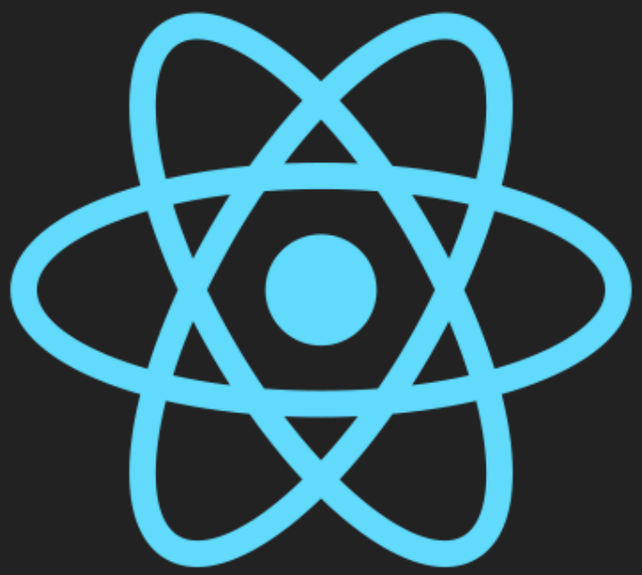
REACT AND GAMES

An experiment about making games

@BOBYLITO



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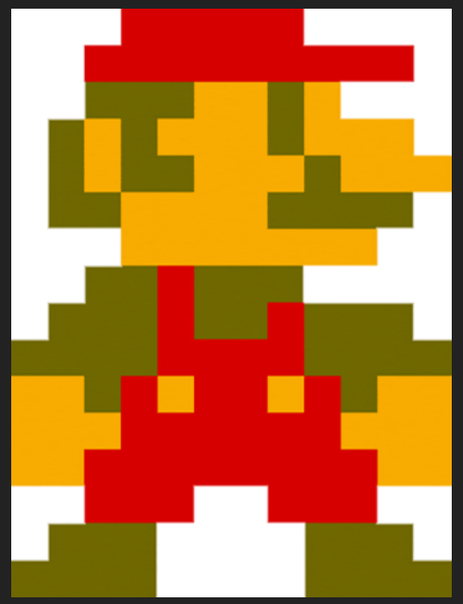

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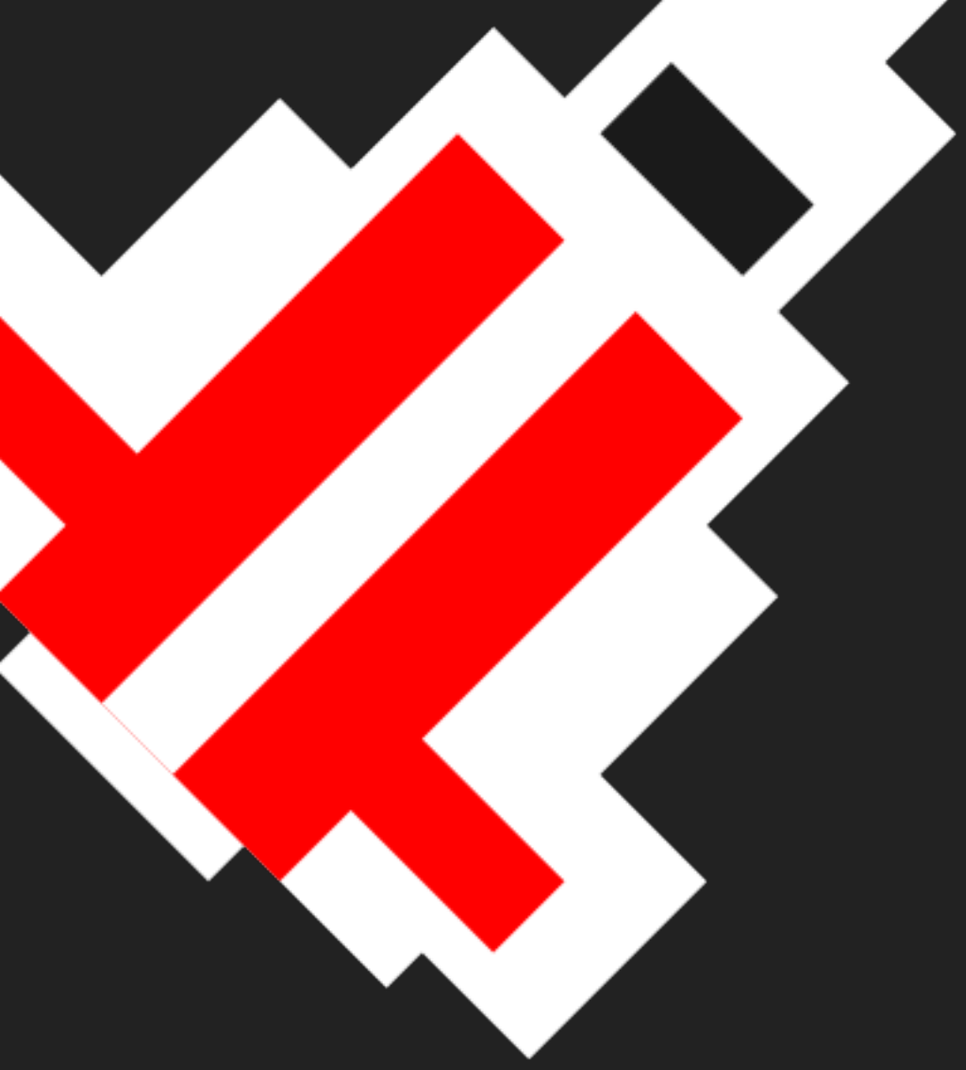
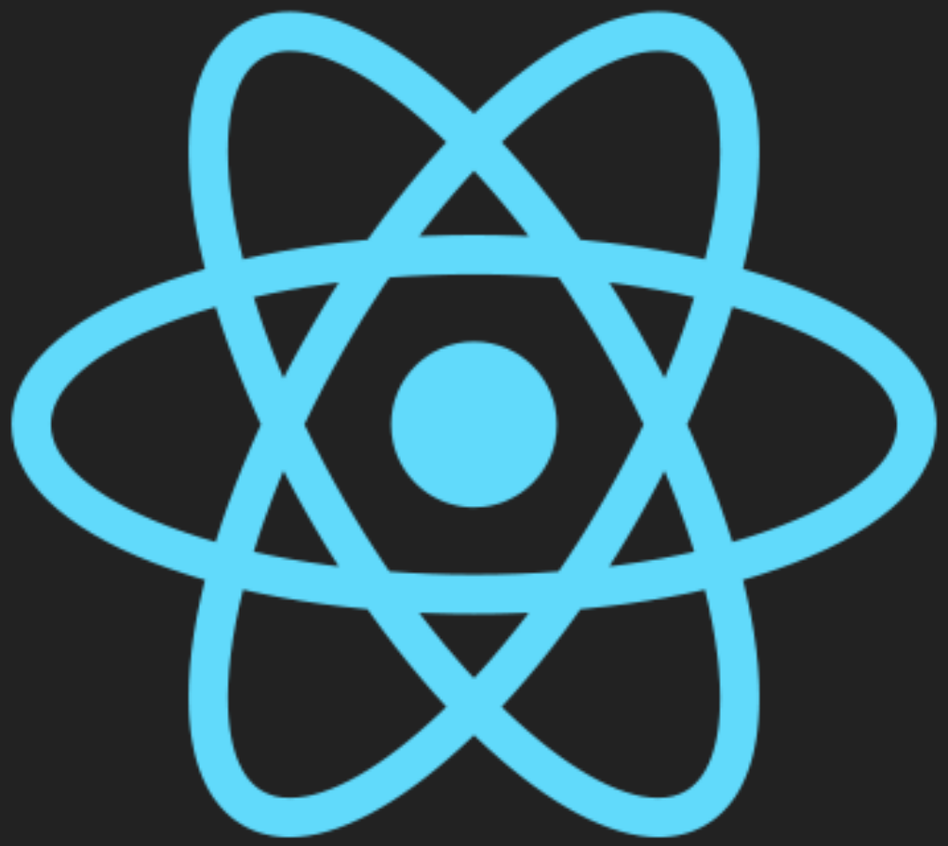


Little Shooter v2

1. (re)Introduction to React
2. Game dev patterns with React
3. Demo
4. Next



Rendering

```
1 React.render( <div>Hello World</div>, document.body );
```

Custom components

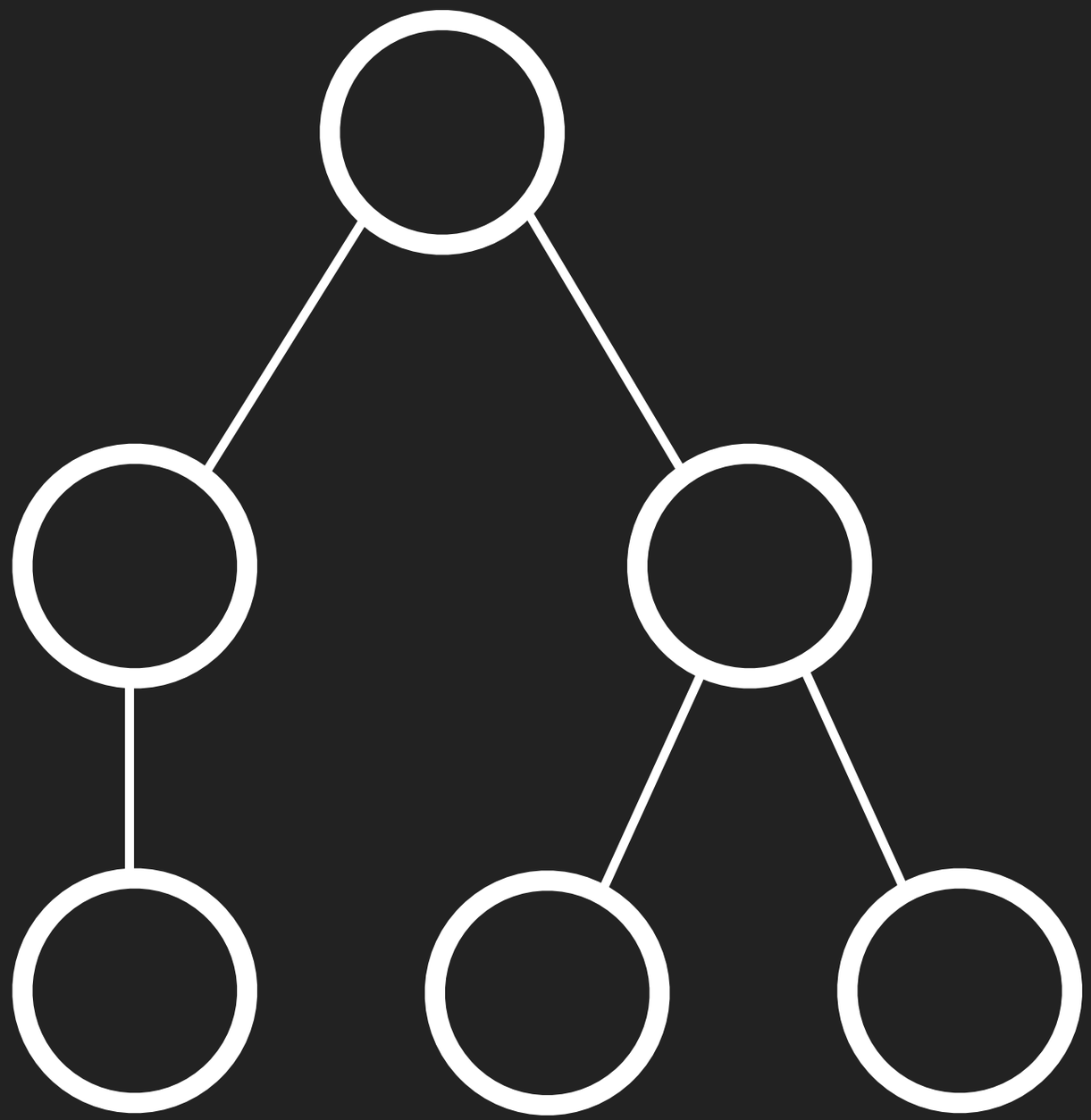
```
1 var MyComponent = React.createClass({
2   render: function(){
3     return <div><MyOtherComponent prop1="value"/></div>
4   }
5 });
6 React.render( <MyComponent>, document.body );
```

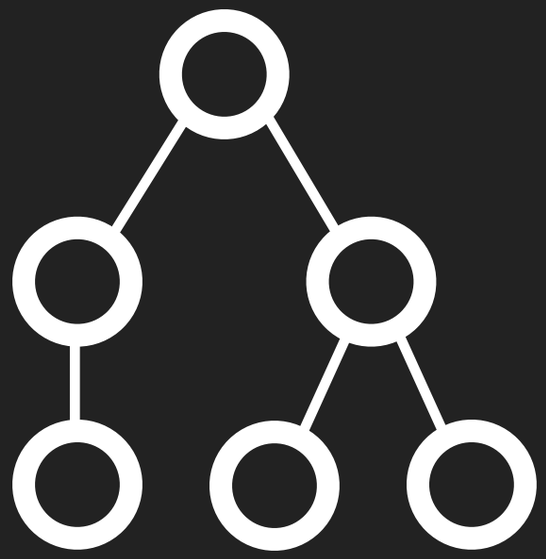
Component state

```
1 var MyComponent = React.createClass({
2   //state: {}
3   getInitialState: function(){ return {foo:"bar"} },
4   render: function(){
5     var valueFromState = this.state.foo;
6     return <div><MyOtherComponent prop1="value"/></div>
7   }
8   //setState: function( newState ){ /*set the new state*/ }
9 });
```

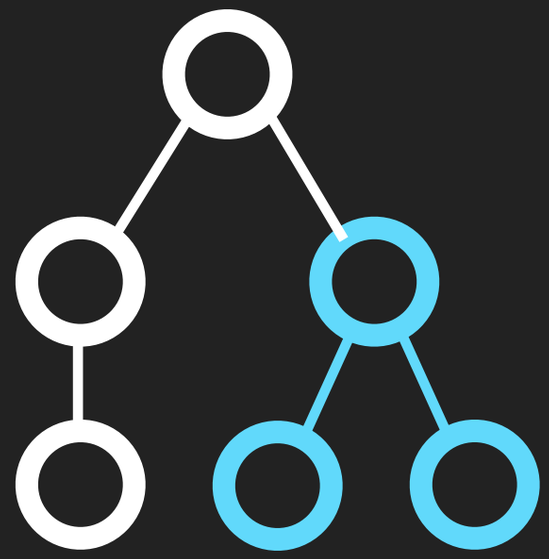
Lifecycle and hooks

```
1 var MyComponent = React.createClass({
2   render: function(){
3     return <div><MyOtherComponent prop1="value"/></div>
4   },
5   componentWillMount: function(){},
6   componentWillReceiveProps: function( props ){ /* new values
handling, modify state ;) */}
7 });
```





T-0



T-1

Diff T-0 T-1

LET'S MAKE A GAME!

