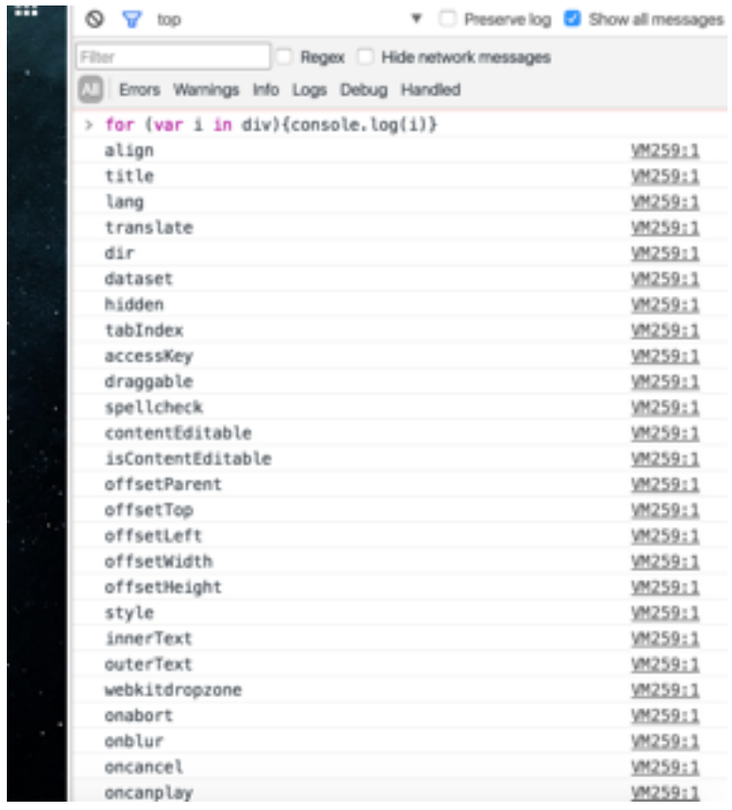
Little Virtual Dom

一个虚拟dom的简单实现

为什么要virtualDom

操作真实dom节点开销太大



什么是virtualDom

- element
- diff
- patch

Element实现

```
var tree = Element('div',{id:'box'},[
        Element('h1',{key:'h1',class:'title',style:'
            color:blue;font-size:24px'},['simple virtual
            dom']),
        Element('ul',{key:'list1',id:'list'},[
            Element('li',{key:'li1',class:'li'},['
                lalalallaa']),
            Element('li',{key:'li2',class:'li'},['
                hahahahahaha']),
            Element('li',{key:'li3',class:'li'},['
                xixiixiixixix'])
        ])
    ])

var theRoot = tree.render()
```

Element实现

```
    if(!(this instanceof Element)){
        if(!_.isArray(children) && children != null){
            //children再处理，去除掉children非true的元素
            children = _.slice(arguments,2).filter(_.truth)
        }
        return new Element(tagName,props,children)
    }
```

Element实现

Render

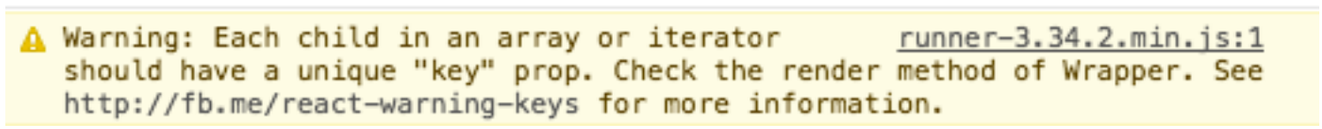
```
Element.prototype.render = function(){
    var t = this;
    var el = document.createElement(t.tagName)
    var props = t.props


    for(var propName in props){
        var propValue = props[propName]
        _.setAttr(el,propName,propValue)
    }


    _.each(t.children,function(child){
        var childNode = (child instanceof Element)
            ? child.render()
            : document.createTextNode(child);
        childNode && el.appendChild(childNode)
    })

    document.body.appendChild(el)
    return el

}
```

Diff实现

- **两个相同组件产生类似的DOM结构，不同的组件产生不同的DOM结构；**

—— 意味着相同dom往下走，不同dom直接删掉

- **对于同一层次的一组子节点，它们可以通过唯一的id进行区分。**



—— 这是React在遇到列表时却又找不到key时提示的警告。虽然无视这条警告大部分界面也会正确工作，但这通常意味着潜在的性能问题。因为React觉得自己可能无法高效的去更新这个列表。

Diff实现

所以diff核心步骤：

递归逐层比较，对比当前new / old node

- 当new node不存在，忽略，因为会在list_diff中被消除
- 当都是文本节点： push({type: patch.TEXT,content:newNode})
- 当tagName相同，且key相同（undefined也是相同），1,比较props，2，diffChildren()
- 其它：push({type:patch.REPLACE,node:newNode})

```
var REPLACE = 0;
var REORDER = 1;
var PROPS = 2;
var TEXT = 3;

patch.REPLACE = REPLACE;
patch.REORDER = REORDER;
patch.PROPS = PROPS;
patch.TEXT = TEXT;
```

Diff实现

- 当tagName相同，且key相同（undefined也是相同），1,比较props，2，diffChildren()

1.
```
//对props
if(propsPatches){
    currentPatch.push({type:patch.PROPS,props:propsPatches})
}
```

2. diffChildren()内调用list_diff

```
function diffChildren(oldChildren,newChildren,index,patches,currentPat
    var diffs = listDiff(oldChildren,newChildren,'key')
    newChildren = diffs.children;
    if(diffs.moves.length){
        var reorderPatch = {type:patch.REORDER,moves:diffs.moves}
        currentPatch.push(reorderPatch)
    }
```

小插曲list_diff

```
var diff = require("list-diff2")
var oldList = [{id: "a"}, {id: "b"}, {id: "c"}, {id: "d"}, {id: "e"}]
var newList = [{id: "c"}, {id: "a"}, {id: "b"}, {id: "e"}, {id: "f"}]

var moves = diff(oldList, newList, "id")
// `moves` is a sequence of actions (remove or insert):
// type 0 is removing, type 1 is inserting
// moves: [
//   {index: 3, type: 0},
//   {index: 0, type: 1, item: {id: "c"}},
//   {index: 0, type: 0},
//   {index: 4, type: 1, item: {id: "f"}}
//  ]
```

Patch实现