Lab 04
Component based Game

Software Studio

DataLab, CS, NTHU

2020 spring

What did we learn so far?

Object Oriented Programming

Class

```
class Employee {
  constructor(name) {
    this.name = name;
    this.salary = 1000;
  }
  addSalary(amt) {
    this.salary += amt;
  }
}
```

Object Oriented Programming

Class

new

Object

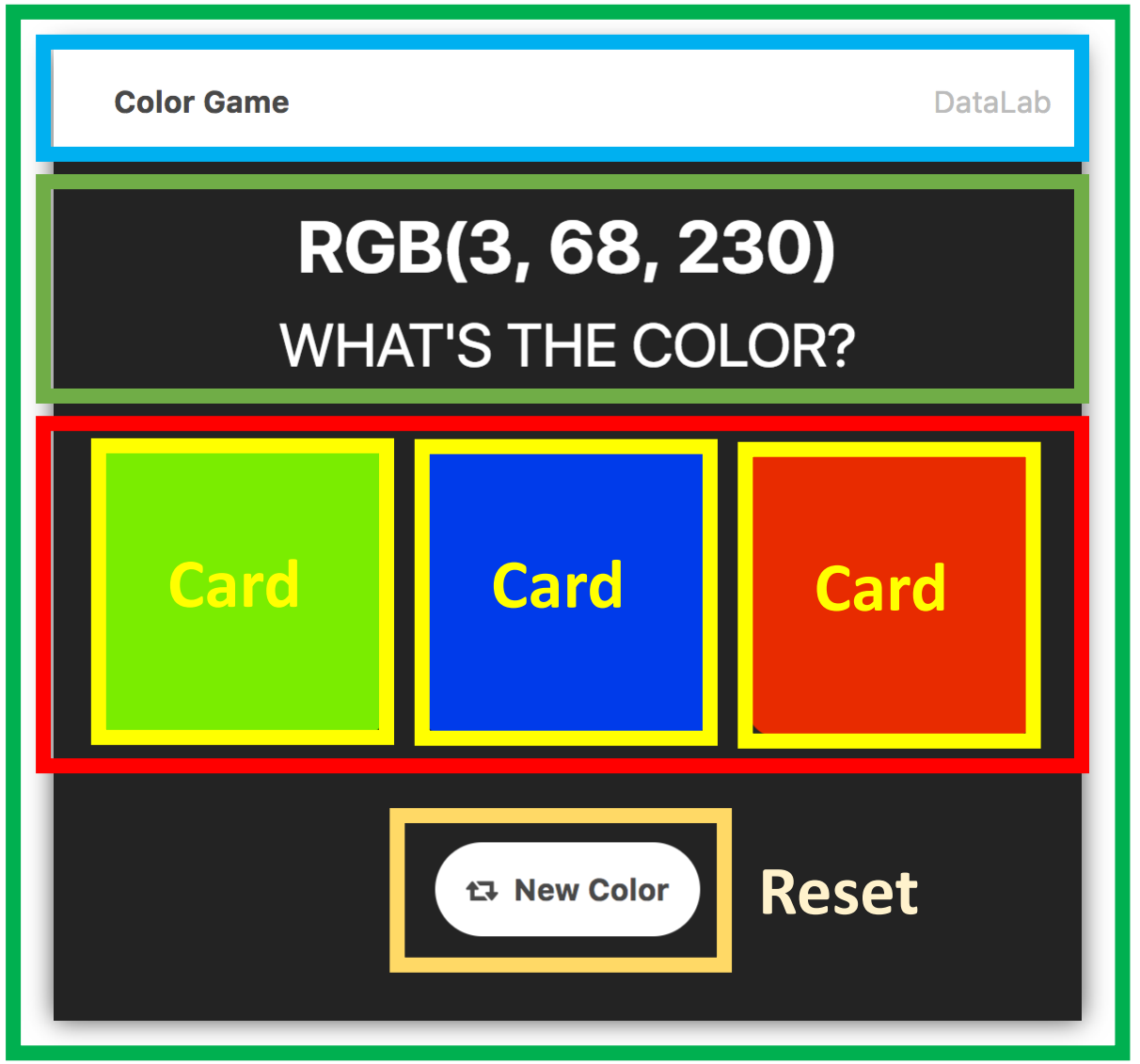
Object.method()