Game Loop

Game loop

Game loop

Repeat

Game loop

Render

Repeat

Game loop

Update game state

Render

Repeat

Game loop

Get input

Update game state

Render

Repeat

```
var GameApp = React.createClass({
  getInitialState: function(){
    return {
      input : {
        time : (Date.now()) } };
  },
  render : function(){
    return <Game input={ this.state.input }/>
  },
  tick : function(){
    var t = Date.now();
    requestAnimationFrame(this.tick);
    this.setState({
      input:{
        time : t
      }
    });
  },
  componentWillMount : function(){
    requestAnimationFrame( this.tick );
  },
});

var output = d.getElementById("main");
React.renderComponent( <GameApp width="500" height="500" />, output);
```

Inputs

- Time
- Keys

Time

- Date.now() at the tick
- Store the time in the state
- Propagate to sub components
- Will trigger the rendering even if nothing else happen from the real world

Keys

- Bind event listeners to the main component
- Properly handle auto fire

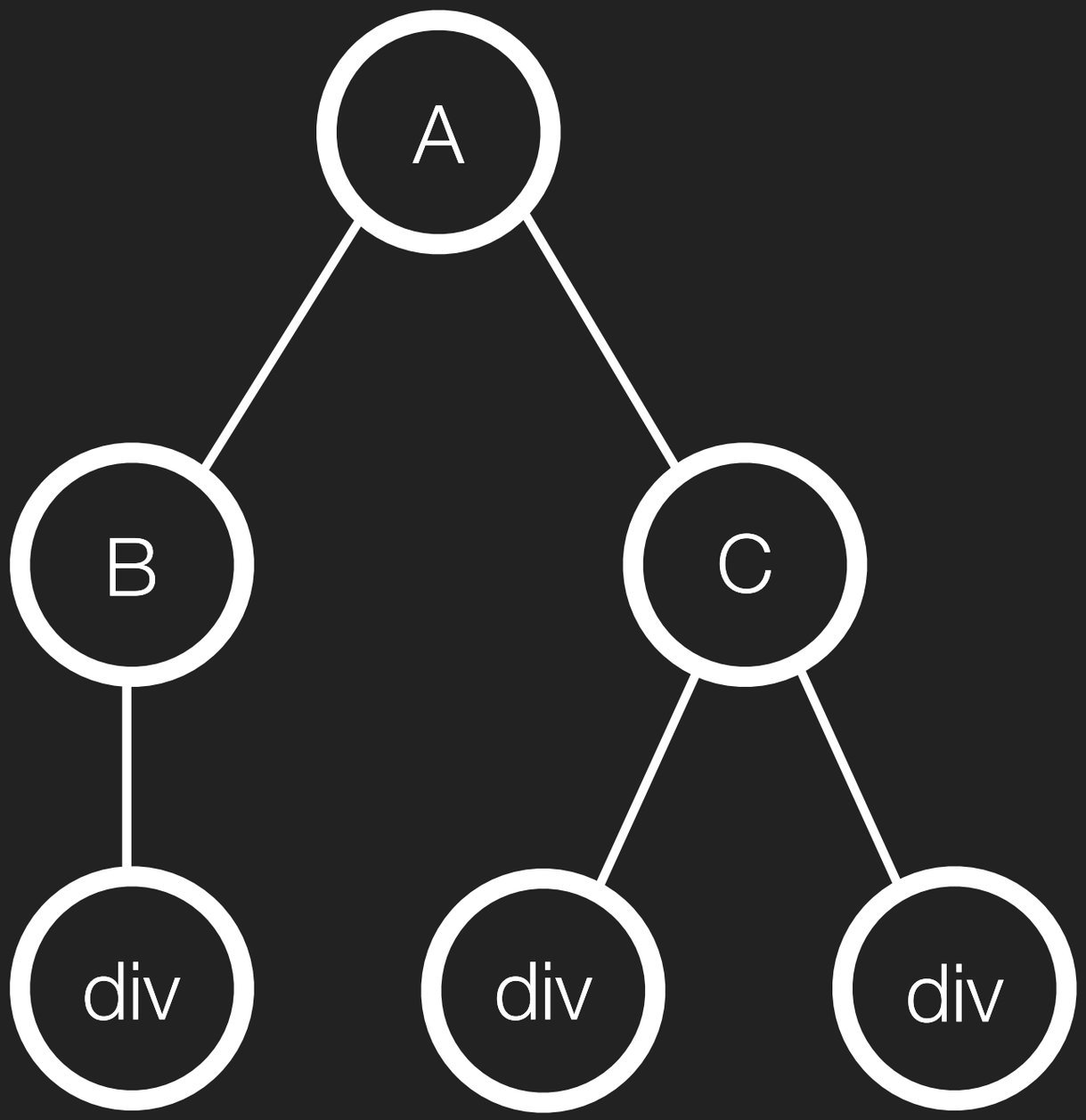
```
...
  render : function(){
    return <div className="game"
      onKeyDown = { this.keyHandler.bind(this, true) }
      onKeyUp   = { this.keyHandler.bind(this, false) } tabIndex="1"></div>;
  },
  keyHandler : function(valueToSet, e){
    var newKeys = {
      left  : this.state.input.keys.left,
      right : this.state.input.keys.right,
      up    : this.state.input.keys.up,
      down  : this.state.input.keys.down,
      space : this.state.input.keys.space
    };

    if(e.keyCode === 37) newKeys.left  = valueToSet;
    if(e.keyCode === 38) newKeys.up    = valueToSet;
    if(e.keyCode === 39) newKeys.right = valueToSet;
    if(e.keyCode === 40) newKeys.down  = valueToSet;
    if(e.keyCode === 32) newKeys.space = valueToSet;

    this.setState({
      input:{
        time : this.state.input.time,
        keys : newKeys } });
  }
...
```

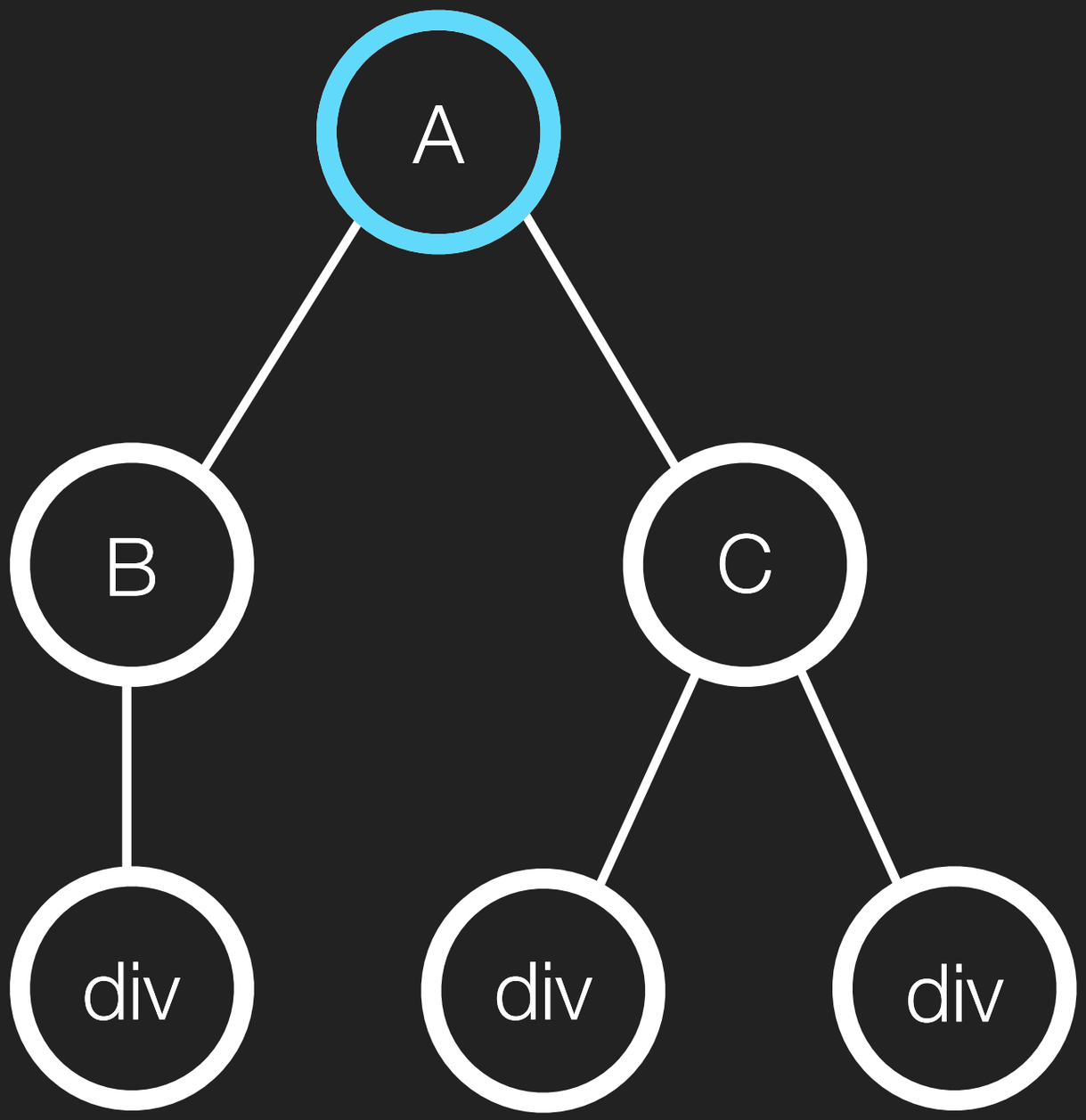
Game screens

React.render(<A />)




```
<div class="a">
    <div class="b">
        <div/>
    </div>
    <div class="c">
        <div/>
        <div/>
    </div>
</div>
```

React.render(<A />)

