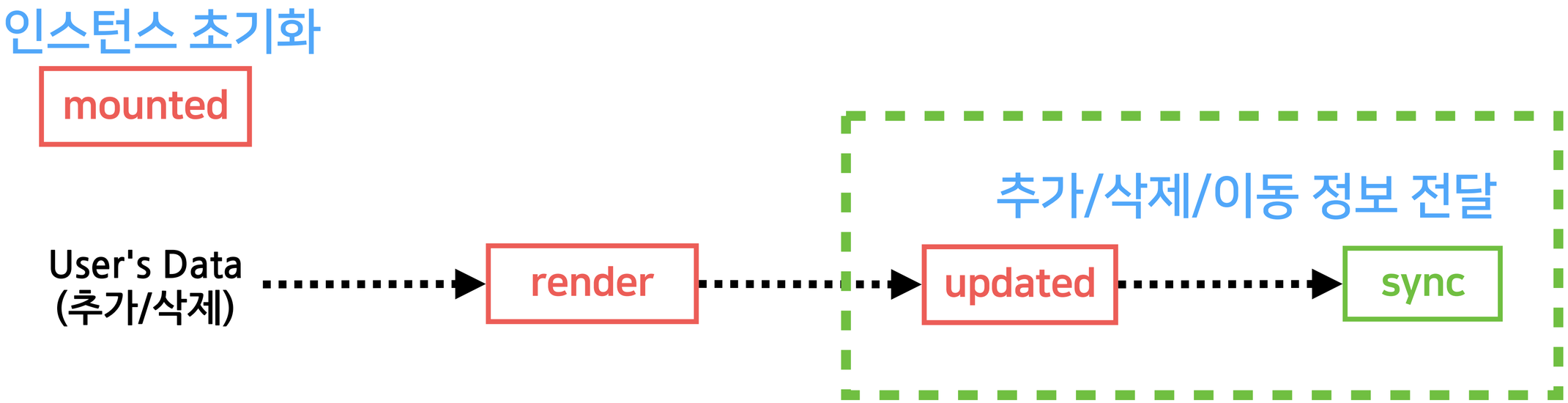
DEVIEW 2019

No Recycle 구조의 Lifecycle



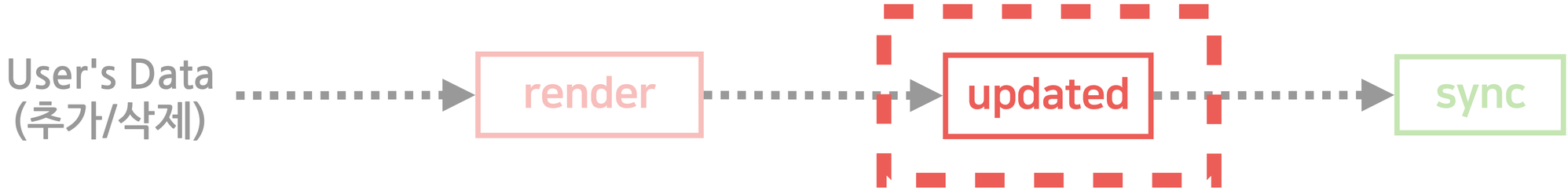
6.1 CFC 예제 - Infinite Scroll(No Recycle)

No Recycle 구조의 Lifecycle



6.1 CFC 예제 - Infinite Scroll(No Recycle)

프레임워크에서 DOM을 추가/삭제한 후 sync 메서드 호출




```
public componentDidUpdate() {
  this.infinite.sync(this.container.children);
}
```

6.1 CFC 예제 - Infinite Scroll(No Recycle)

DEVIEW 2019

removed(삭제) > maintained(유지) > added(추가) 방법으로 동기화


```
maintained.forEach(([fromIndex]) => {
  nextList.push(items[fromIndex]);
});
this.items = nextList;

added.forEach(index => {
  this.insert(index, list[index]);
});
```

6.1 CFC 예제 - Infinite Scroll(No Recycle)

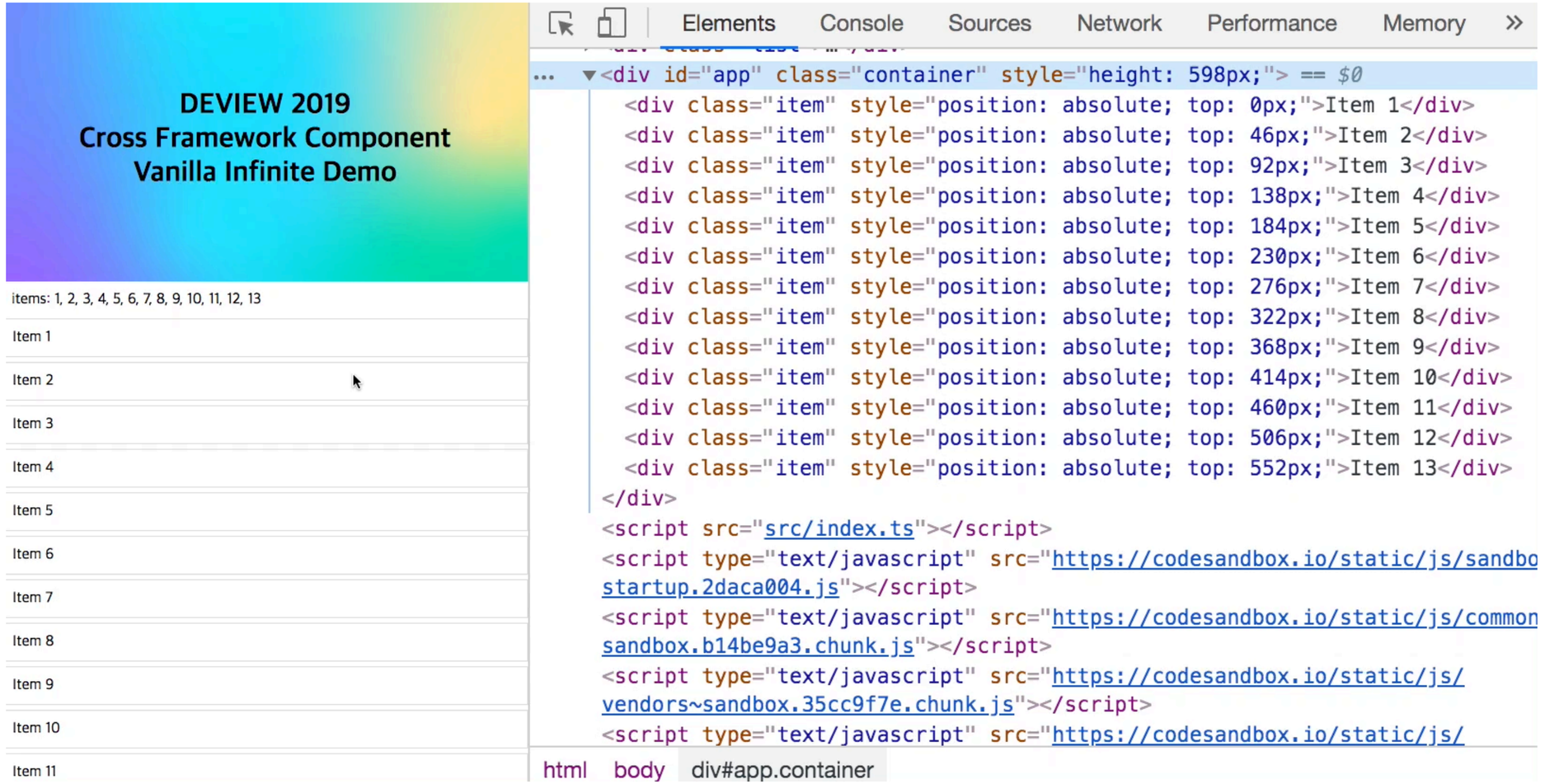
DEVIEW 2019

DOM 조작 외부화

```
public insert(index: number, data: HTMLElement | string) {
  items.splice(index, 0, item);

  if (!options.renderExternal) {
    const nexItem = items[index + 1];
    this.container.insertBefore(item.el, nexItem ? nexItem.el : null);
  }
}
```

