Synthetic events in Reactjs

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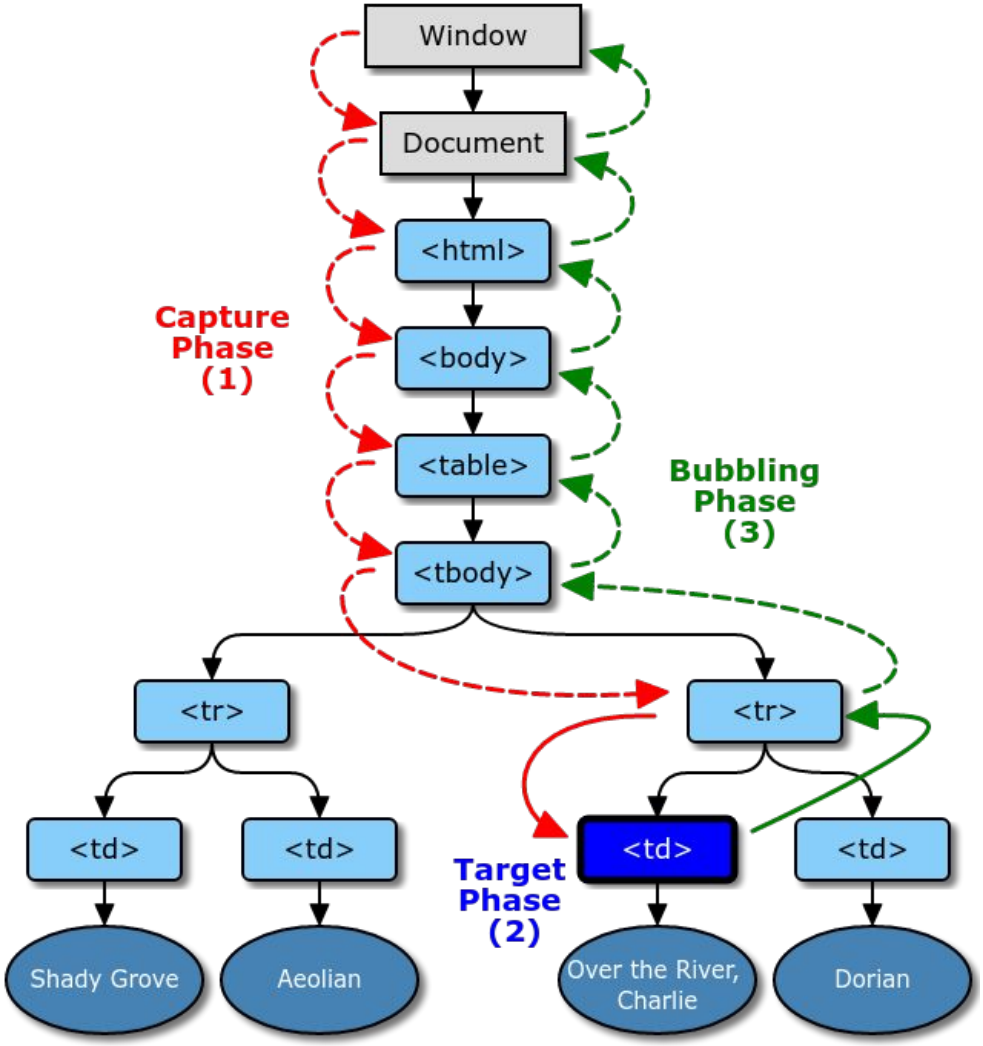
Captain obviously

Event is...

HTML DOM events allow JavaScript to register different event handlers on elements in an HTML document

DOM events bubbling / capturing



Bubbling/capturing

- addEventListener(‘eventName’, handler, isCapturing);
  - Last argument set bubbling/capture event capturing phase

-
  - Always bubbling

Dom event

- event.preventDefault()
- event.stopPropagation()
- event.stopImmediatePropagation()
  - ```
    x.addEventListener("click", myFunction);
    ```
  - ```
    x.addEventListener("click", someOtherFunction);
    ```

Event delegation

- Attach event to the **window** or **document** and listen it
- Use **event.target** to check what element caused the event

Event pooling

- All events will be added to some pool
- When event was handle then clear it and return to the pool