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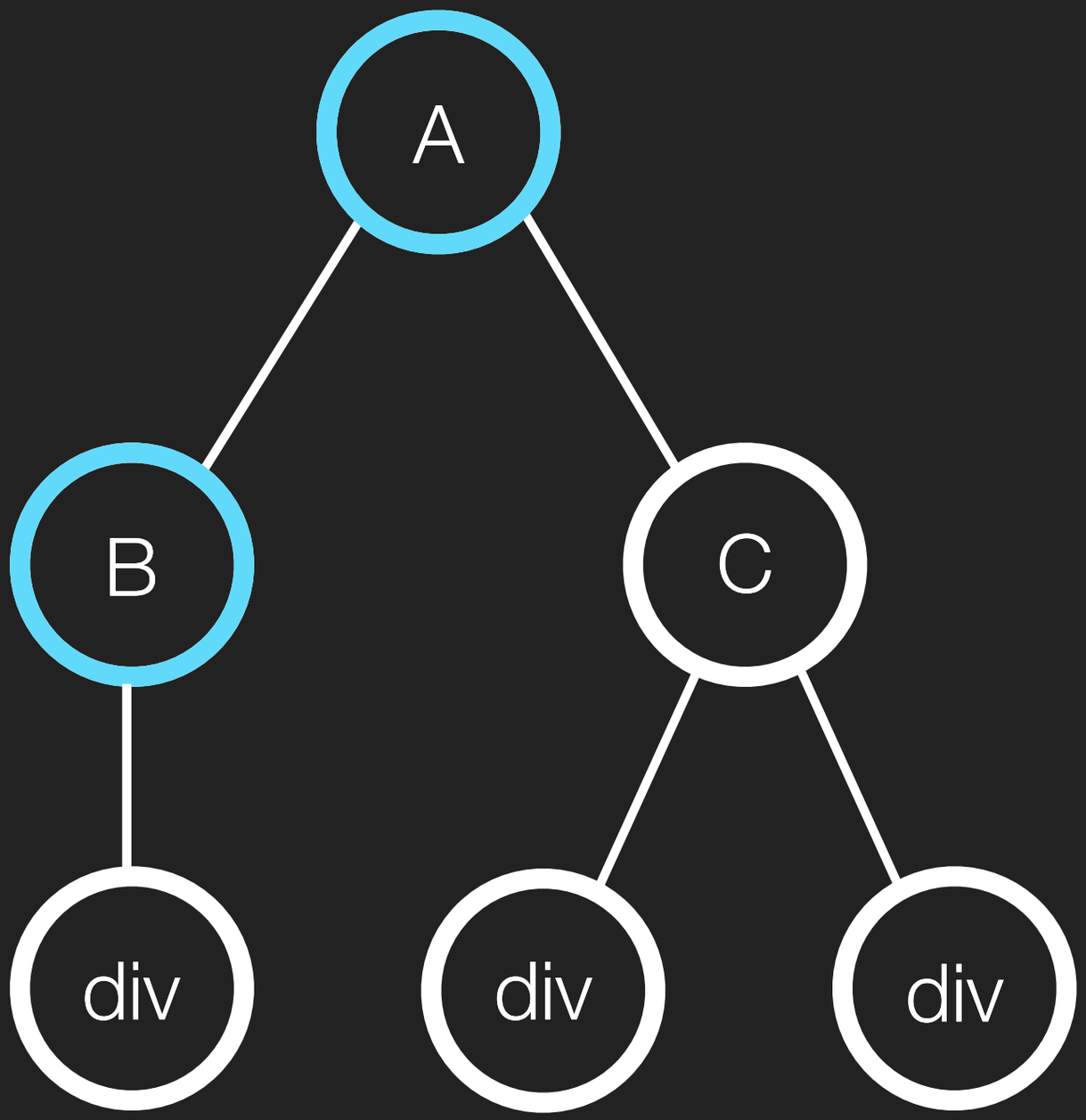


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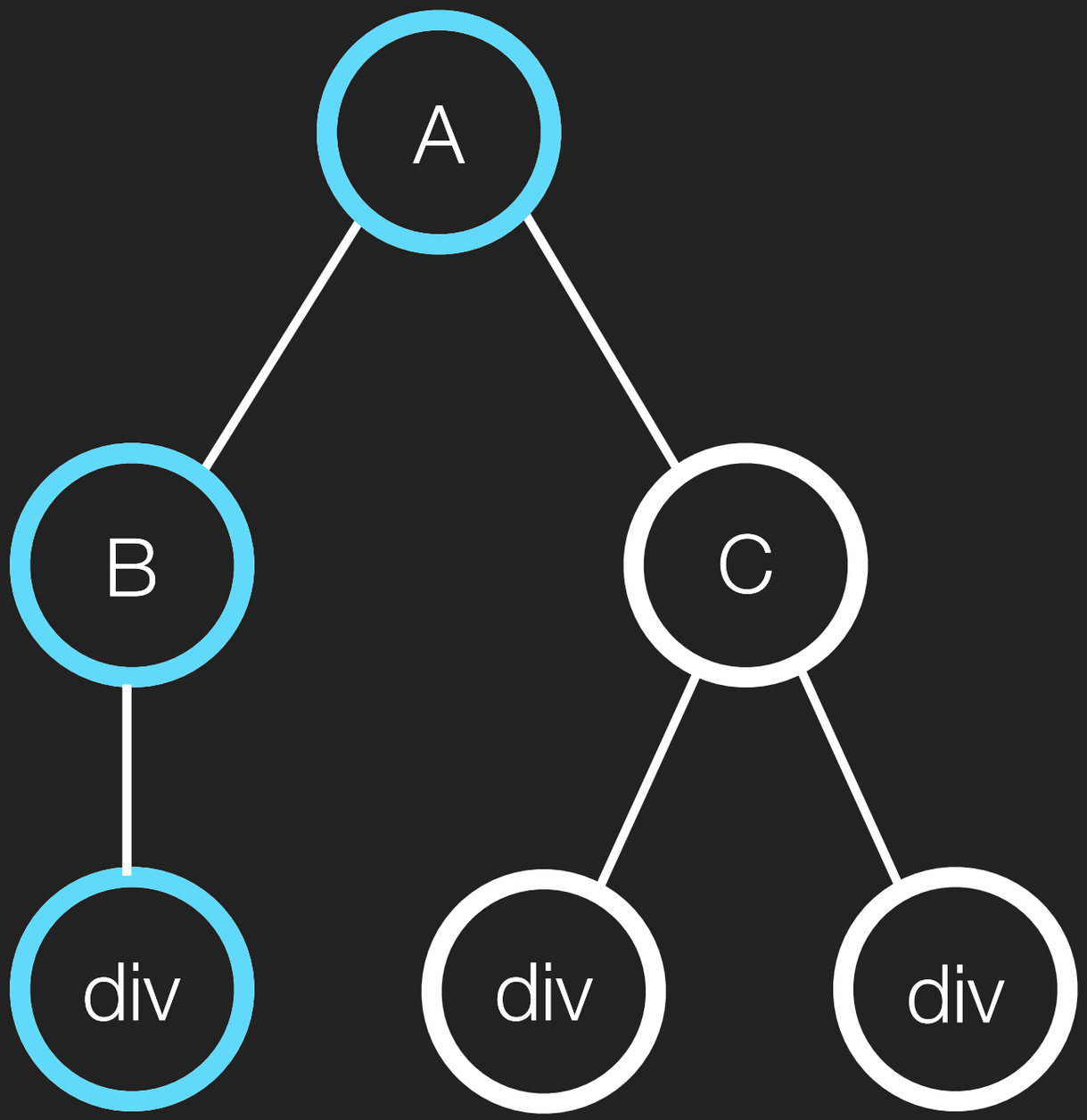


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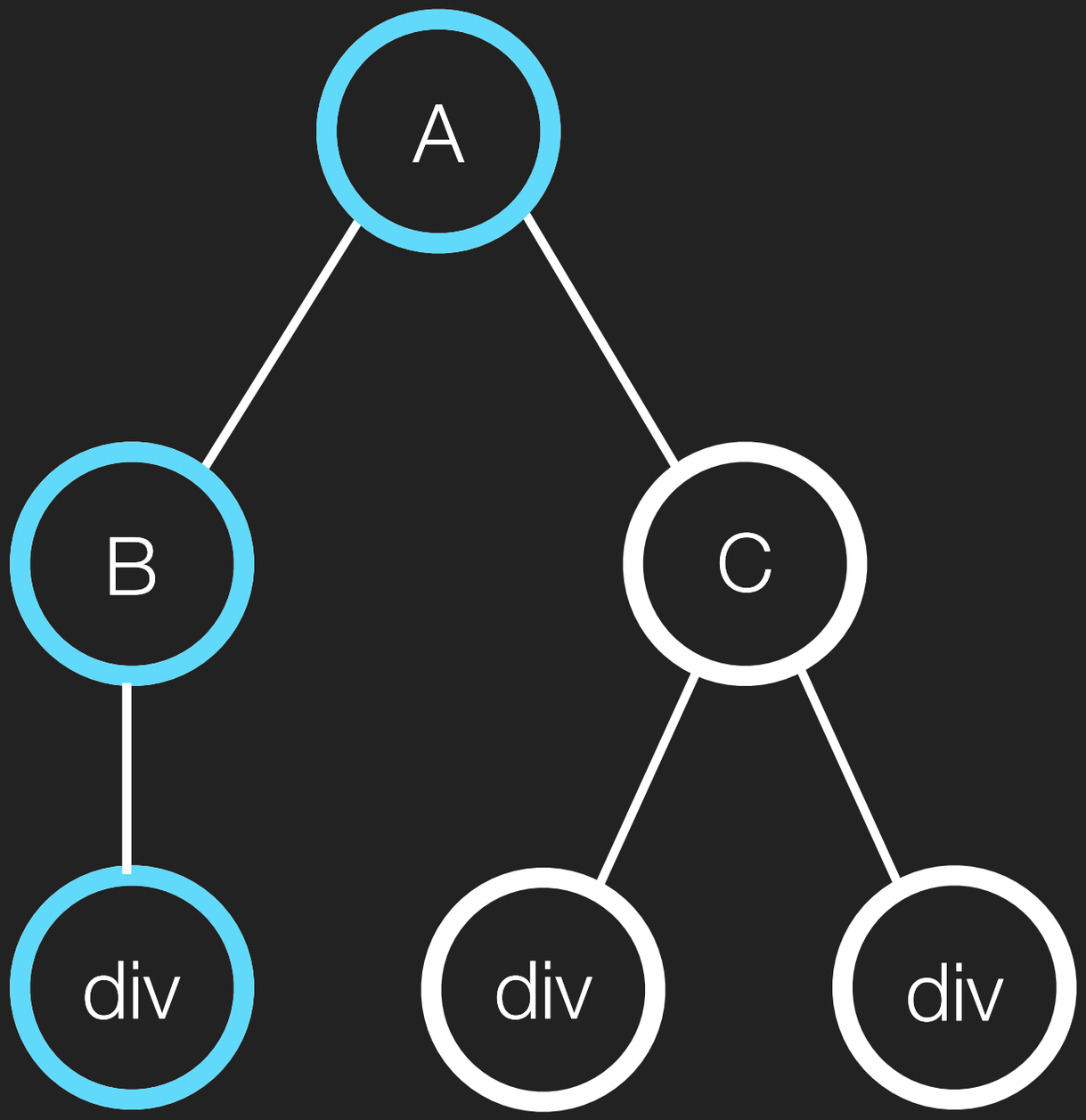


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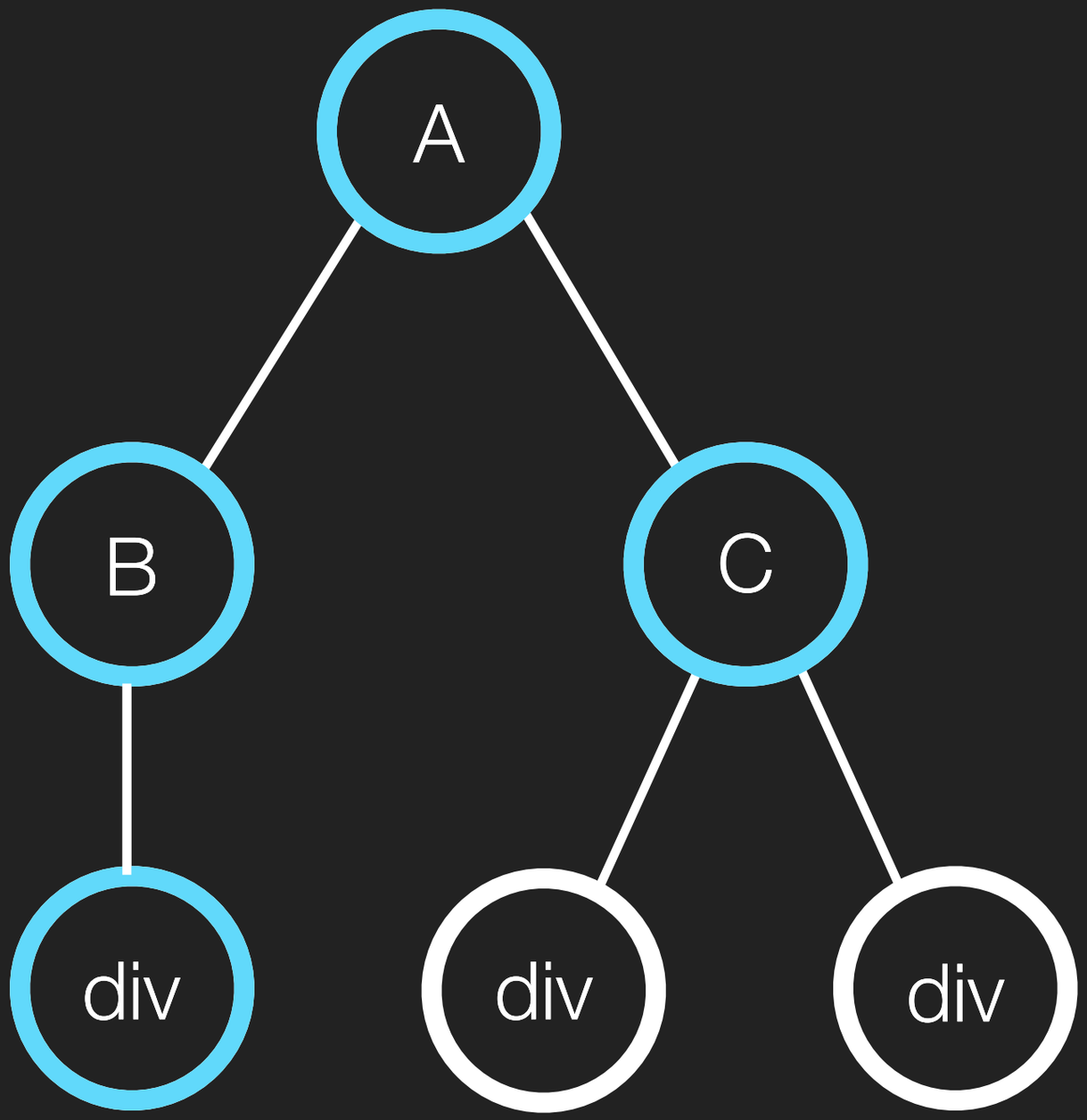