6.1 CFC 예제 - Infinite Scroll(No Recycle)

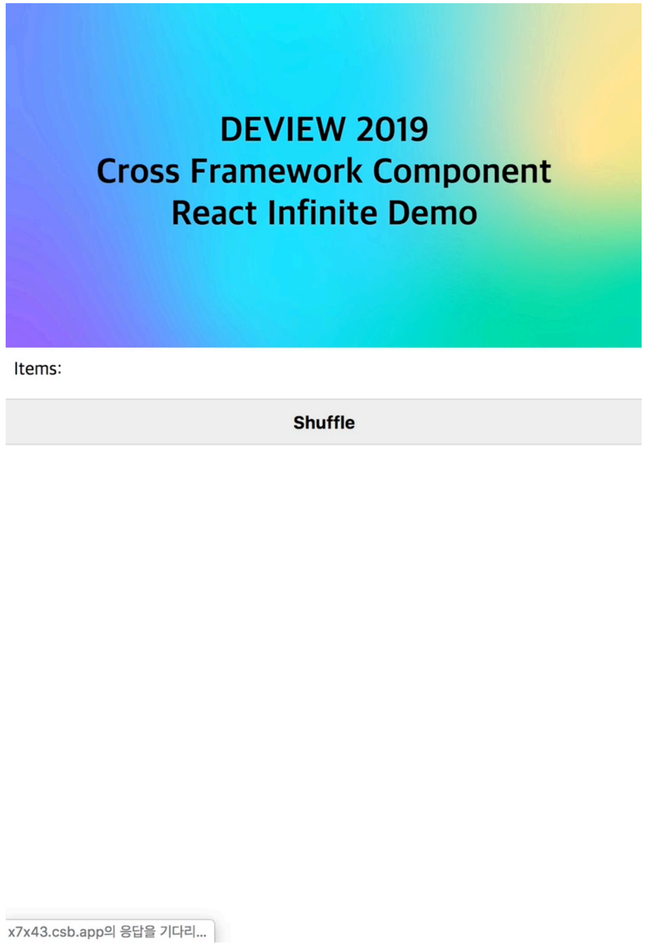
DEVIEW 2019



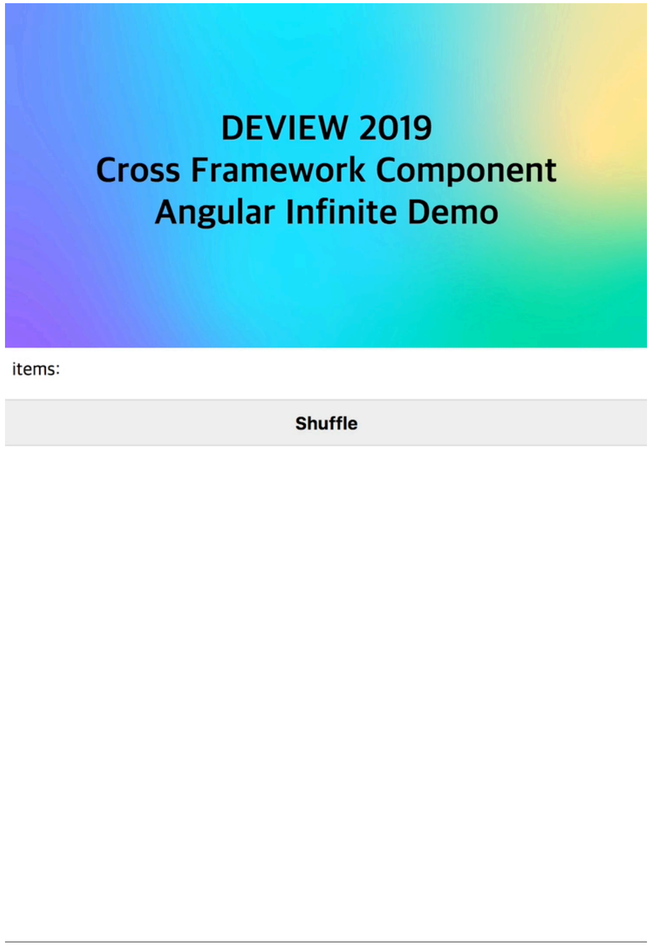
Vanilla Infinite

6.1 CFC 예제 - Infinite Scroll(No Recycle)

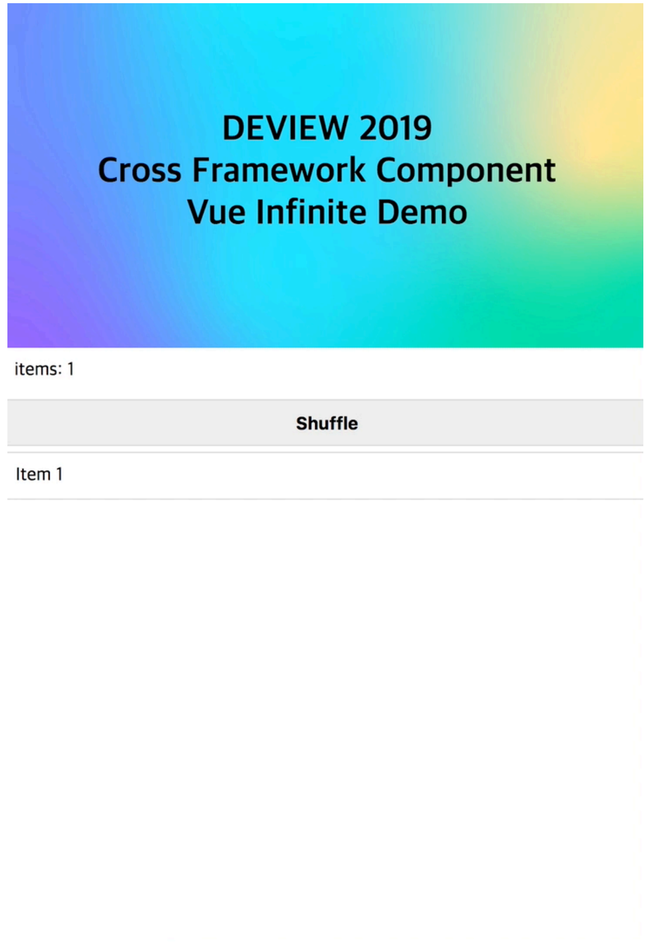
DEVIEW 2019