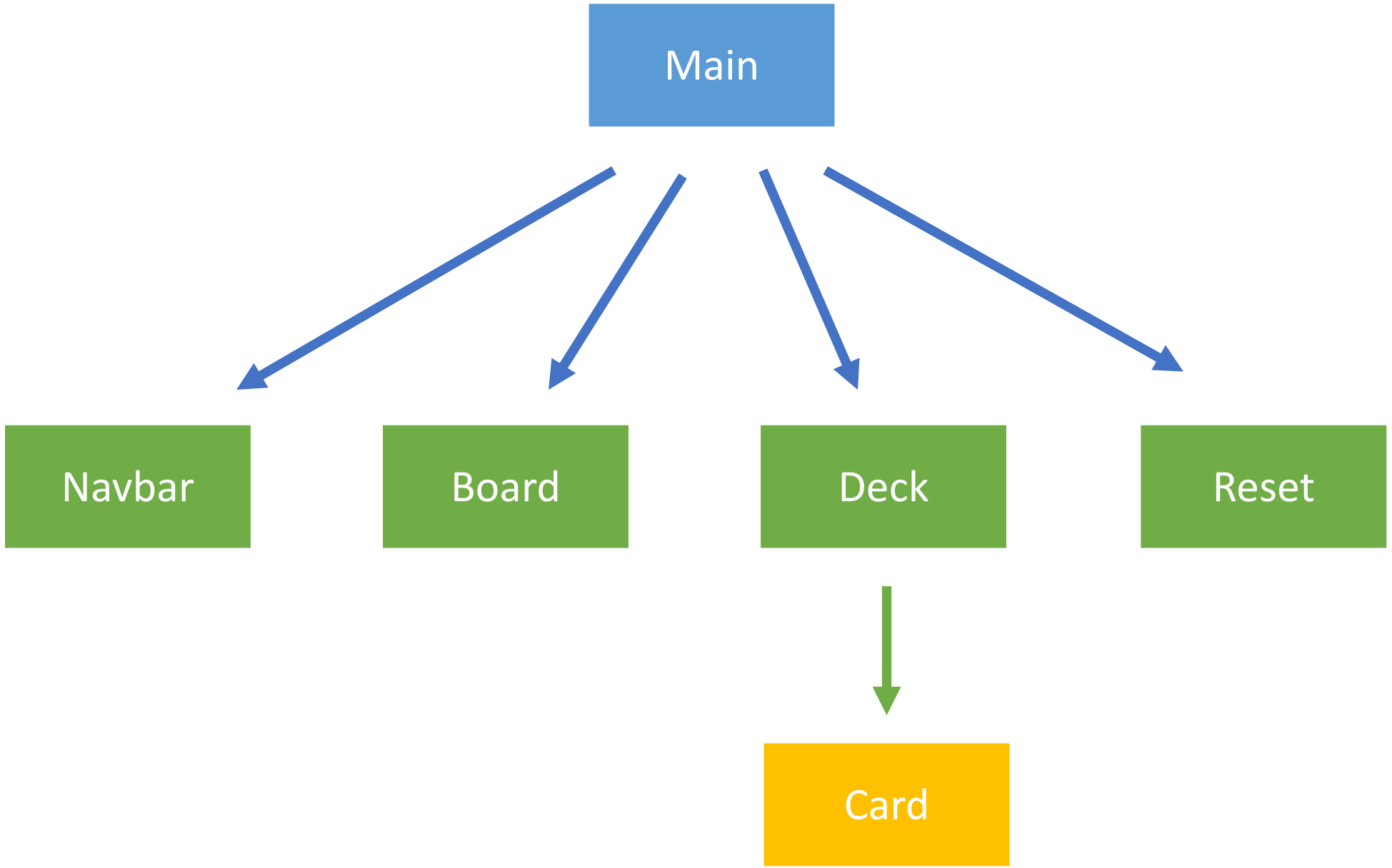
Object.property

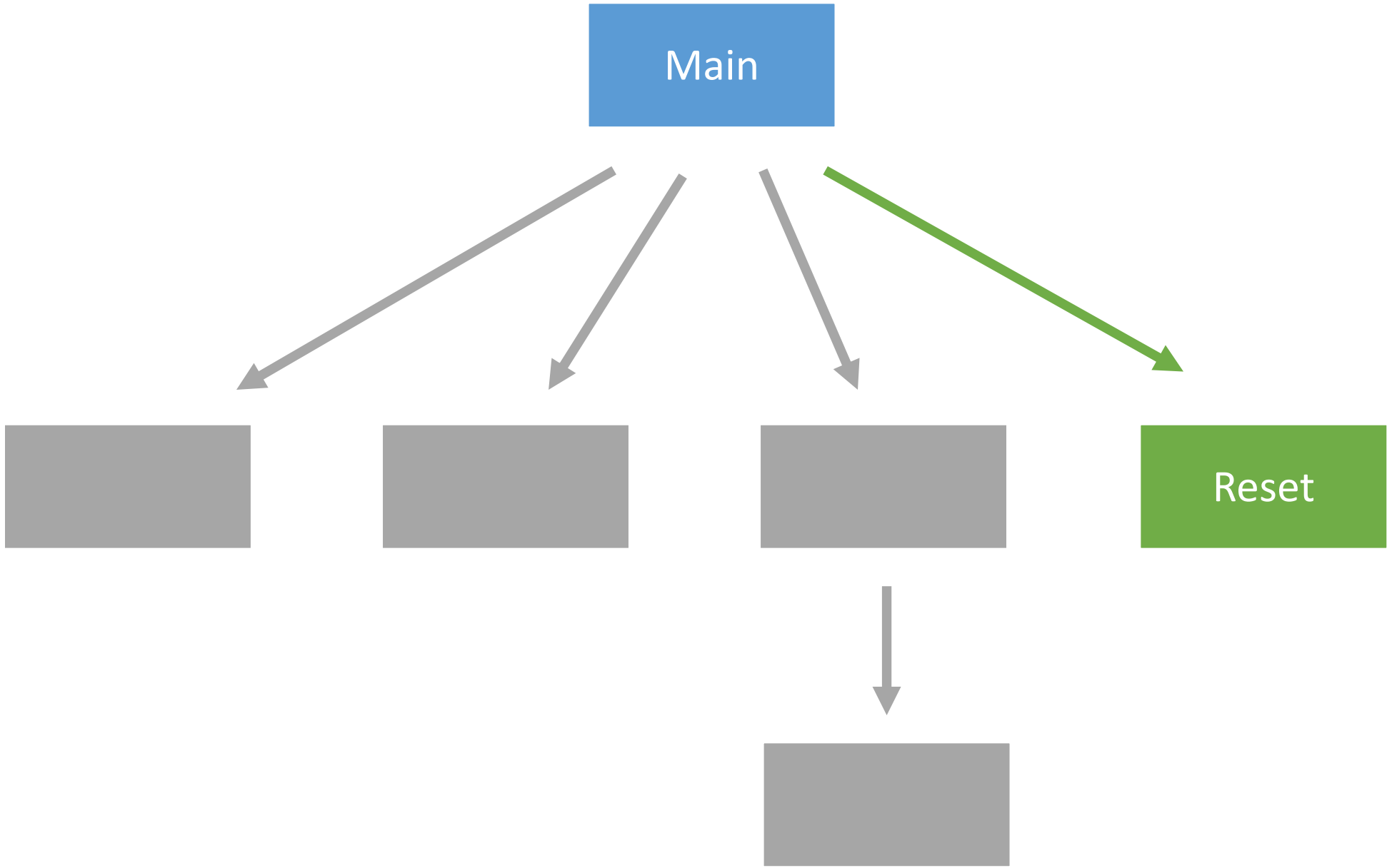