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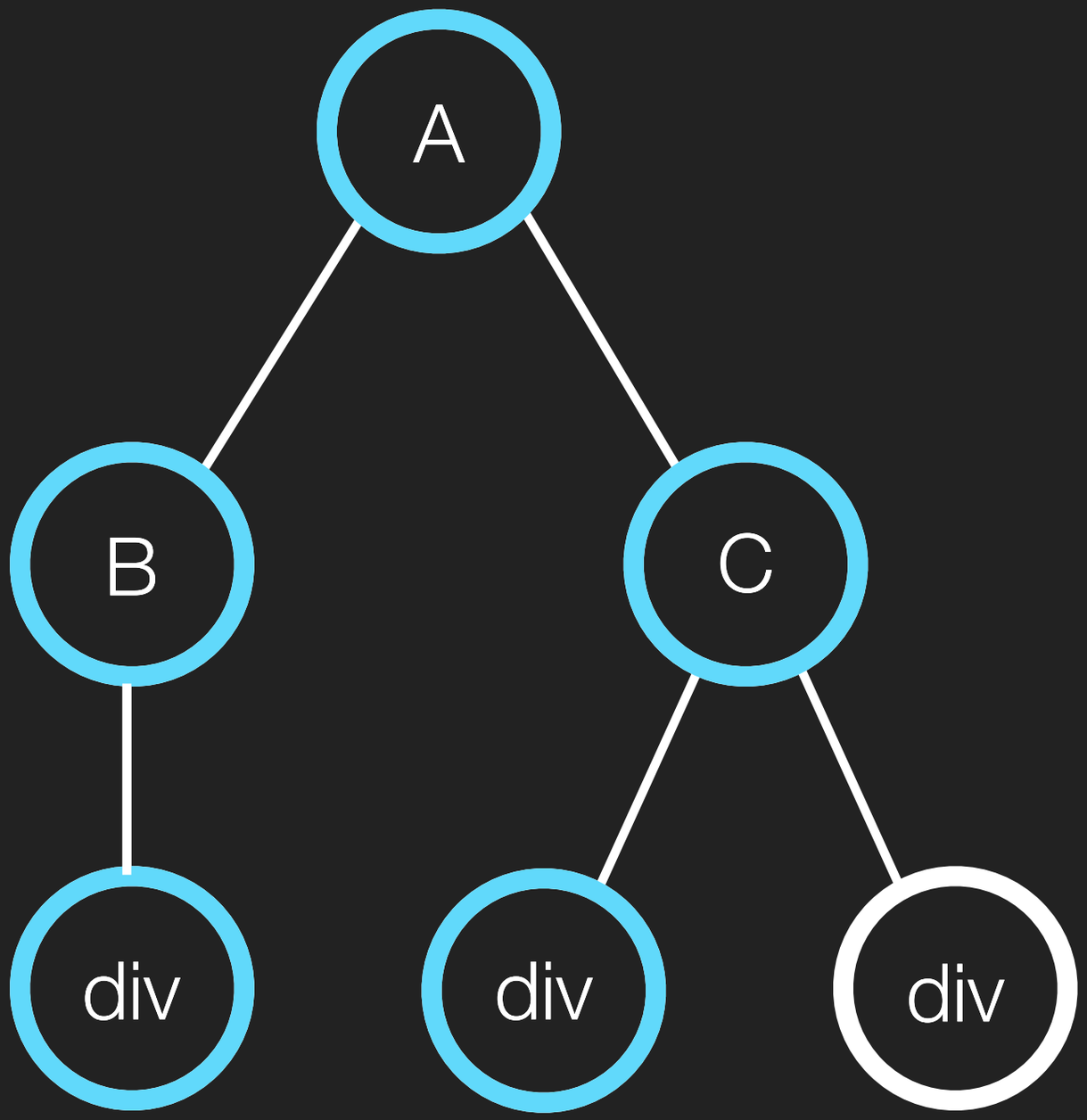


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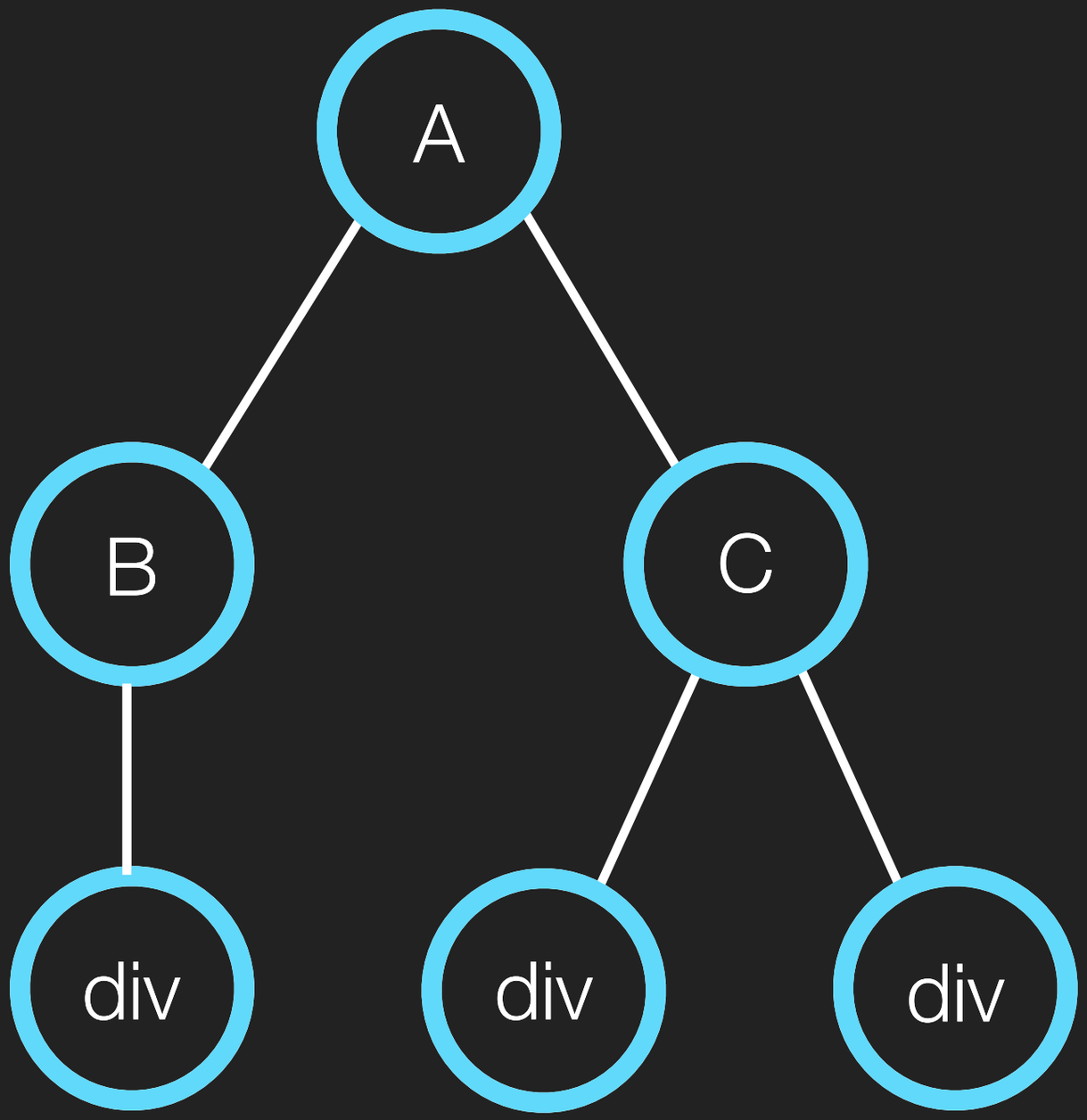


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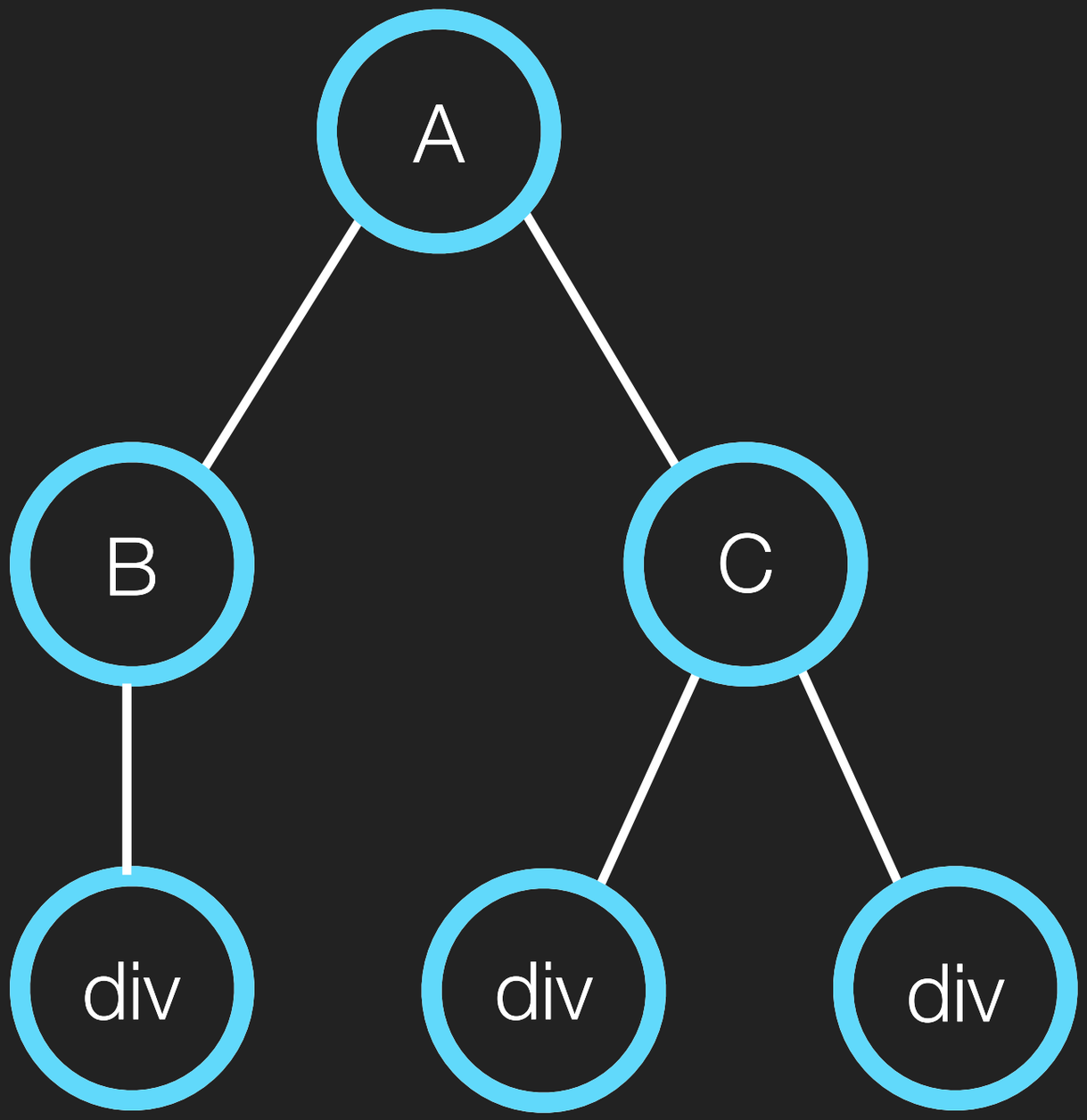