React Infinite



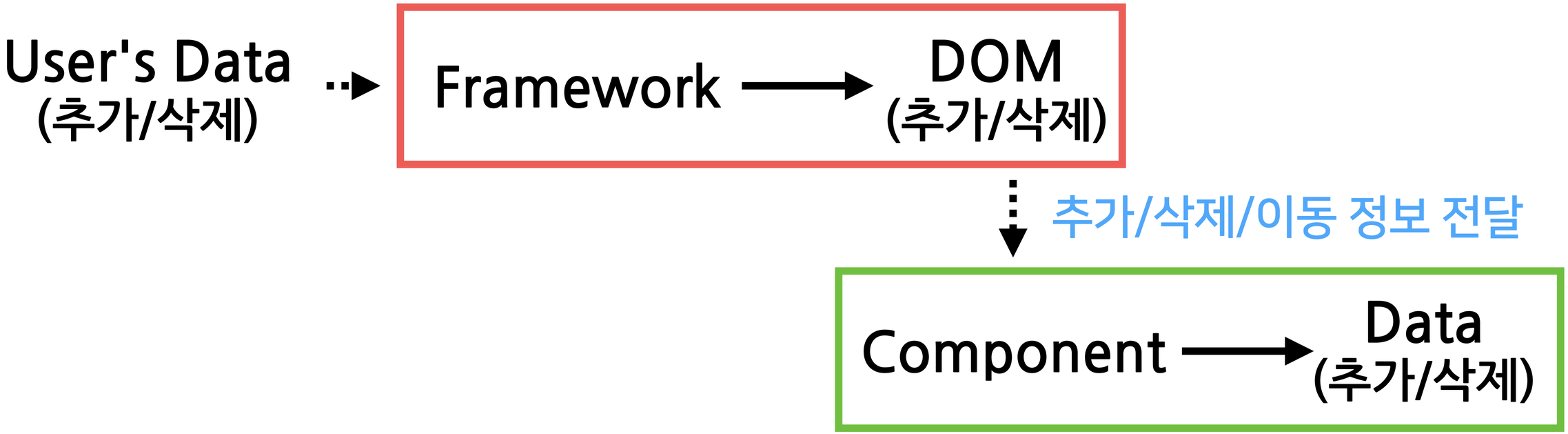
Angular Infinite



Vue Infinite

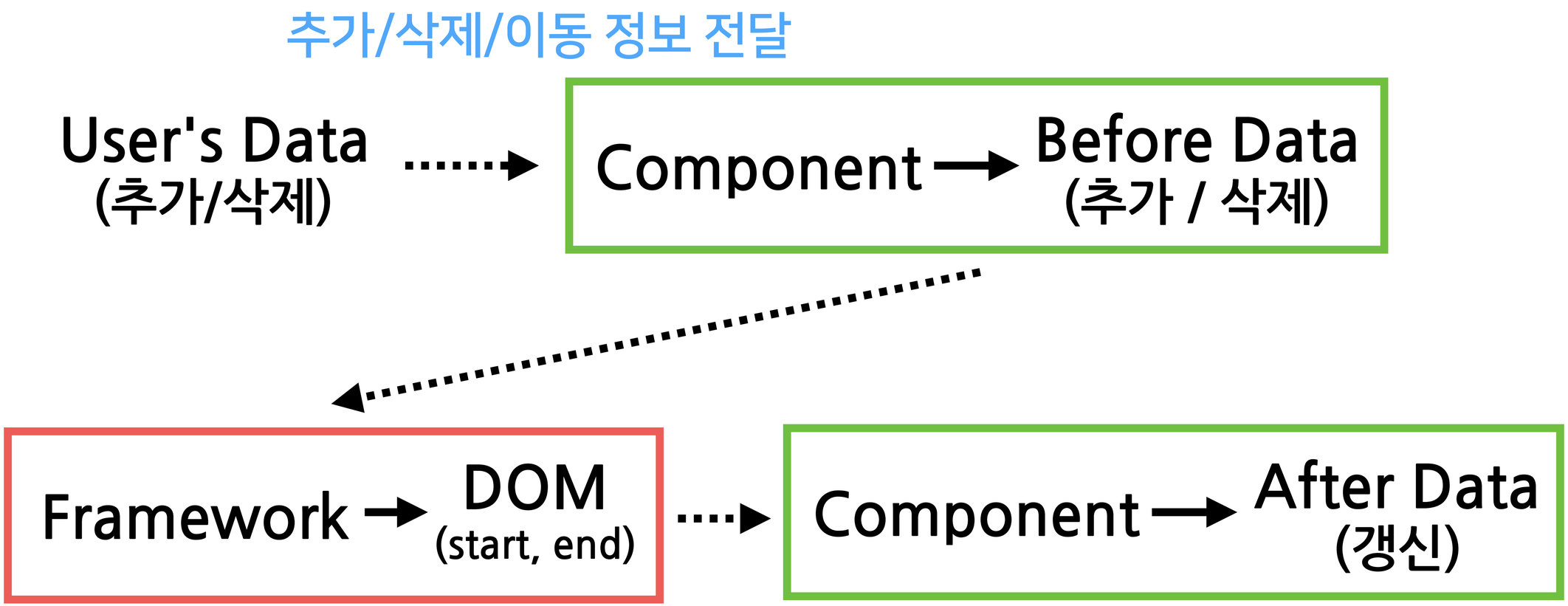
6.2 CFC 예제 - Infinite Scroll(Recycle)

No Recycle 구조



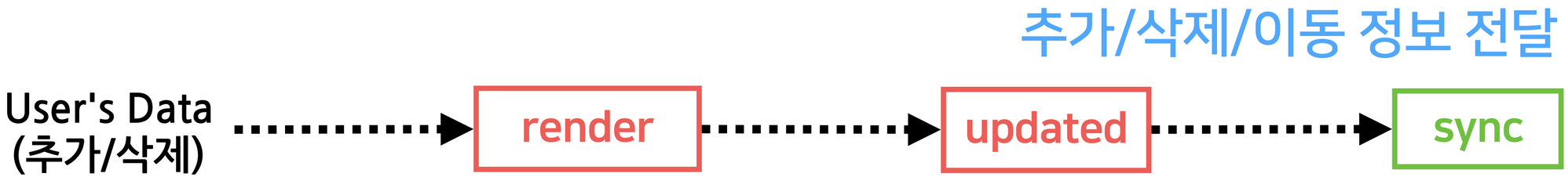
6.2 CFC 예제 - Infinite Scroll(Recycle)