圖片來源 / ShutterStock / GigCasa.com

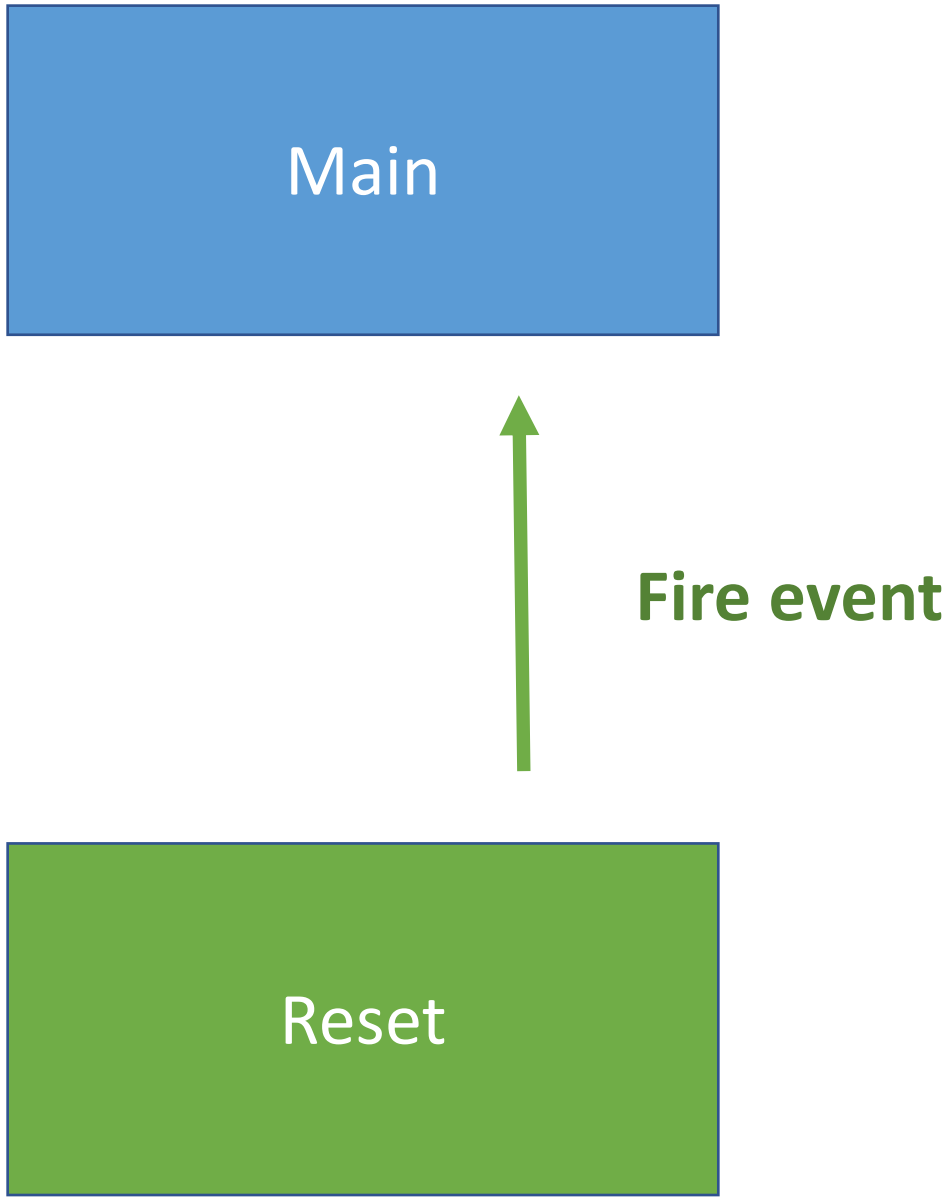
Inheritance (繼承)