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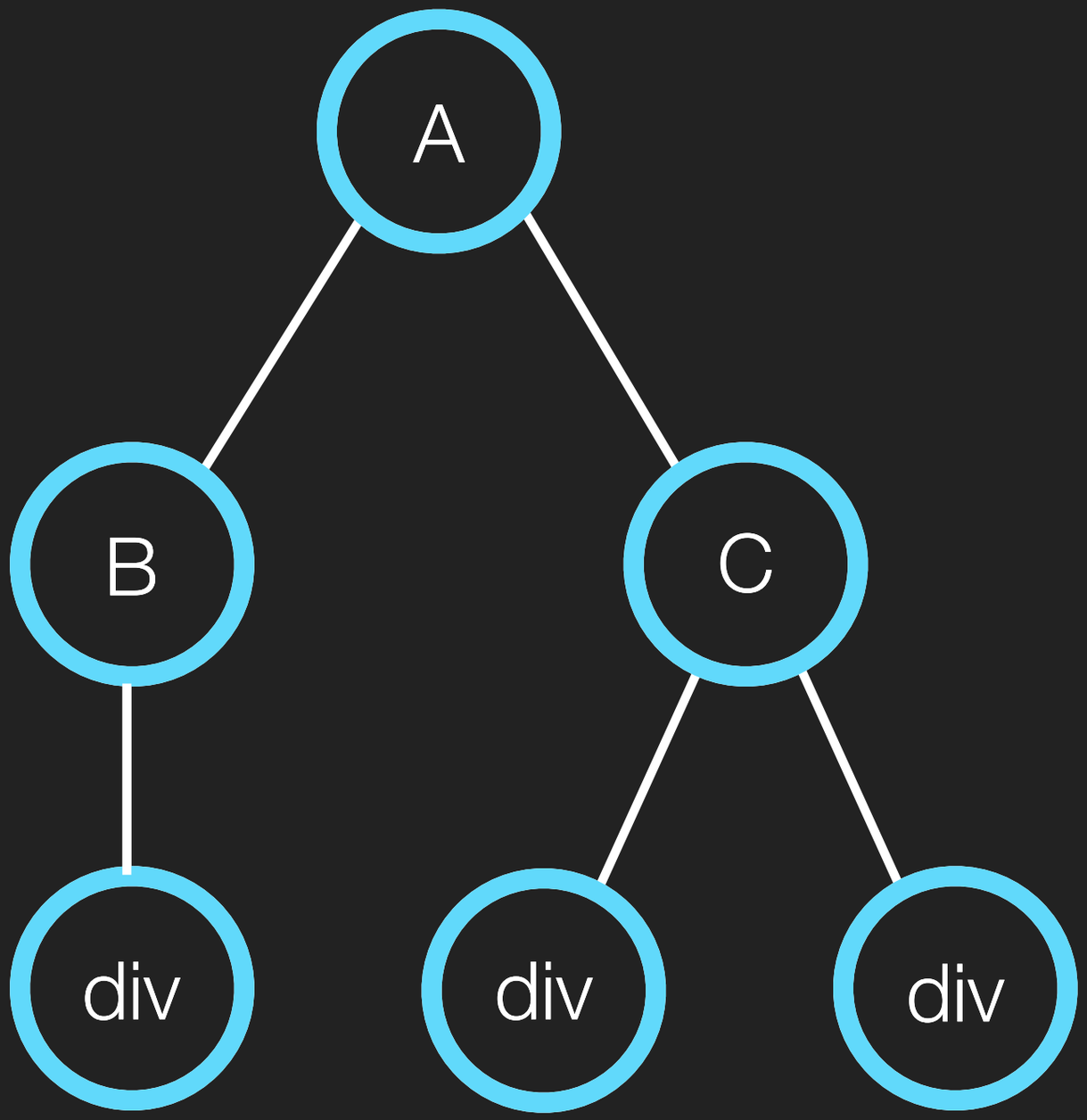


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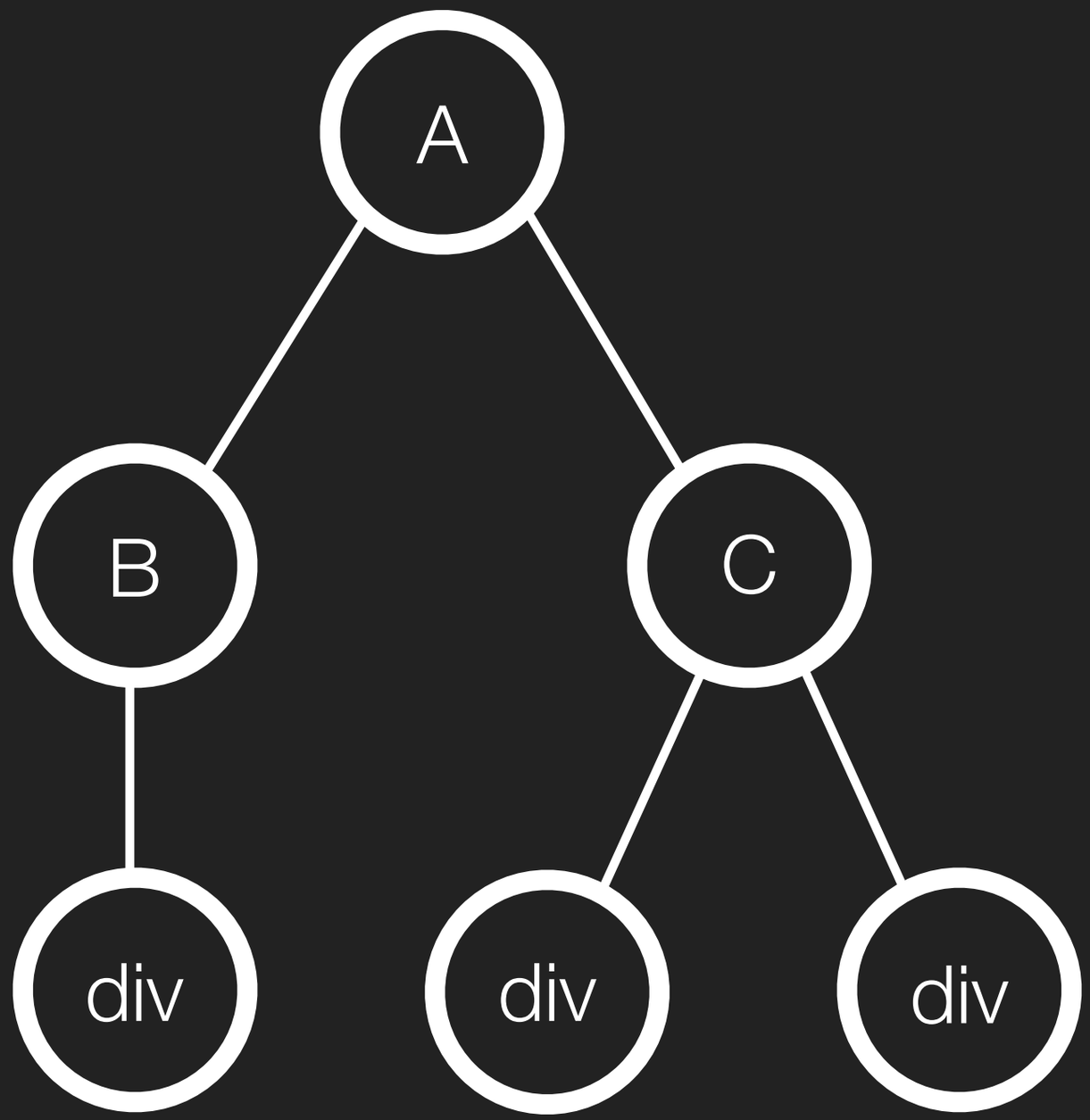
A
B
C
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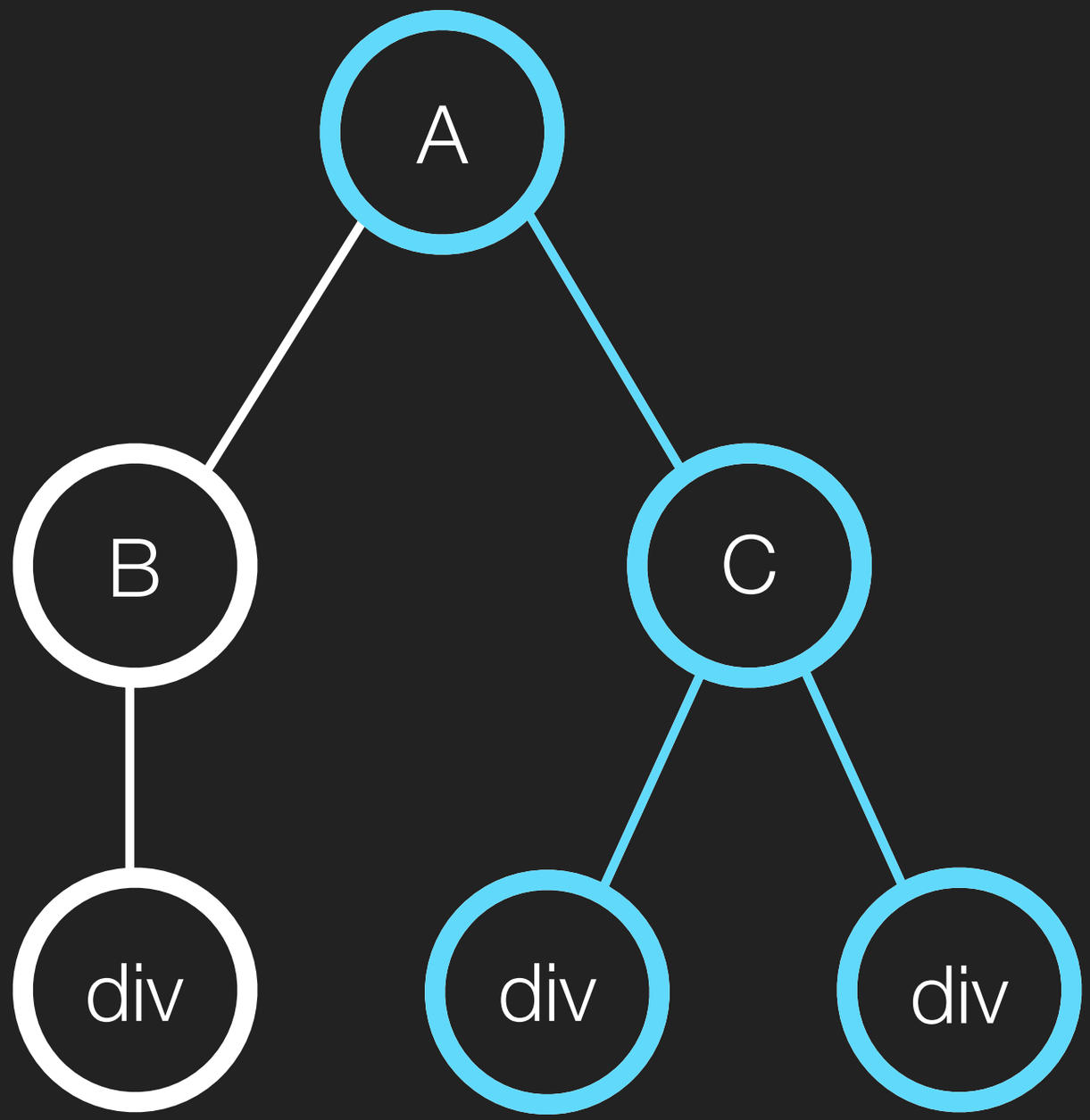
A
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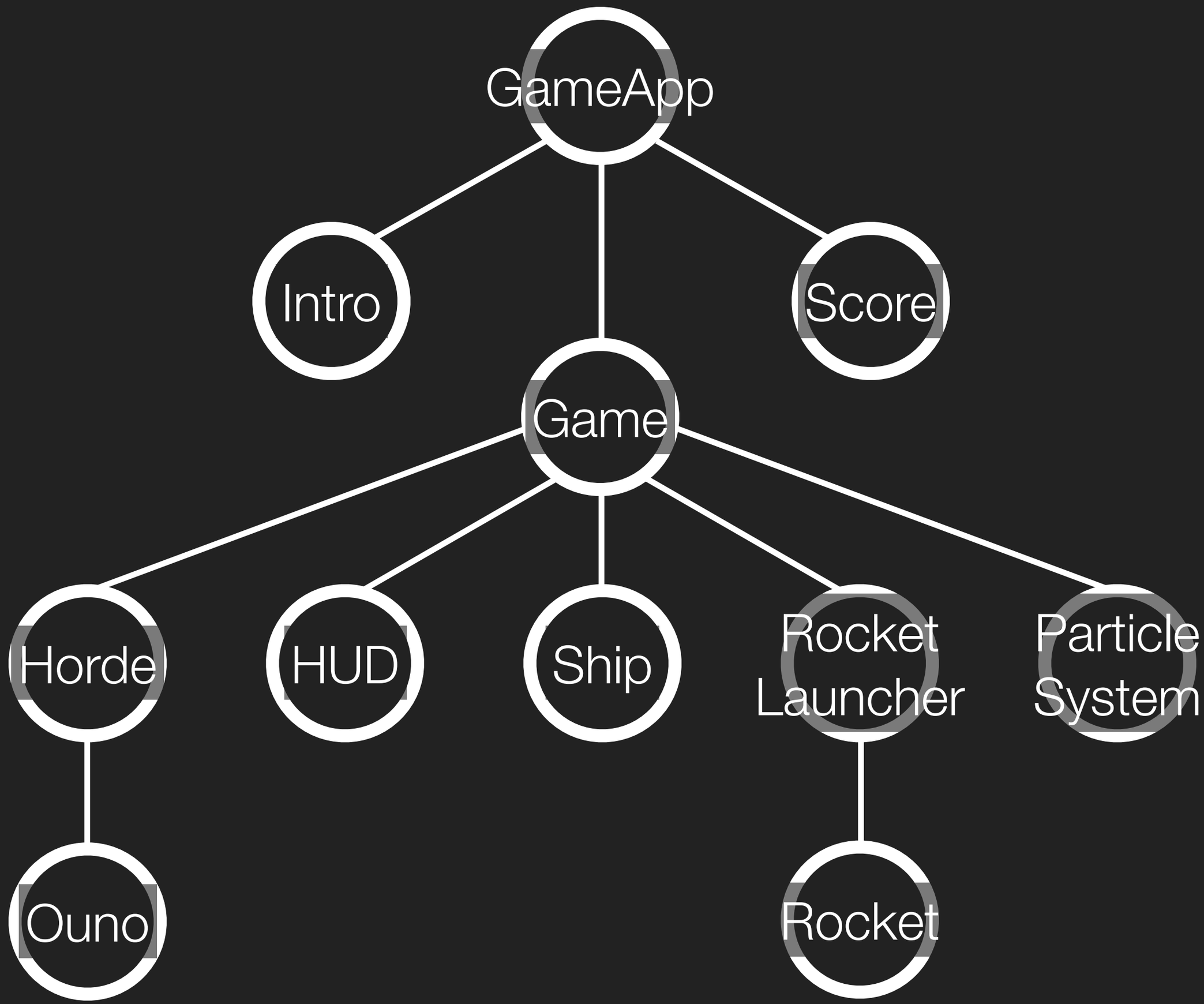
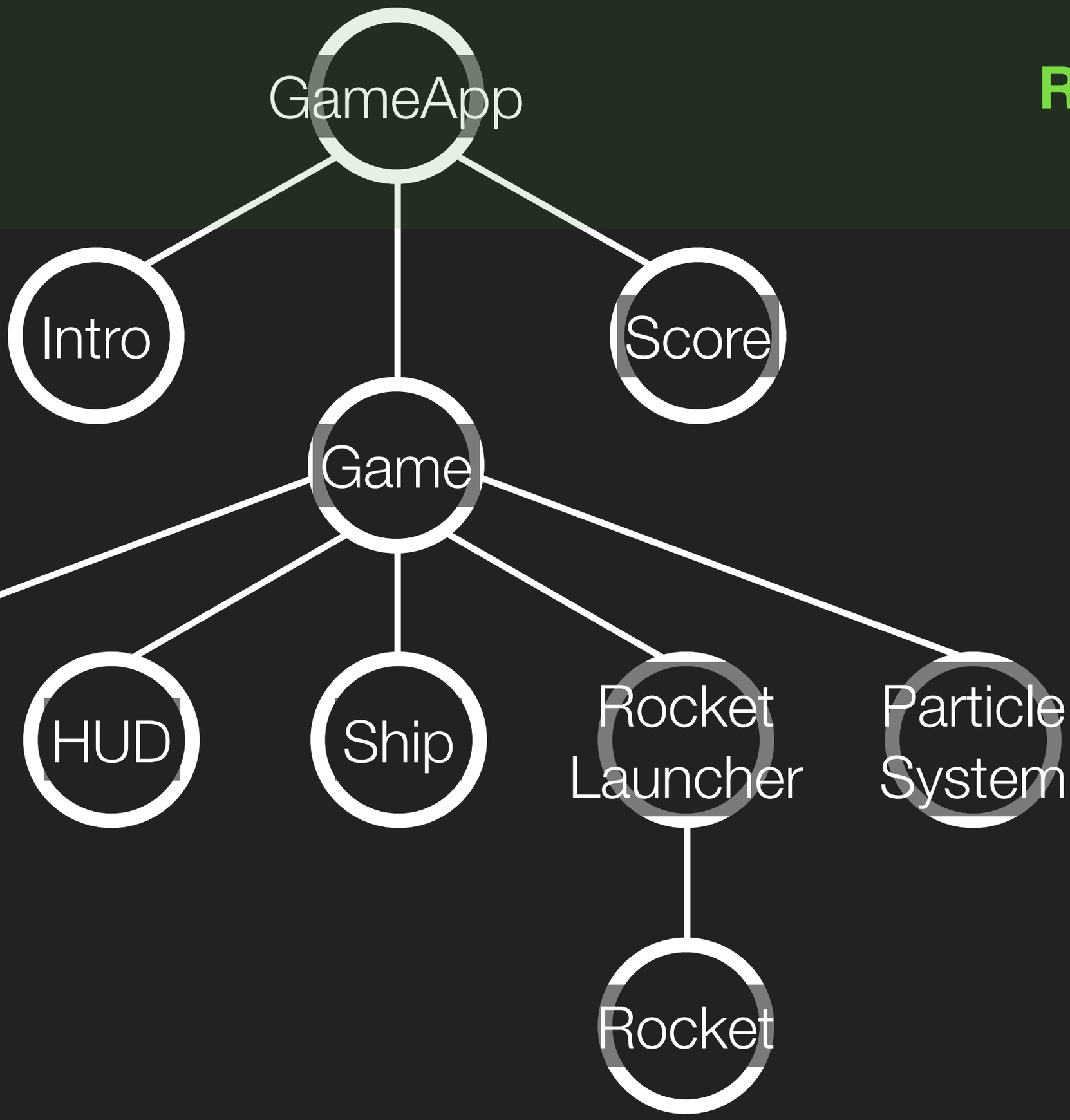