Recycle 구조

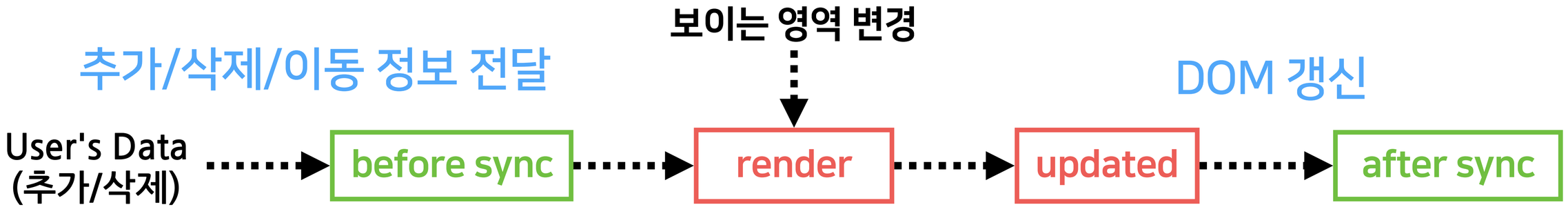


6.2 CFC 예제 - Infinite Scroll(Recycle)

No Recycle 구조의 Lifecycle

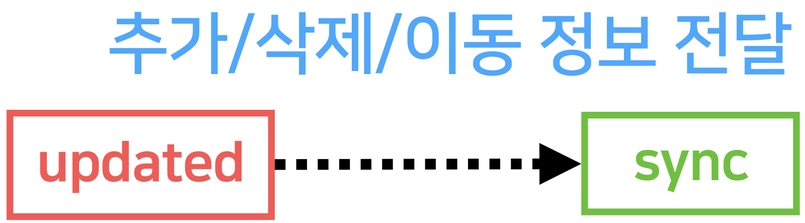


Recycle 구조의 Lifecycle

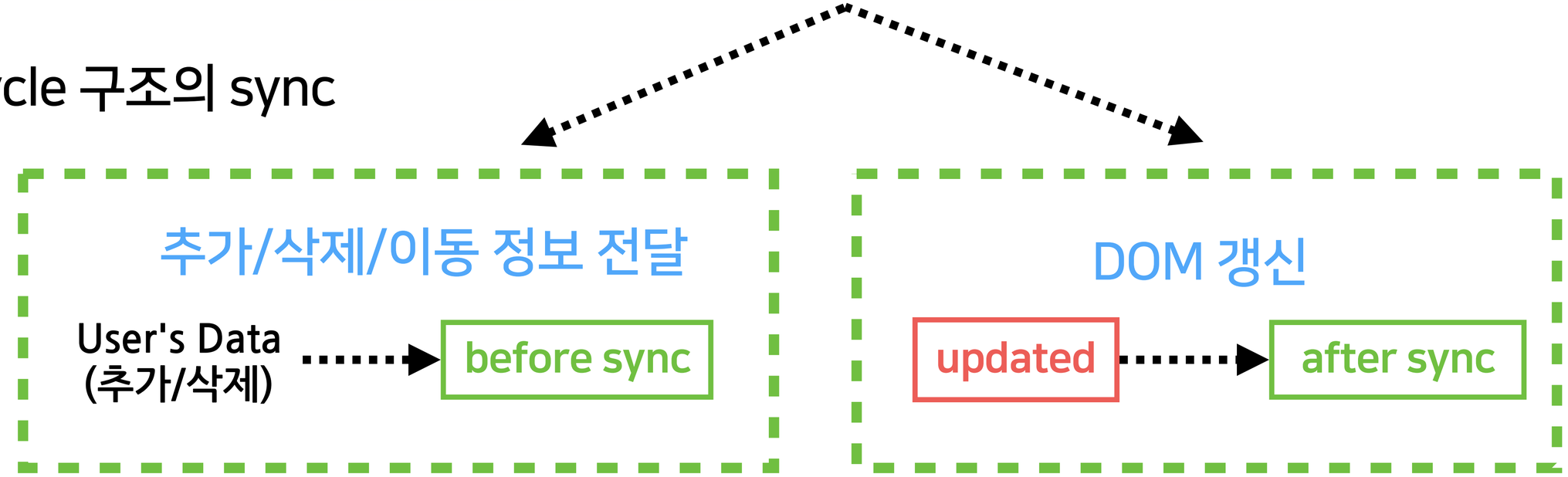


6.2 CFC 예제 - Infinite Scroll(Recycle)

No Recycle 구조의 sync

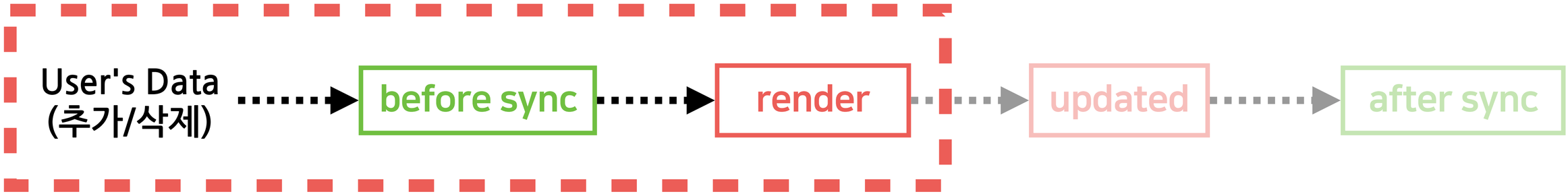


Recycle 구조의 sync



6.2 CFC 예제 - Infinite Scroll(Recycle)

DOM을 추가/삭제하기 전에 beforeSync 메서드 호출




```
public render() {
  const children = React.Children.toArray(this.props.children);

  this.recycle.beforeSync(children.map(child => child.key));
  const indexes = this.recycle.getRenderingIndexes();

  const visibleChildren = children.slice(indexes.start, indexes.end + 1);

  return (<Tag {...attributes}>{visibleChildren}</Tag>);
}
```

6.2 CFC 예제 - Infinite Scroll(Recycle)

DEVIEW 2019

DOM을 추가/삭제하기 전에 beforeSync 메서드 호출(Angular)

```
ngOnChanges() {
  const itemKeys = this.items.map((item, i) => this.trackBy(i, item));

  this.recycle.beforeSync(itemKeys);
  const indexes = this.recycle.getRenderingIndexes();

  this.visibleItems = items.slice(indexes.start, indexes.end + 1);
}
```

```
<div NgxDeviewRecycle #recycle [items]="items" [trackBy]="trackBy">
  <div class="item" *ngFor="let item of recycle.visibleItems;trackBy: trackBy;">
    Item {{item}}
  </div>
</div>
```

6.2 CFC 예제 - Infinite Scroll(Recycle)

DEVIEW 2019

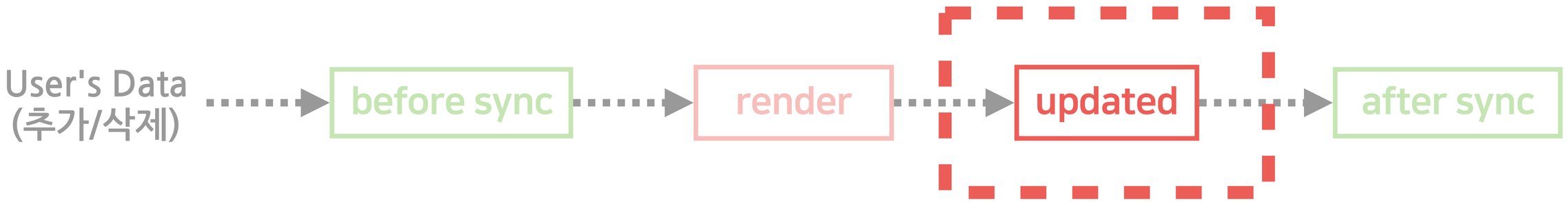
removed(삭제) > maintained(유지) > added(추가) 방법으로 사전 동기화

```
public beforeSync(data: any[]) {
  const items = this.items;
  const itemKeys = this.items.map(item => item.key);
  const { maintained, added } = diff(itemKeys, data, key => key);

  const nextList: Item[] = [];

  maintained.forEach(([fromIndex]) => {
    nextList.push(items[fromIndex]);
  });
  this.items = nextList;

  added.forEach(index => {
    this.insert(index, "", data[index]);
  });
  this.refreshCursor();
}
```