Color Game component



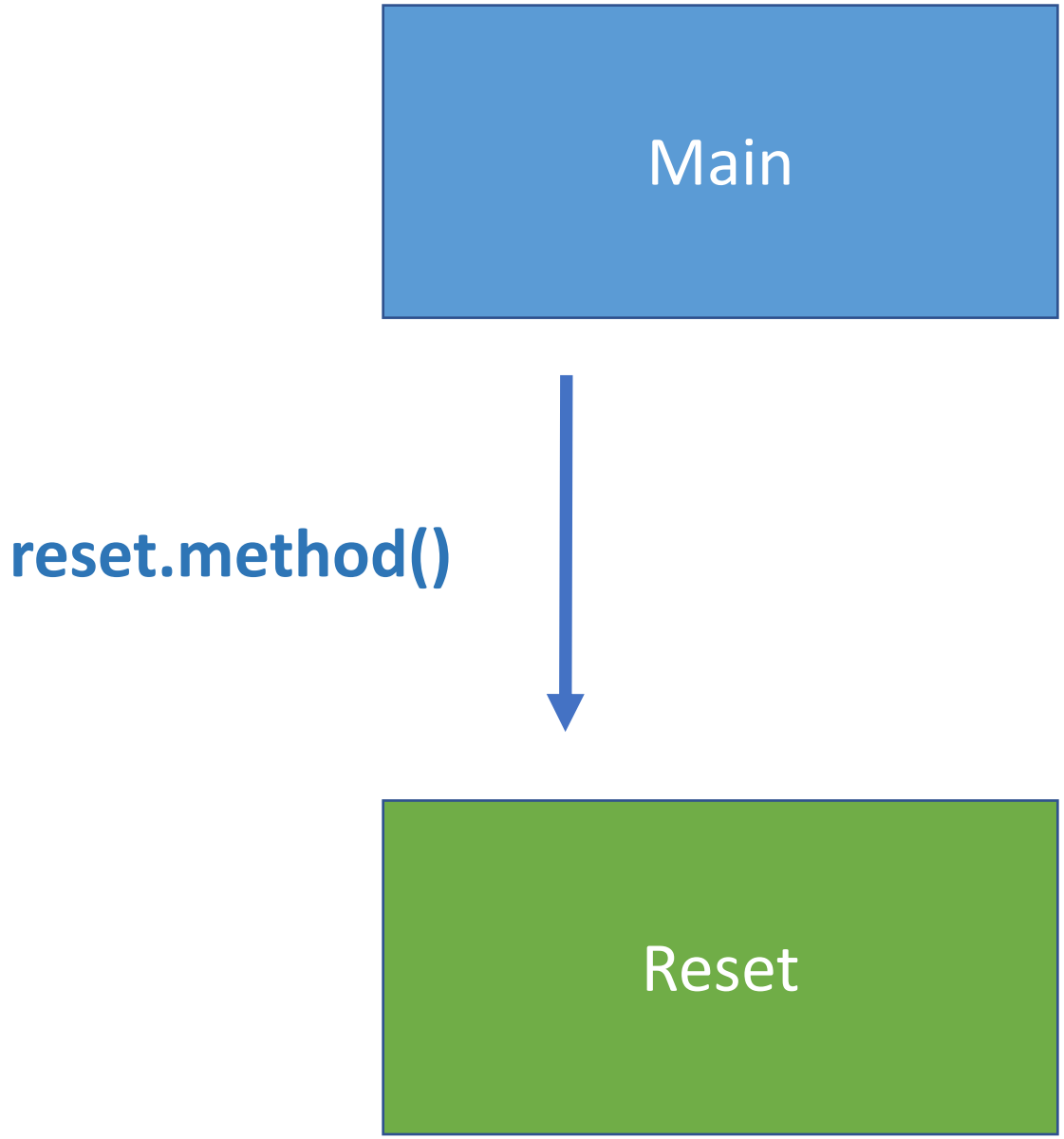

Main
Navbar
Board
Deck
Reset
Card


Main
Reset


Main
Fire event
Reset

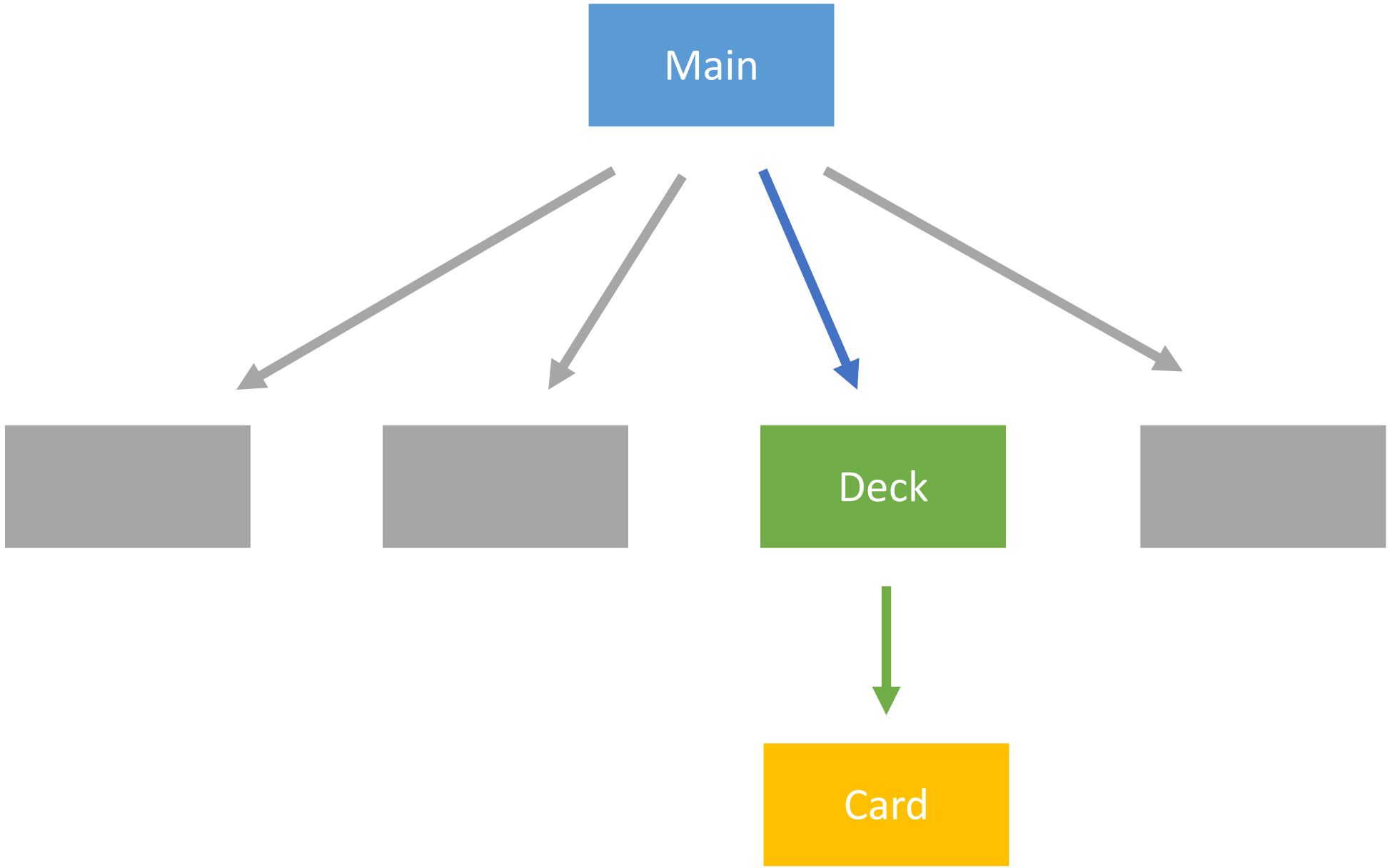
```
export default class Reset extends Component {

    constructor(root) {
        super(root);

        root.addEventListener("click", this.handleDomClick.bind(this));
    }

    handleDomClick(e) {

        this.fire('resetClick');

    }
```

```
export default class Main extends Component {

    constructor(root) {
        super(root);

        this.navbar = new Navbar(root.querySelector('.navbar'));

        this.deck = new Deck(root.querySelector('.deck'));
        this.deck.on('wrongClick', this.handleDeckWrongClick.bind(this));
        this.deck.on('rightClick', this.handleDeckRightClick.bind(this));

        this.board = new Board(root.querySelector('.board'), this.deck.getPickedColor());

        this.reset = new Reset(root.querySelector('.reset'));
        this.reset.on('resetClick', this.handleRestClick.bind(this));
    }

    handleRestClick() {
        this.root.style.backgroundColor = "#232323";

        this.deck.reset();
        this.board.reset(this.deck.getPickedColor());
        this.reset.reset();
    }
```