GameApp
Intro
Score
Game
Horde
HUD
Ship
Rocket Launcher
Particle System
Ouno
Rocket

Router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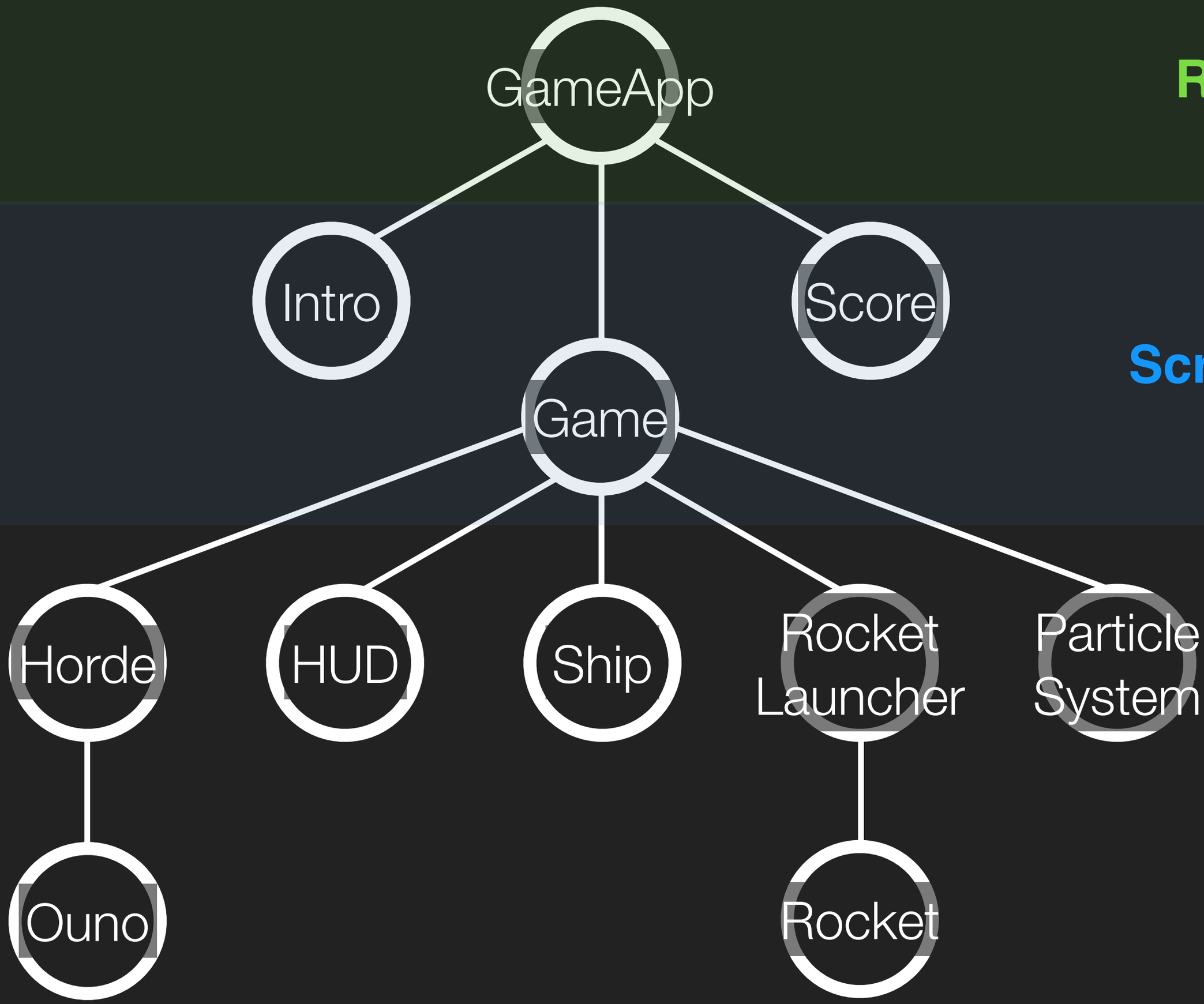
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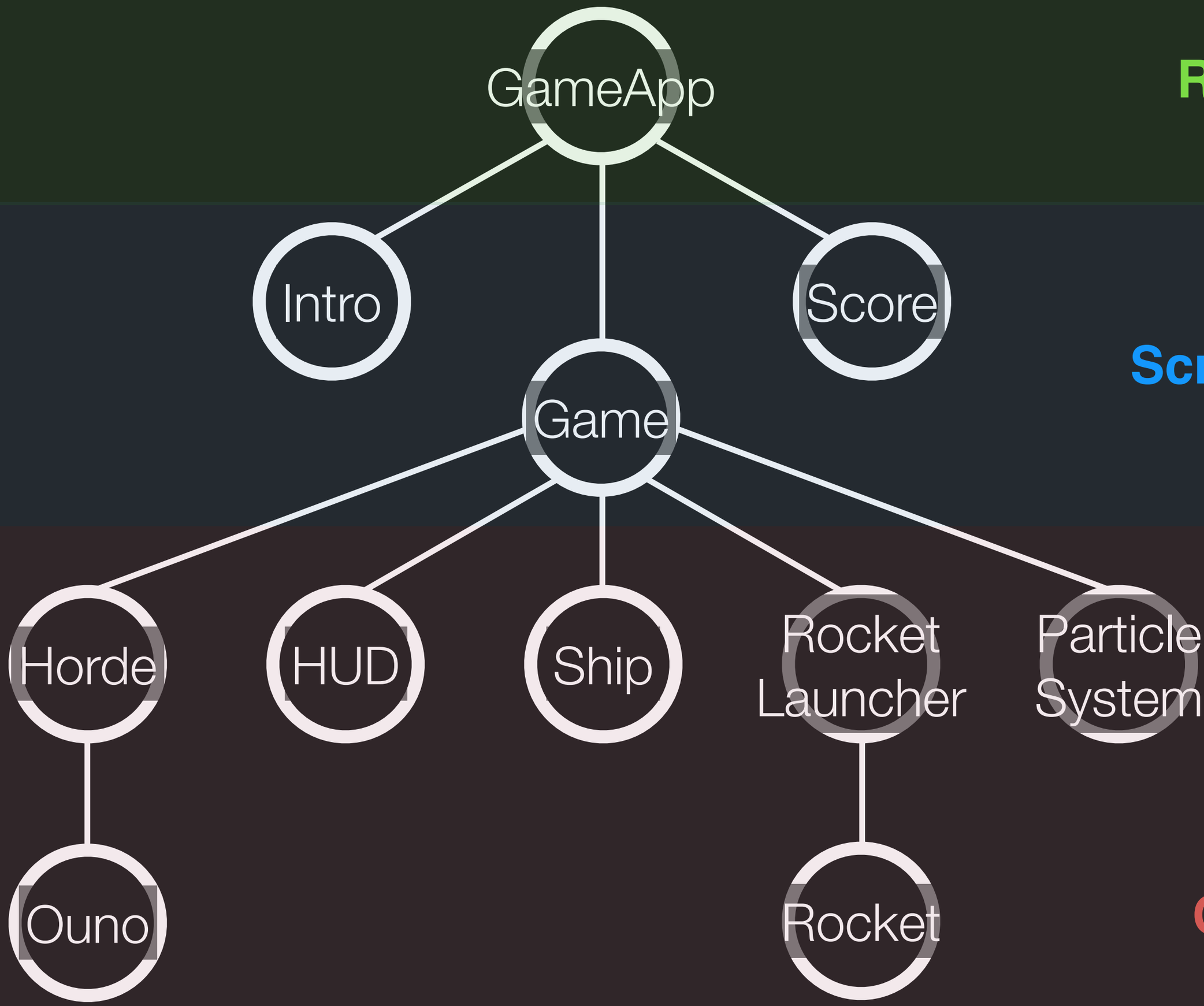
Screens