6.2 CFC 예제 - Infinite Scroll(Recycle)

DEVIEW 2019

프레임워크에서 DOM을 추가/삭제한 후 sync 메서드 호출

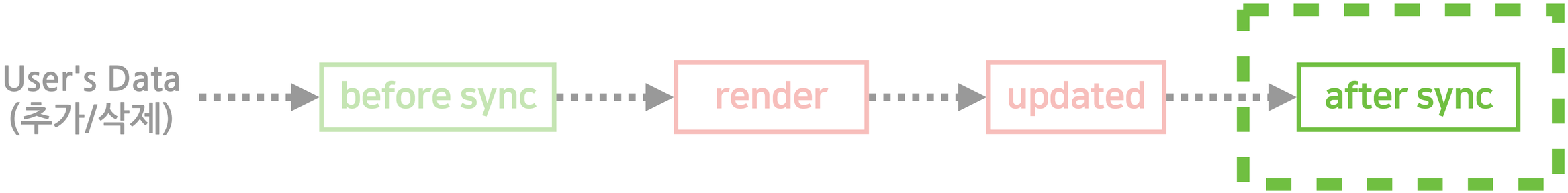



```
public componentDidUpdate() {
  this.infinite.sync(this.container.children);
}
```

6.2 CFC 예제 - Infinite Scroll(Recycle)

DEVIEW 2019

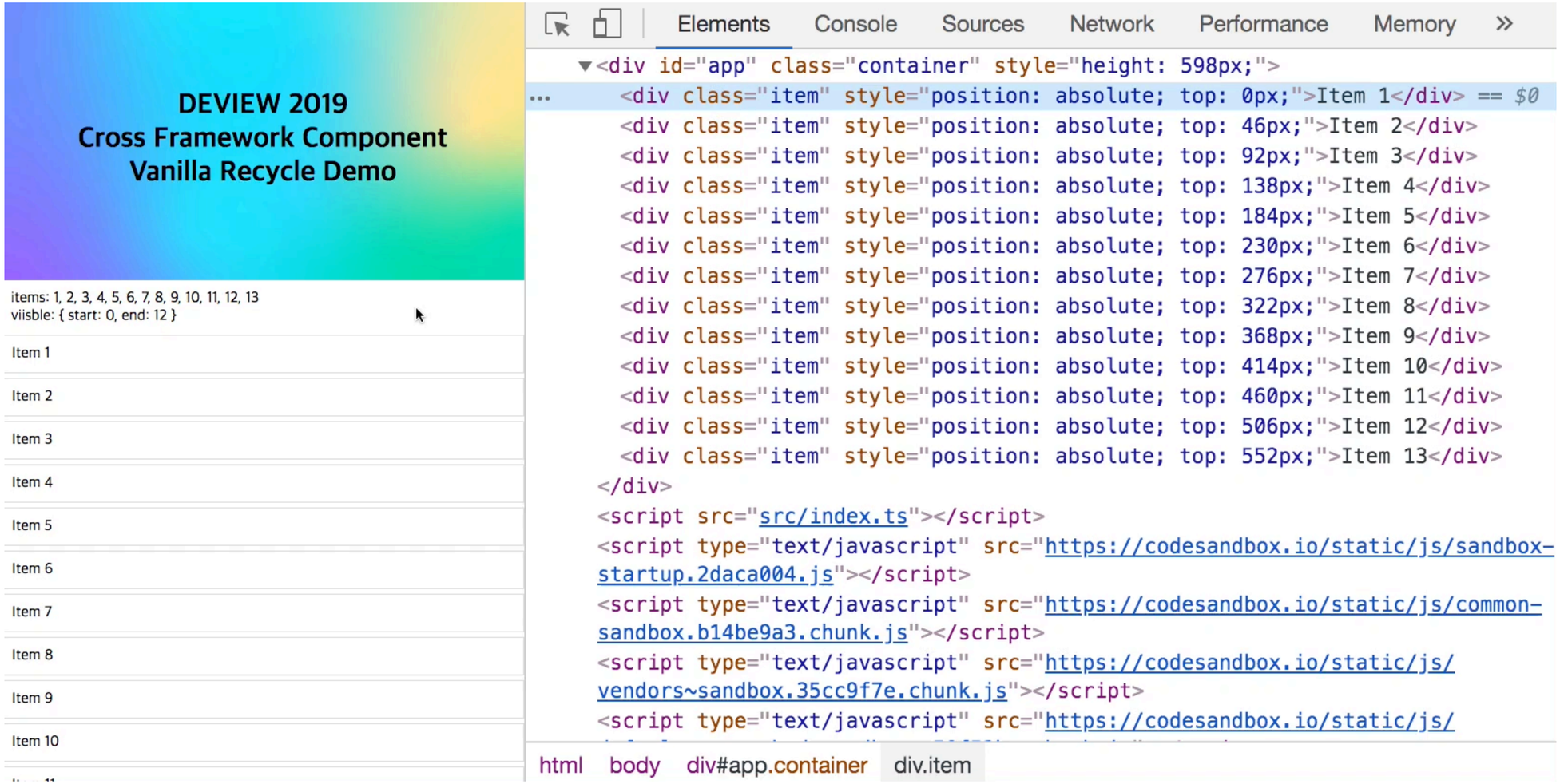
DOM 갱신




```
public sync(elements: HTMLElement[]) {
  const visibleItems = this.items.slice(this.startCursor, this.endCursor + 1);
  visibleItems.forEach((item, i) => {
    item.el = elements[i];
  });
  this.layout();
}
```