Main
reset.method()
Reset

```
export default class Main extends Component {

    constructor(root) {
        super(root);

        this.navbar = new Navbar(root.querySelector('.navbar'));

        this.deck = new Deck(root.querySelector('.deck'));
        this.deck.on('wrongClick', this.handleDeckWrongClick.bind(this));
        this.deck.on('rightClick', this.handleDeckRightClick.bind(this));

        this.board = new Board(root.querySelector('.board'), this.deck.getPickedColor());

        this.reset = new Reset(root.querySelector('.reset'));
        this.reset.on('resetClick', this.handleRestClick.bind(this));
    }

    handleRestClick() {
        this.root.style.backgroundColor = "#232323";

        this.deck.reset();
        this.board.reset(this.deck.getPickedColor());
        this.reset.reset();
    }
```

How about click card?


Main
Deck
Card

```
export default class Card extends Component {

    constructor(root) {
        super(root);

        root.addEventListener("click", this.handleDomClick.bind(this));
    }

    handleDomClick(e) {

        this.fire('cardClick', this.color);
    }
```

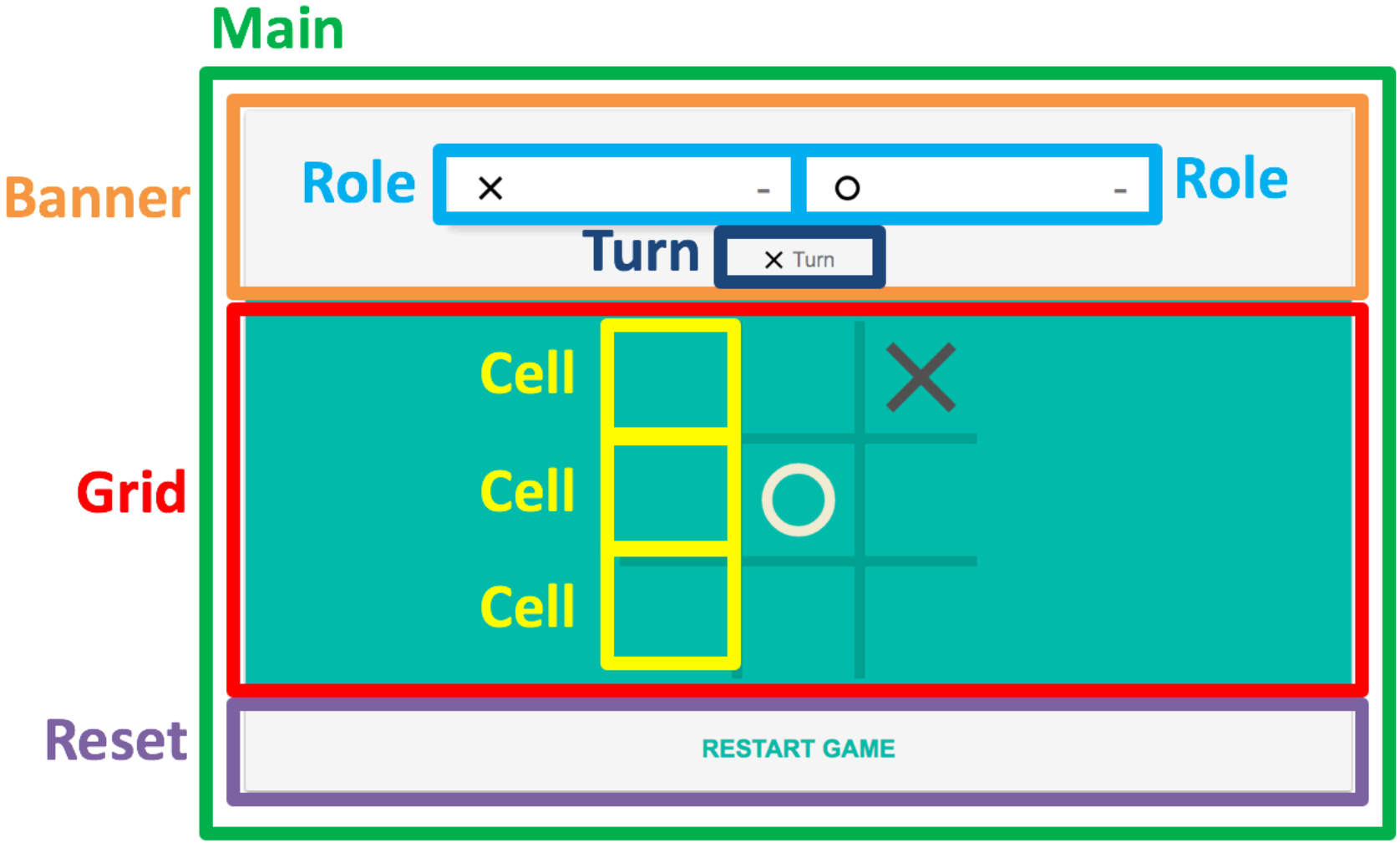
```
export default class Deck extends Component {

    constructor(root) {
        super(root);

        this.cards = [];
        const els = root.querySelectorAll(Card.getRootClass());

        for (let el of els) {

            const card = new Card(el);
            card.on('cardClick', this.handleCardClick.bind(this));

            this.cards.push(card);
        }
    }

    handleCardClick(firer, color) {
        if (this.gameOver)
            return;

        if (color === this.pickedColor) {
            // do something
            this.fire('rightClick', this.pickedColor);
        } else {
            // do something
            this.fire('wrongClick');
        }
    }
```