GameApp
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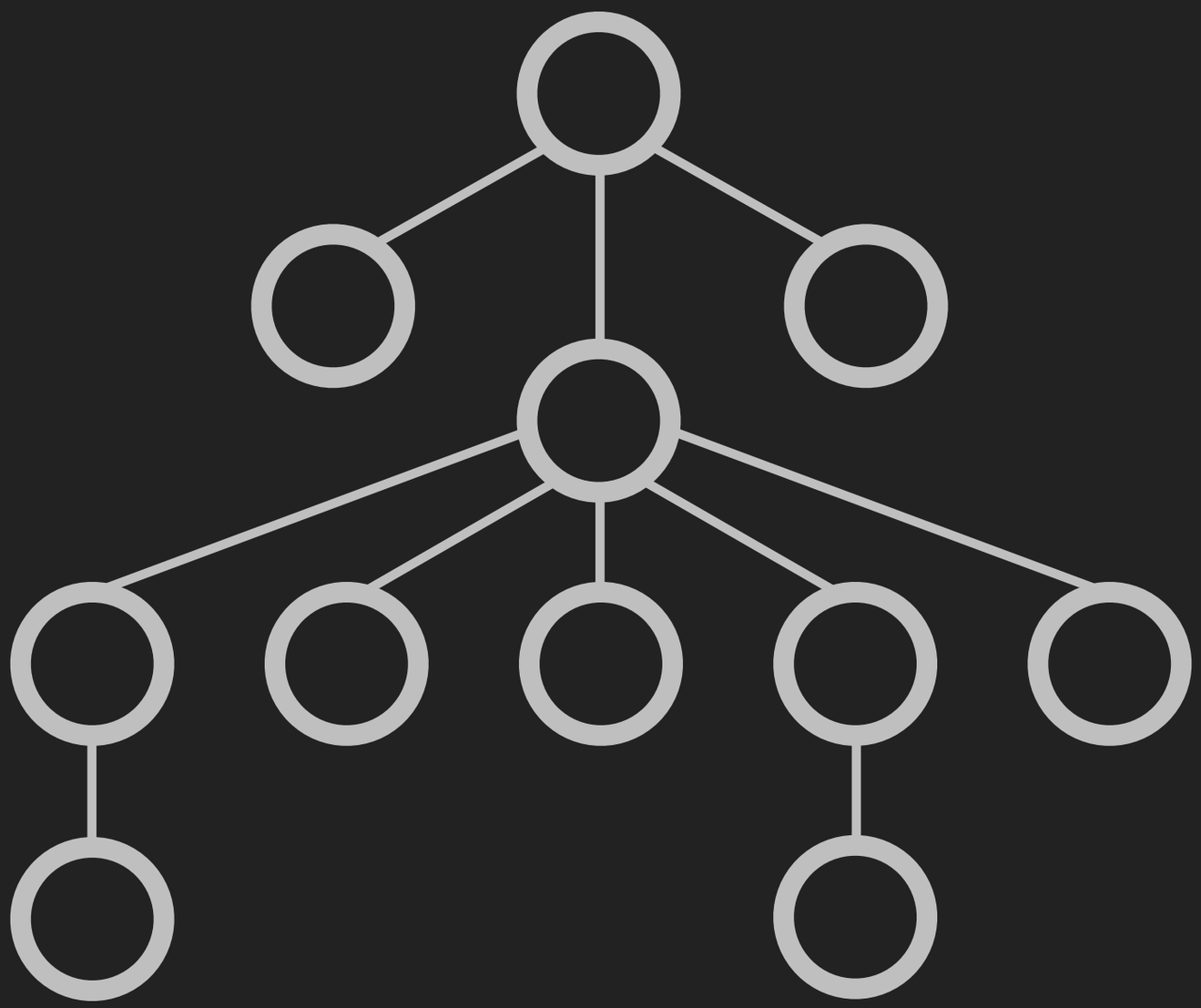
Rocket
Router
Screens
Other

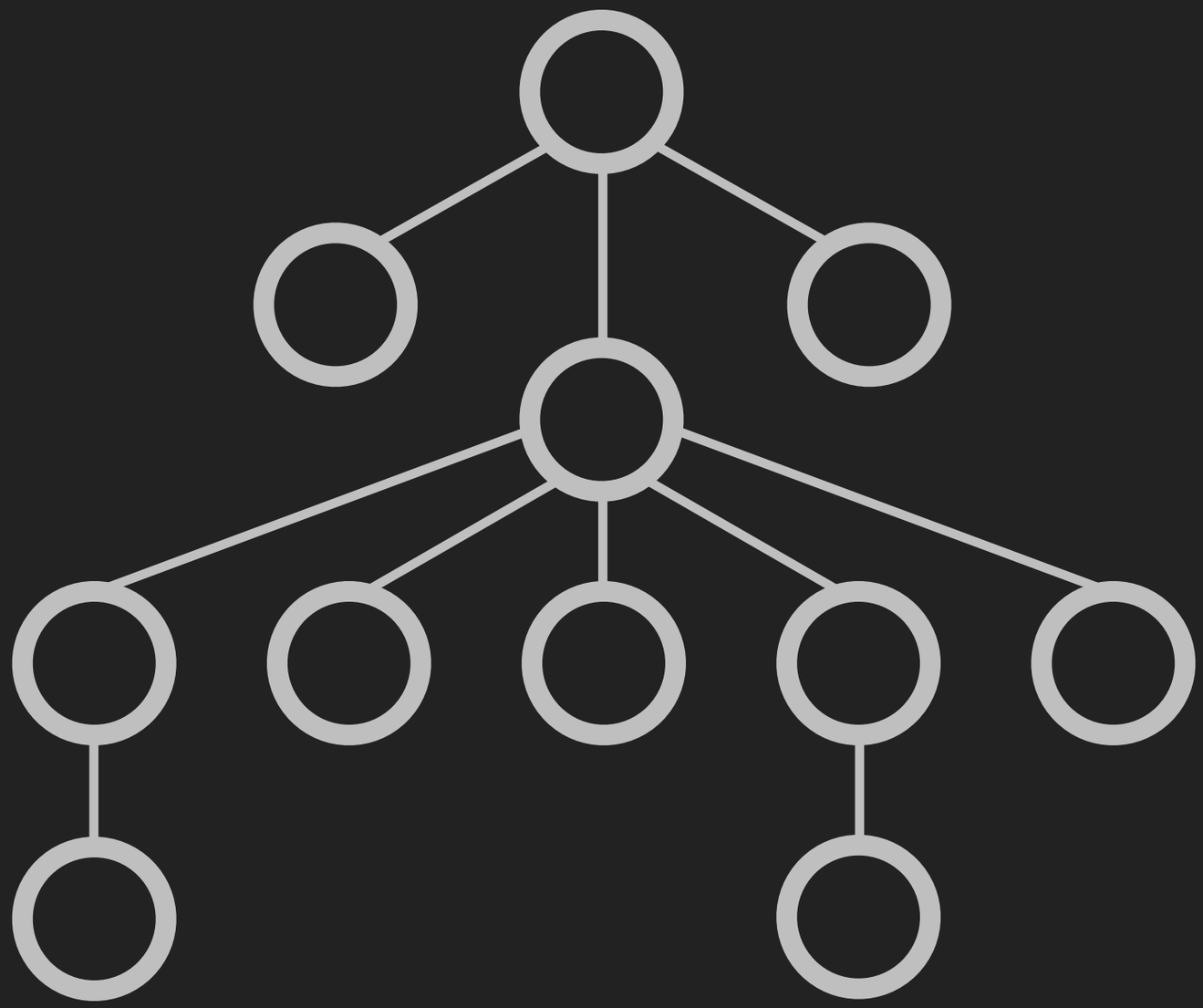
The world

Model

- One centralized model for the game
- Old school prototypal objects
- One function to update the world



ONE WAY



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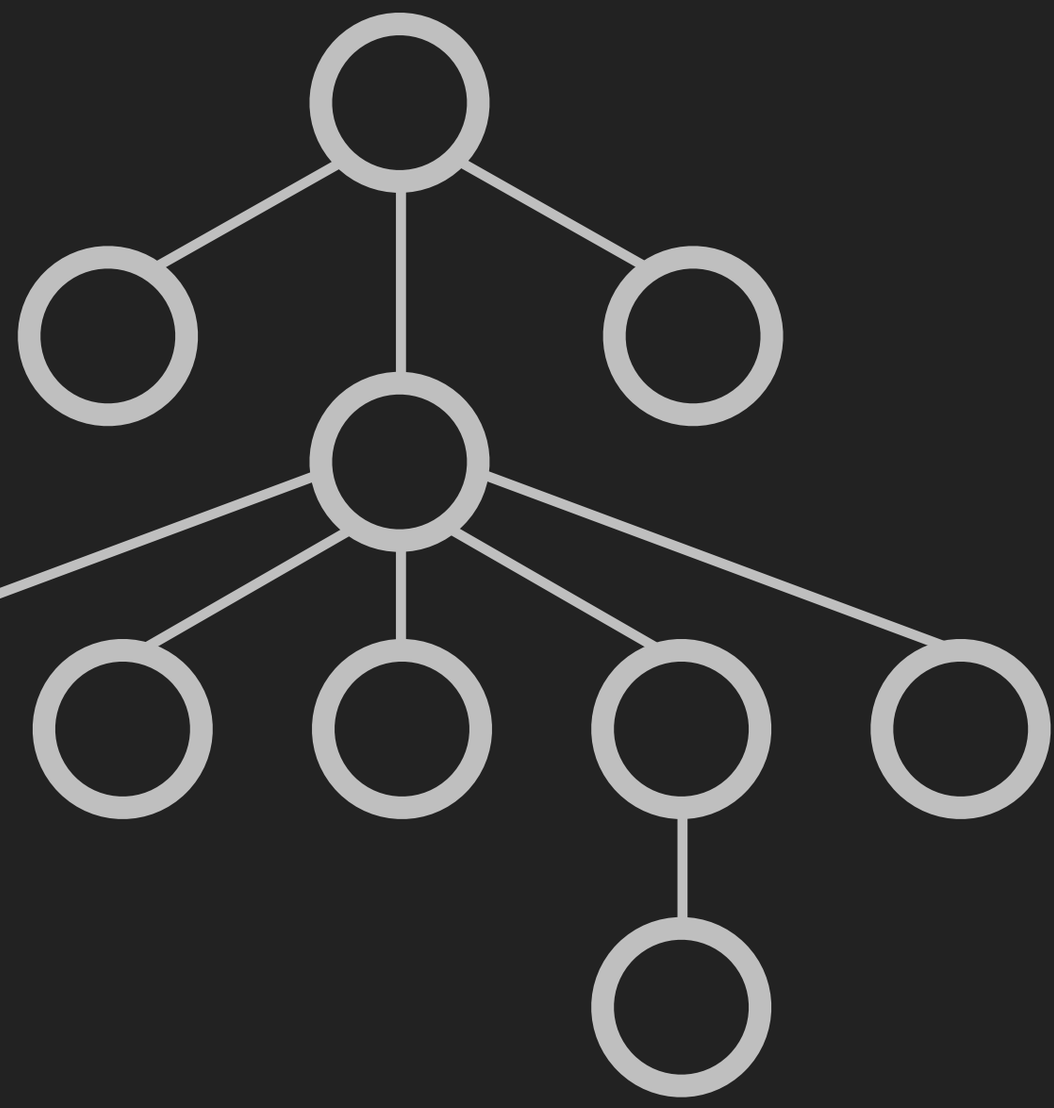
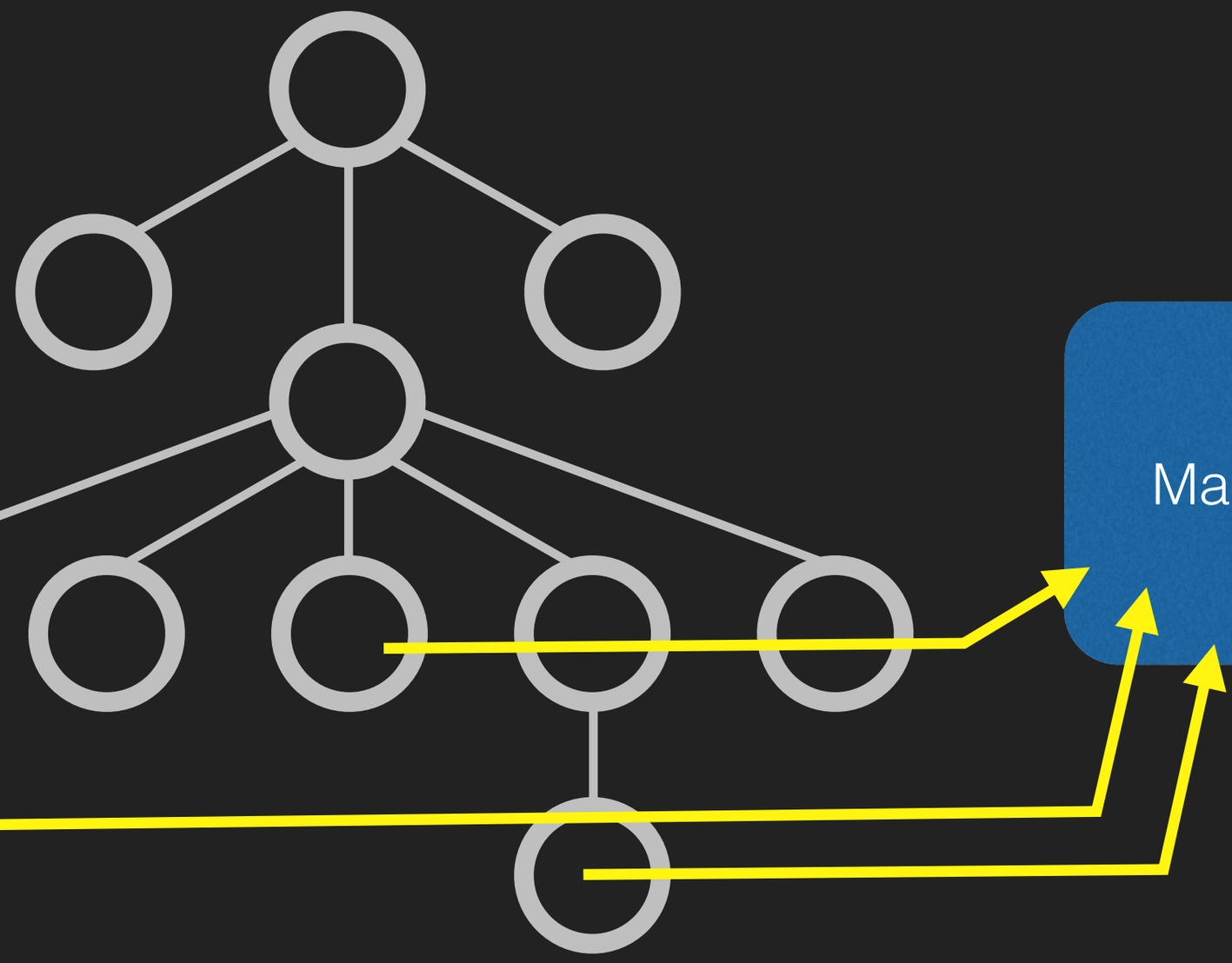