6.2 CFC 예제 - Infinite Scroll(Recycle)

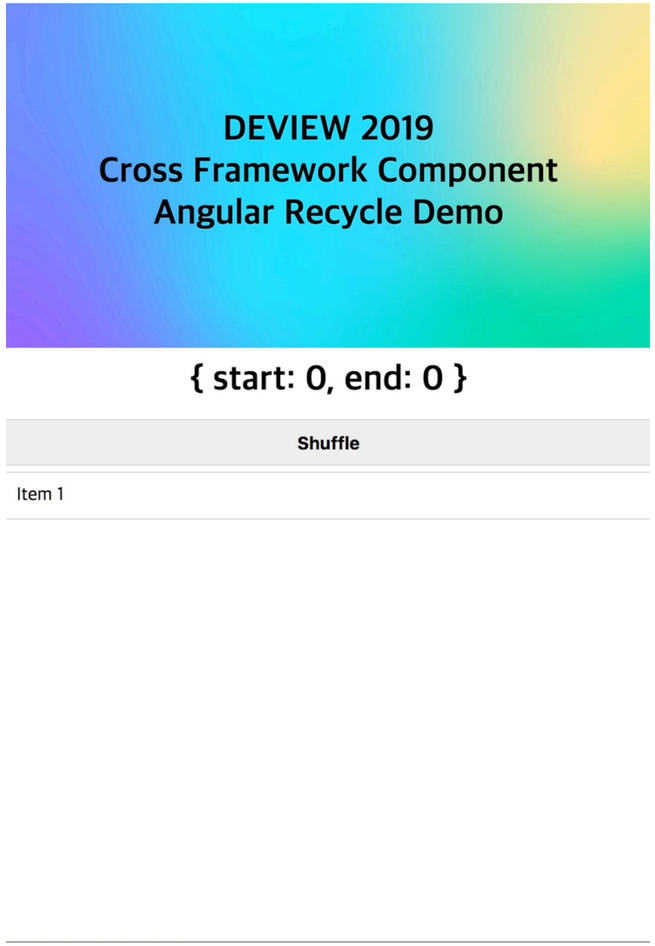
DEVIEW 2019

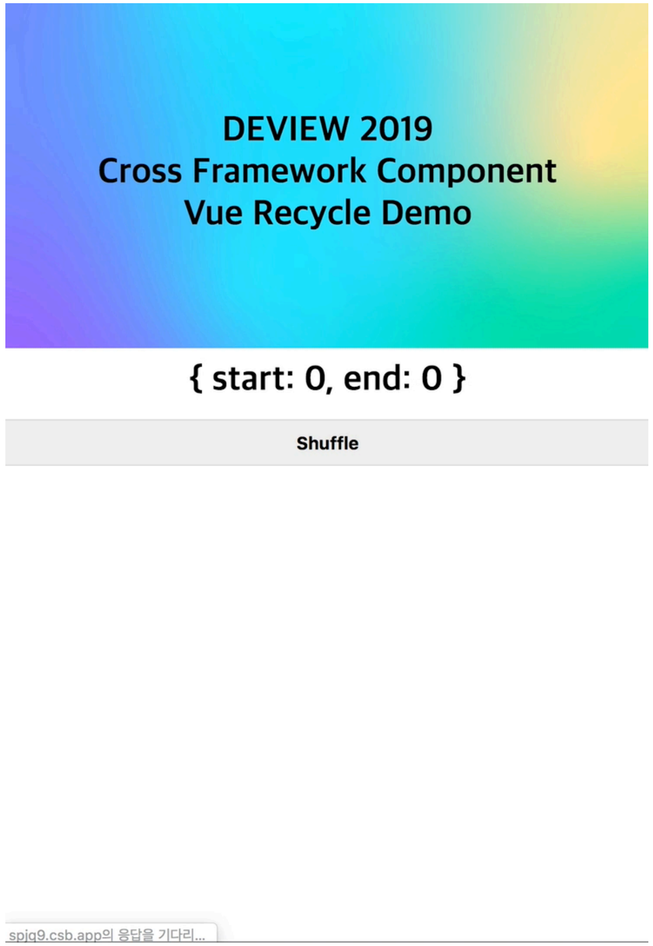


Vanilla Recycle

6.2 CFC 예제 - Infinite Scroll(Recycle)

DEVIEW 2019





React Recycle

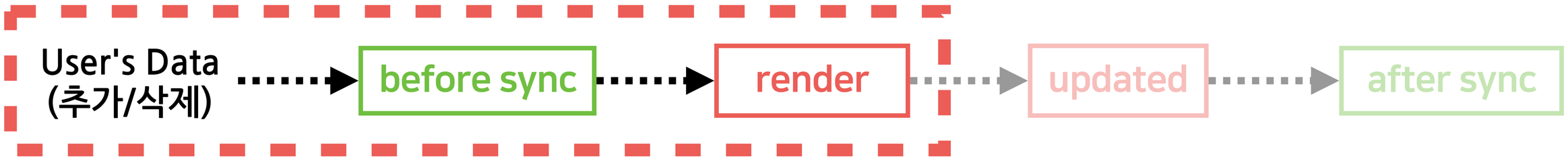
Angular Recycle

Vue Recycle

7. egjs에서 CFC를 적용한 사례

7.1 CFC 사례 - InfiniteGrid

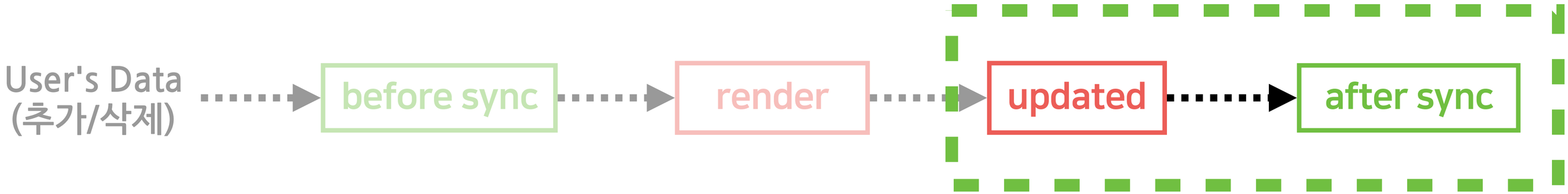
removed(삭제) > maintained(유지) > added(추가) 방법으로 사전 동기화




```
const newGroups = categorize(newItems);
...
removed.forEach(removedIndex => {
  delete groupKeys[groups[removedIndex].groupKey];
});
maintained.forEach(([fromIndex]) => {
    nextGroups.push(groups[fromIndex]);
});
added.forEach(addedIndex => {
    this.insertGroup(newGroups[addedIndex], addedIndex);
});
...
```