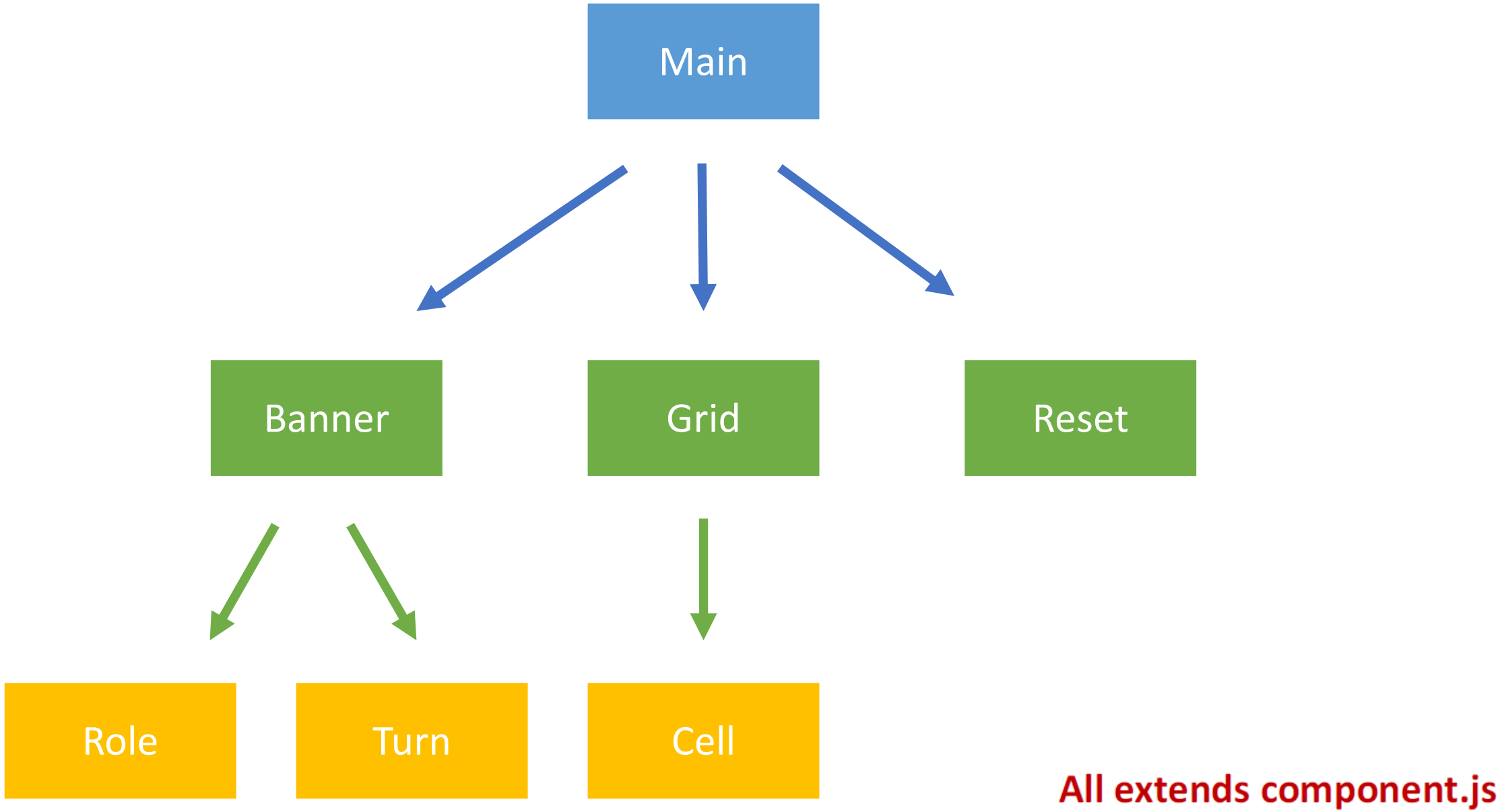
```
export default class Main extends Component {

    constructor(root) {
        super(root);

        this.navbar = new Navbar(root.querySelector('.navbar'));

        this.deck = new Deck(root.querySelector('.deck'));
        this.deck.on('wrongClick', this.handleDeckWrongClick.bind(this));
        this.deck.on('rightClick', this.handleDeckRightClick.bind(this));

        this.board = new Board(root.querySelector('.board'), this.deck.getPickedColor());

        this.reset = new Reset(root.querySelector('.reset'));
        this.reset.on('resetClick', this.handleRestClick.bind(this));
    }

    handleDeckWrongClick(firer) {
        this.board.showWrongMessage();
    }

    handleDeckRightClick(firer, pickedColor) {
        this.root.style.backgroundColor = pickedColor;
        this.board.showCorrectMessage();
        this.reset.showPlayAgain();
    }
```

```
export default class Main extends Component {

    constructor(root) {
        super(root);

        this.navbar = new Navbar(root.querySelector('.navbar'));

        this.deck = new Deck(root.querySelector('.deck'));
        this.deck.on('wrongClick', this.handleDeckWrongClick.bind(this));
        this.deck.on('rightClick', this.handleDeckRightClick.bind(this));

        this.board = new Board(root.querySelector('.board'), this.deck.getPickedColor());

        this.reset = new Reset(root.querySelector('.reset'));
        this.reset.on('resetClick', this.handleRestClick.bind(this));
    }

    handleDeckWrongClick(firer) {
        this.board.showWrongMessage();
    }

    handleDeckRightClick(firer, pickedColor) {
        this.root.style.backgroundColor = pickedColor;
        this.board.showCorrectMessage();
        this.reset.showPlayAgain();
    }
```

```
export default class Board extends Component {
    static getRootClass() {
        return '.board';
    }

    constructor(root, color) {
        super(root);

        this.colorDisplay = root.querySelector('.color-picked');
        this.messageDisplay = root.querySelector('.message');
        this.reset(color);
    }

    showWrongMessage() {
        this.messageDisplay.textContent = "Try Again";
    }
```