MailBox

ONE WAY



MailBox

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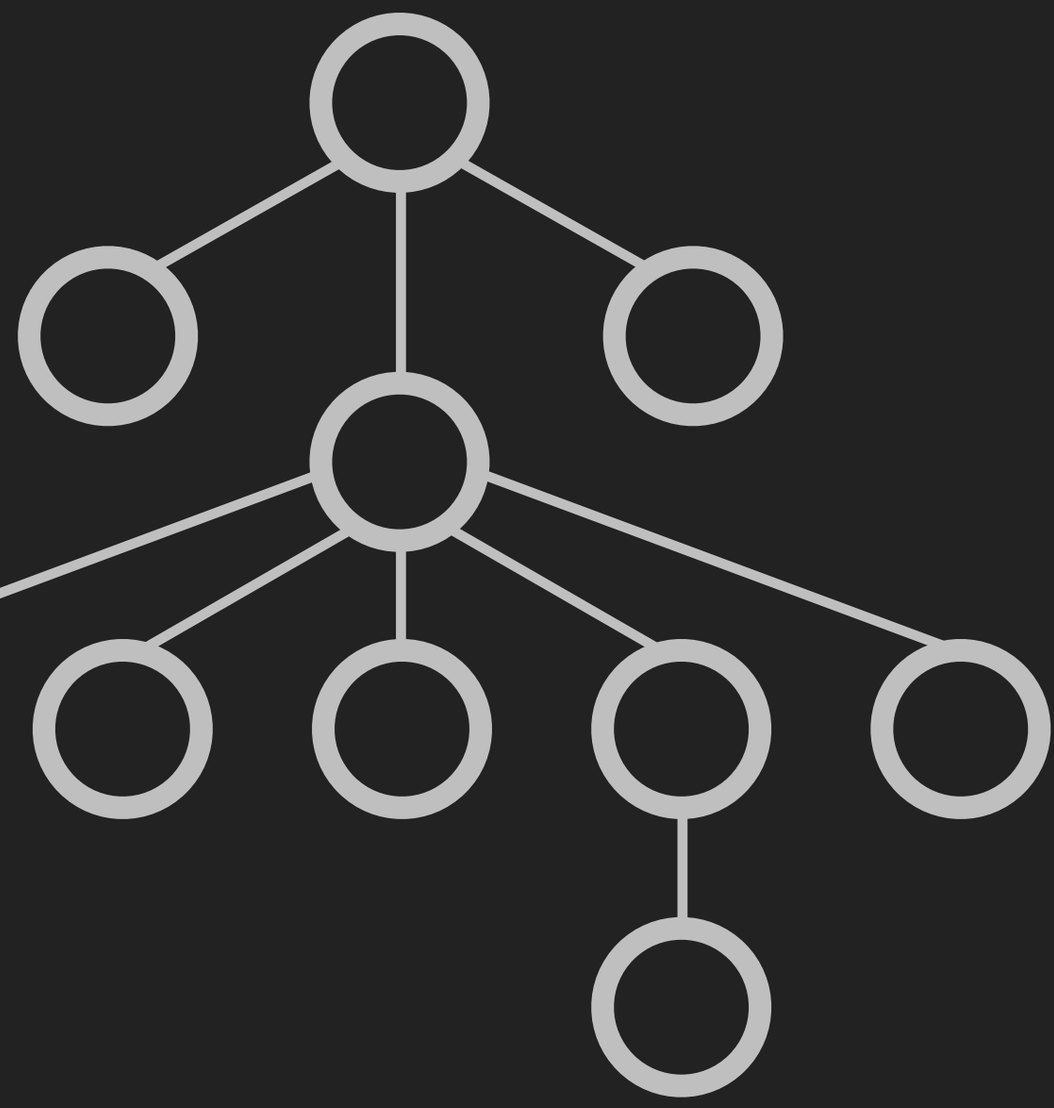

MailBox

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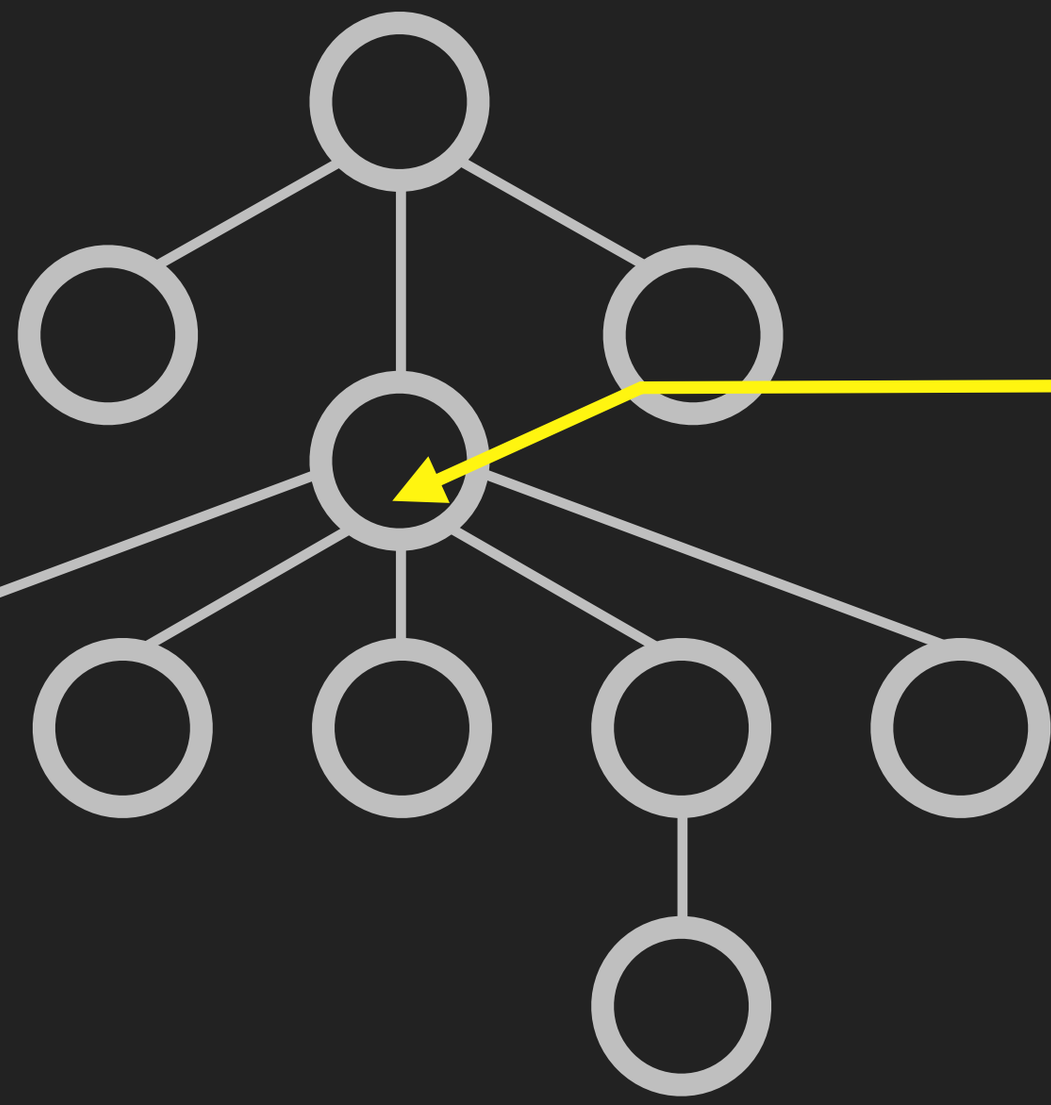
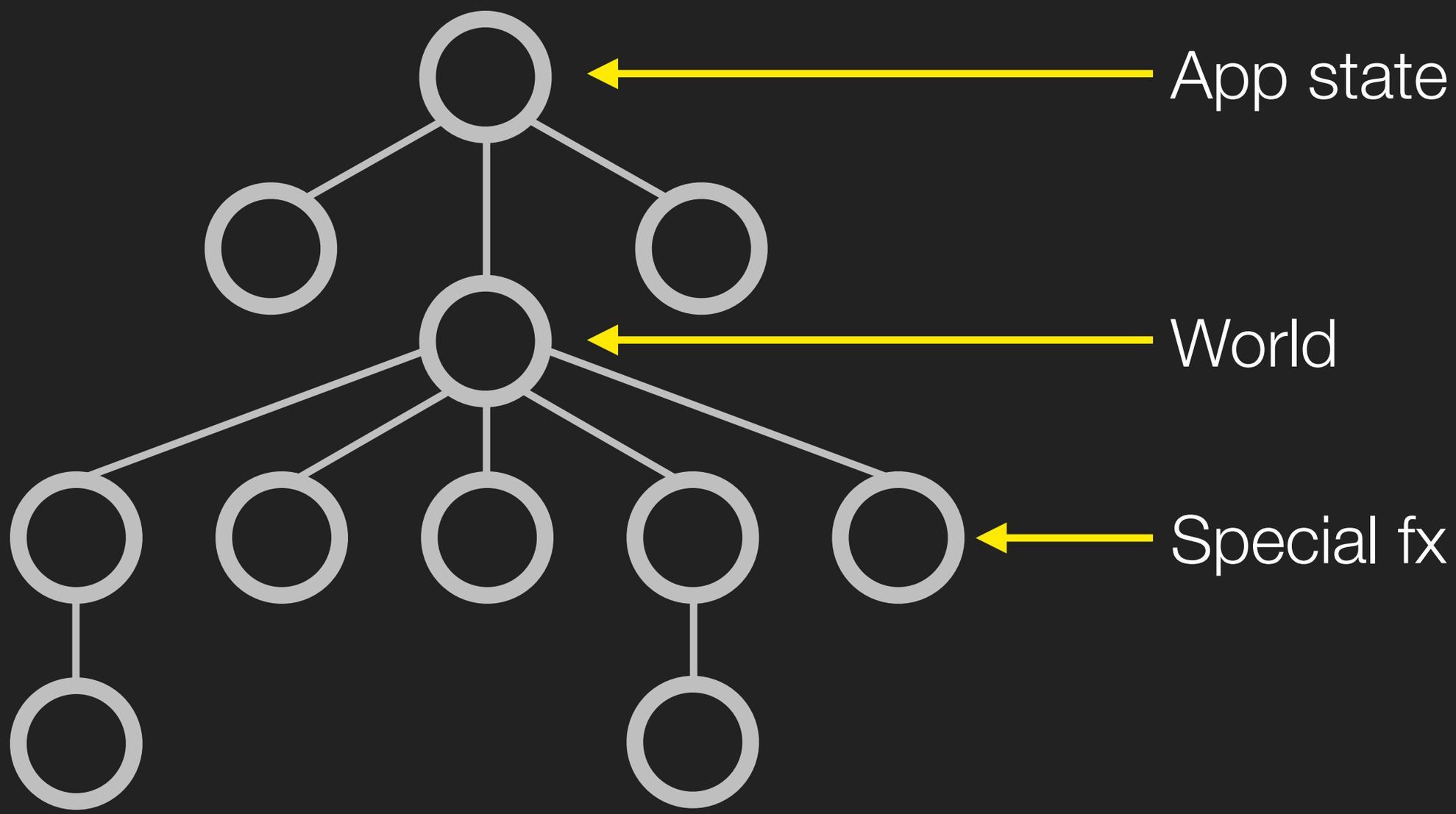


MailBox

Communication

- Every frame there is an update
- Simple message box system
  - Every component can send events
  - Each tick, the model is updated with the events
  - Message box is emptied once read


App state
World
Special fx

Demo

Future

- Mixins
  - Game loop
  - Game screen
  - Sprites
- Ludum dare

Questions?

https://github.com/bobylito/littleshooter2/

References

- React : http://facebook.github.io/react/
- Other related frameworks based on React for doing similar stuff :
  - Pixi / react : https://github.com/lzzimach/react-pixi
  - React art : https://github.com/reactjs/react-art