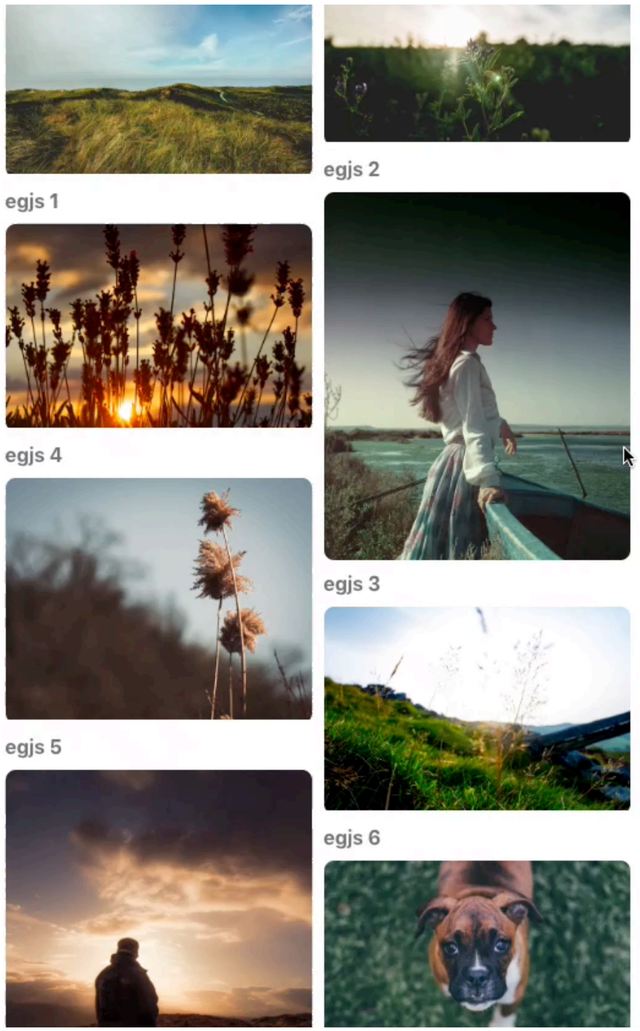
7.1 CFC 사례 - InfiniteGrid

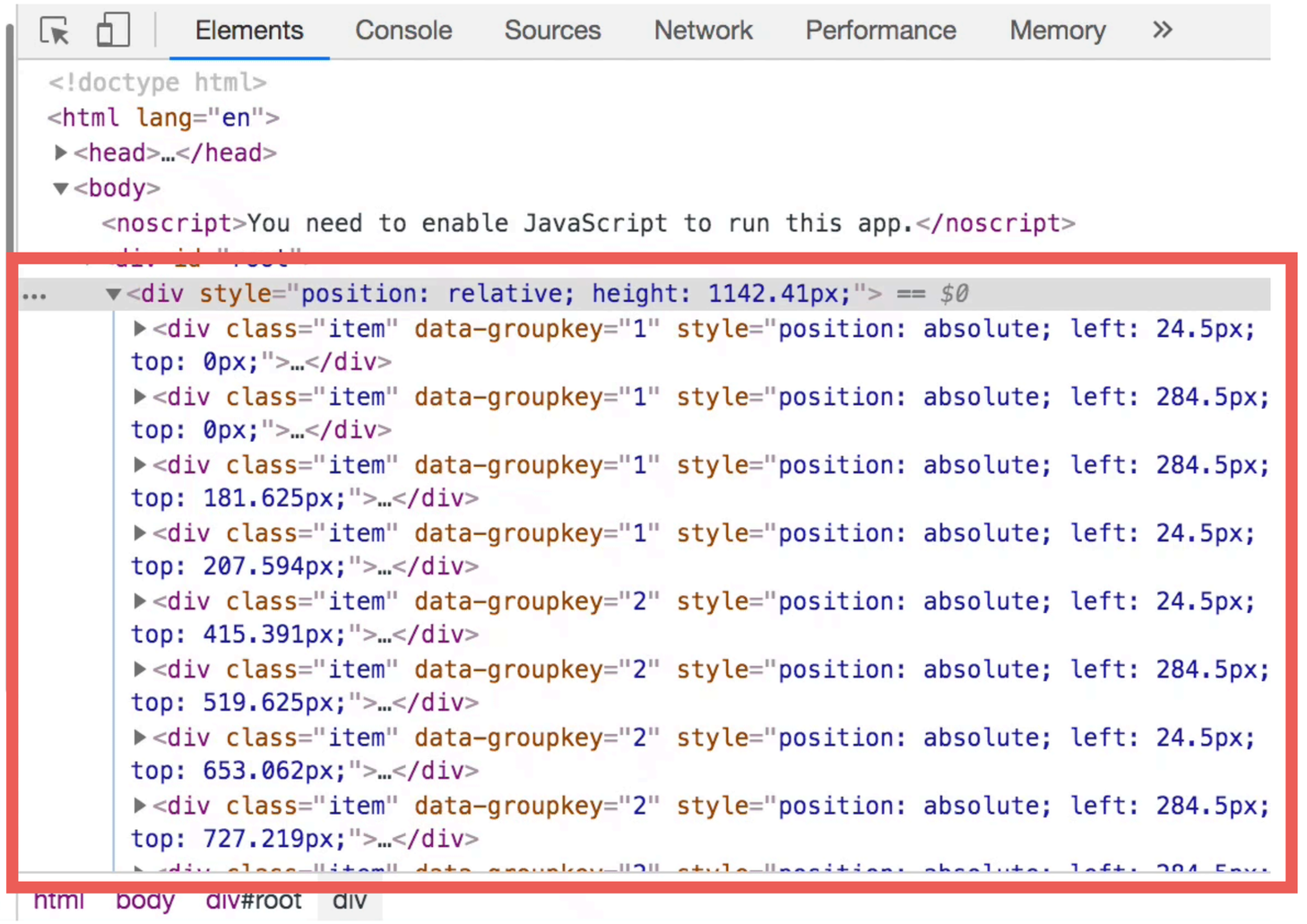
DOM 갱신




```
public sync(elements: HTMLElement[]) {
    const items = this.getRenderingItems().forEach((item, i) => {
        item.el = elements[i];

        DOMRenderer.renderItem(item, item.rect);
    });
}
```

7.1 CFC 사례 - InfiniteGrid

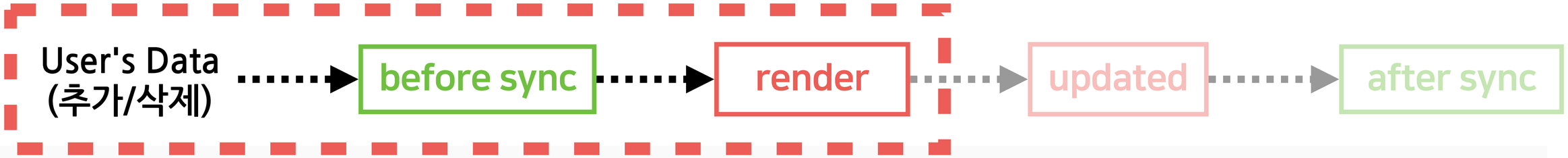




https://naver.github.io/egjs-infinitegrid/assets/html/grid.html

7.2 CFC 사례 - Flicking

removed(삭제) > maintained(유지) > added(추가) 방법으로 사전 동기화

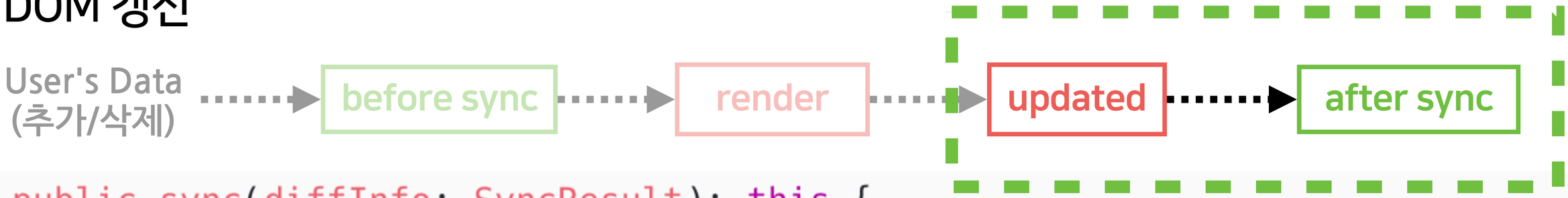



```
render() {
  const children = React.Children.toArray(this.props.children);
  const diffResult = this.jsxDiffer.update(children.map(child => child.key));

  flicking.beforeSync(diffResult);
  const visibleChildren = flicking.getRenderingIndexes(diffResult).map(index => {
    return children[index];
  });

  return <div>{visibleChildren}</div>;
}
```