Tic-Tac-Toe


Main
Banner
Role
×
-
○
-
Role
Turn
× Turn
Grid
Cell
Cell
Cell
Reset
RESTART GAME



All extends component.js

FAQ

- bind(this)

.bind(this)

```
export default class Main extends Component {
    static getRootClass() {
        return '.main';
    }

    constructor(root) {
        super(root);

        this.navbar = new Navbar(root.querySelector('.navbar'));

        this.deck = new Deck(root.querySelector('.deck'));
        this.deck.on('wrongClick', this.handleDeckWrongClick);
        this.deck.on('rightClick', this.handleDeckRightClick);

        this.board = new Board(root.querySelector('.board'), this.deck.getPickedColor());

        this.reset = new Reset(root.querySelector('.reset'));
        this.reset.on('click', this.handleRestClick.bind(this));
    }
```

Who call the function ? window!

.bind(this)

- “this” always binds to “**current owner**”.
- So remember to use .bind(this) in class.

.bind(this)

```
export default class Main extends Component {

    constructor(root) {
        super(root);

        this.navbar = new Navbar(root.querySelector('.navbar'));

        this.deck = new Deck(root.querySelector('.deck'));
        this.deck.on('wrongClick', this.handleDeckWrongClick.bind(this));
        this.deck.on('rightClick', this.handleDeckRightClick.bind(this));

        this.board = new Board(root.querySelector('.board'), this.deck.getPickedColor());

        this.reset = new Reset(root.querySelector('.reset'));
        this.reset.on('resetClick', this.handleRestClick.bind(this));
    }
```