7.2 CFC 사례 - Flicking

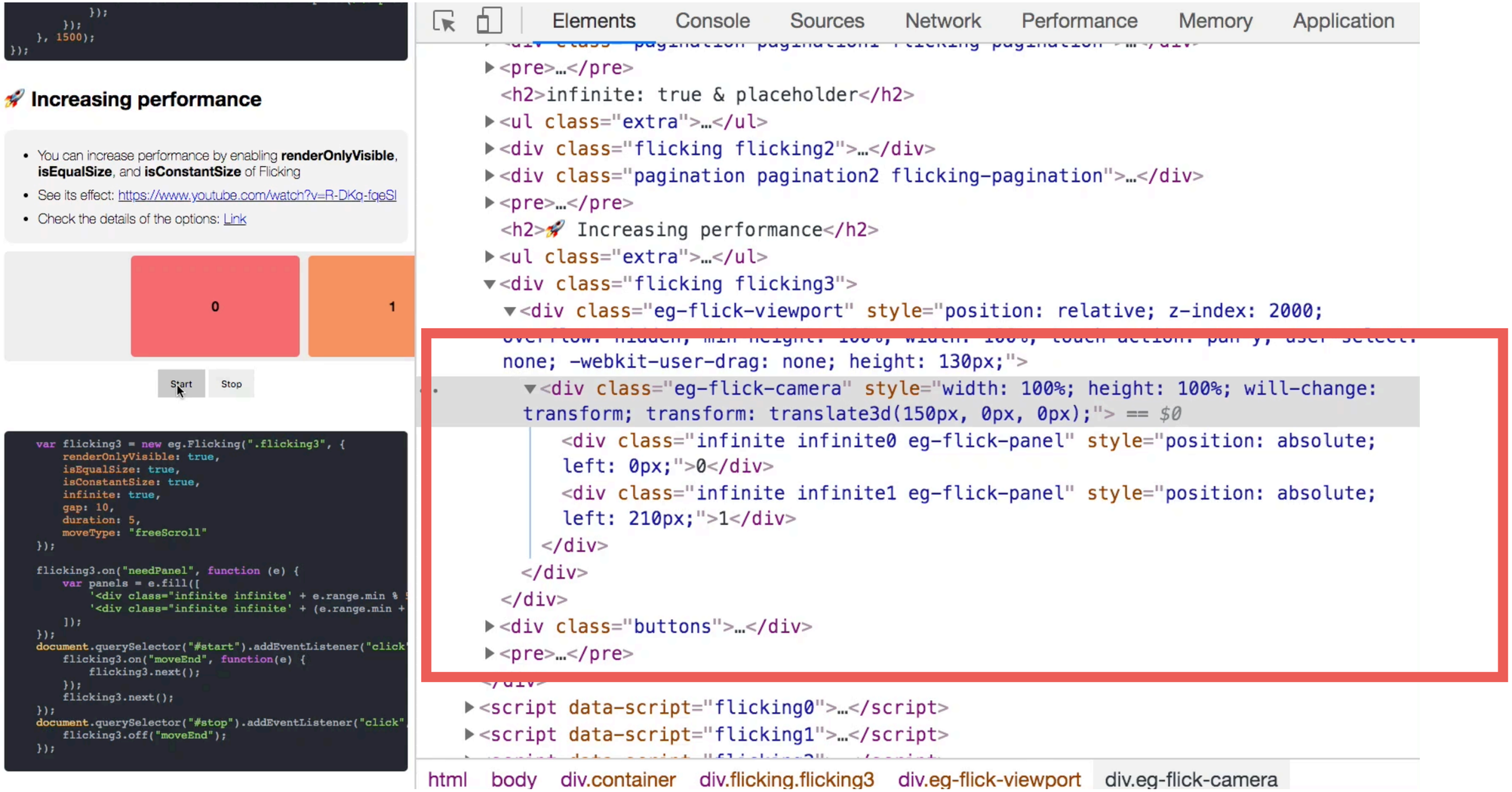
DEVIEW 2019

DOM 갱신



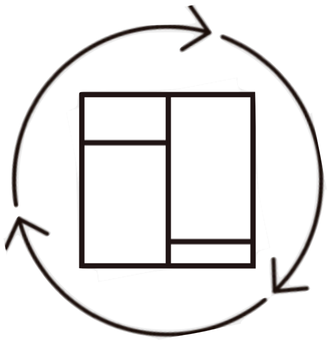

```
public sync(diffInfo: SyncResult): this {
  const { list, added } = diffInfo;
  const visiblePanels = this.viewport.getVisiblePanels();

  added.forEach(addedIndex => {
    const addedElement = list[addedIndex];
    const beforePanel = visiblePanels[addedIndex];

    beforePanel.setElement(addedElement);
  });
}
```

7.2 CFC 사례 - Flicking

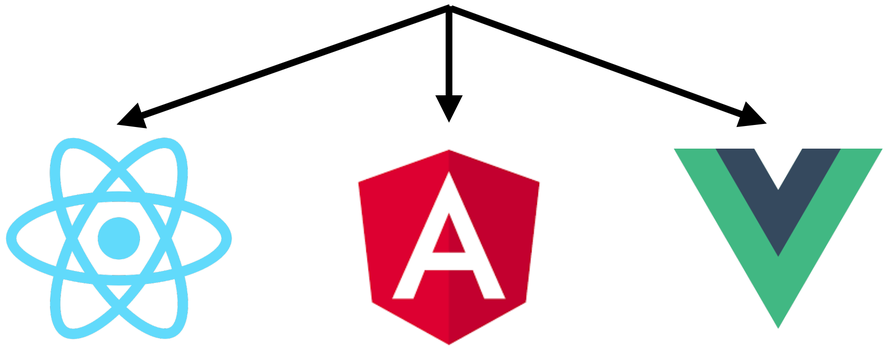


https://naver.github.io/egjs-flicking/features/infiniteflicking.html

7.3 CFC 사례

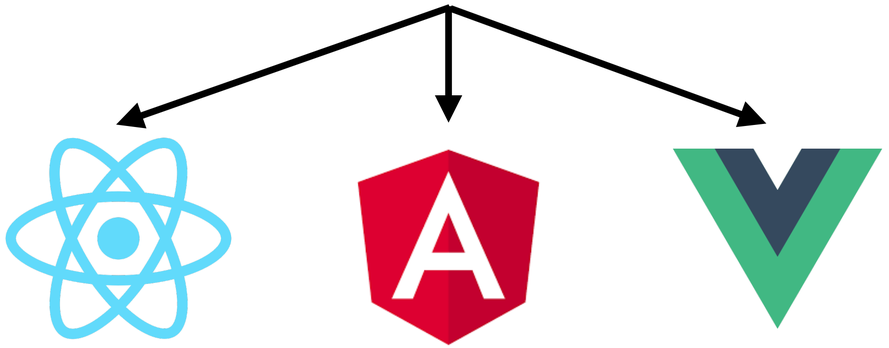


InfiniteGrid



https://github.com/naver/egjs-infinitegrid

‹ Flicking ›



https://github.com/naver/egjs-flicking

DEVIEW
2019

egjs

DEVIEW
2019

Q & A

DEVIEW
2019

Thank You