Reactjs

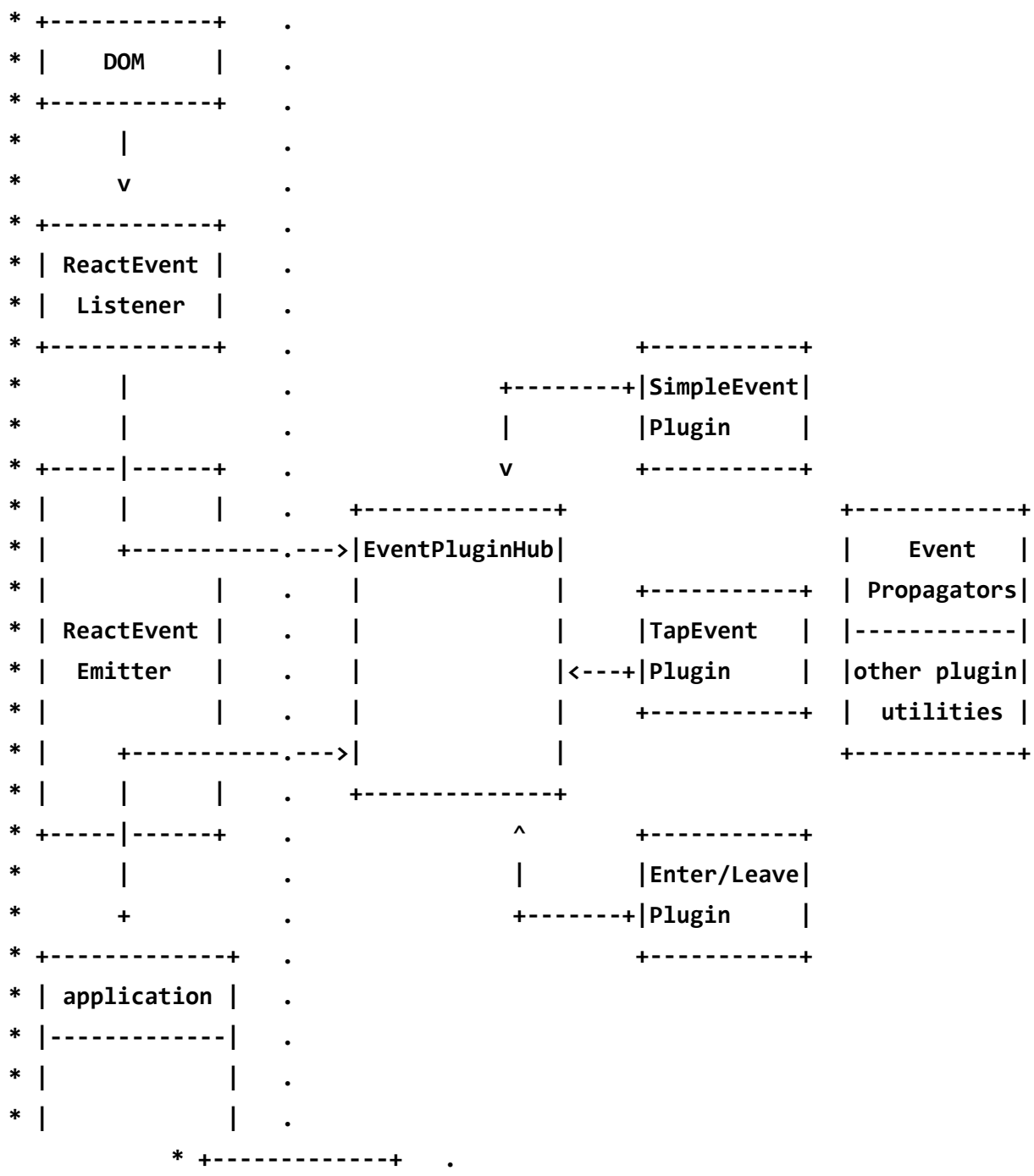
How events work in reactjs

- React uses top-level event delegation
- React doesn’t attach the events to the real DOM nodes
- React uses Synthetic Events to process events within virtual DOM
- **addEventListener** will attach events to DOM nodes
- you have **nativeEvent** reference inside synthetic events

How events work in reactjs

- React attaches 63 events to one handler
  - scroll*, focus, blur are capured
- https://github.com/facebook/fbjs is used to attach events

- **One per event** listener


DOM
ReactEvent
Listener
ReactEvent
Emitter
application
EventPluginHub
SimpleEvent
Plugin
TapEvent
Plugin
Enter/Leave
Plugin
Event
Propagators
other plugin
utilities

React event delegation

- Delegation listener is attached to the **document**
- When it receives an event it dispatches a synthetic event across the virtual DOM

React event pooling

```
if (event) {
  EventPluginUtils.executeDispatchesInOrder(event, simulated);

  if (!event.isPersistent()) {
    event.constructor.release(event);
  }
}
```

Pooling problem

- Event can be cleared before you process it
  - when your handler puts your request to the queue

EventPluginHub

- **extractEvents** - extracts synthetic events that will be queued and dispatched
- **eventTypes** - is the name that is used to register a listener
- **executeDispatch** - overloads the way how event will be dispatched

Synthetic event

- Synthetic events are dispatched by event plugins of delegation handler
- React’s event system and native DOM events are isolated
  - Your component will be the last to hear the event.
- Use react’s event system as much as you can.

When Synthetic events are not enough?

- **resize, hashchange, transitionend, ...** events
- React component is inserted into a page containing other event listeners
  - If an event happens inside your React component, your component will be the last to hear the event

Adding DOM events is the same

- componentDidMount:
  - window.addEventListener('resize', this.closeTooltip);

- componentWillUnmount:
  - window.removeEventListener('resize', this.closeModal);

But how to stop it for real DOM?

`event.stopPropagation()` - the synthetic event can't stop real DOM events...


....hmmmm

But how to stop it for real DOM?

reactEvent.nativeEvent.stopPropagation()

… still can’t stop the propagation

Only one chance...

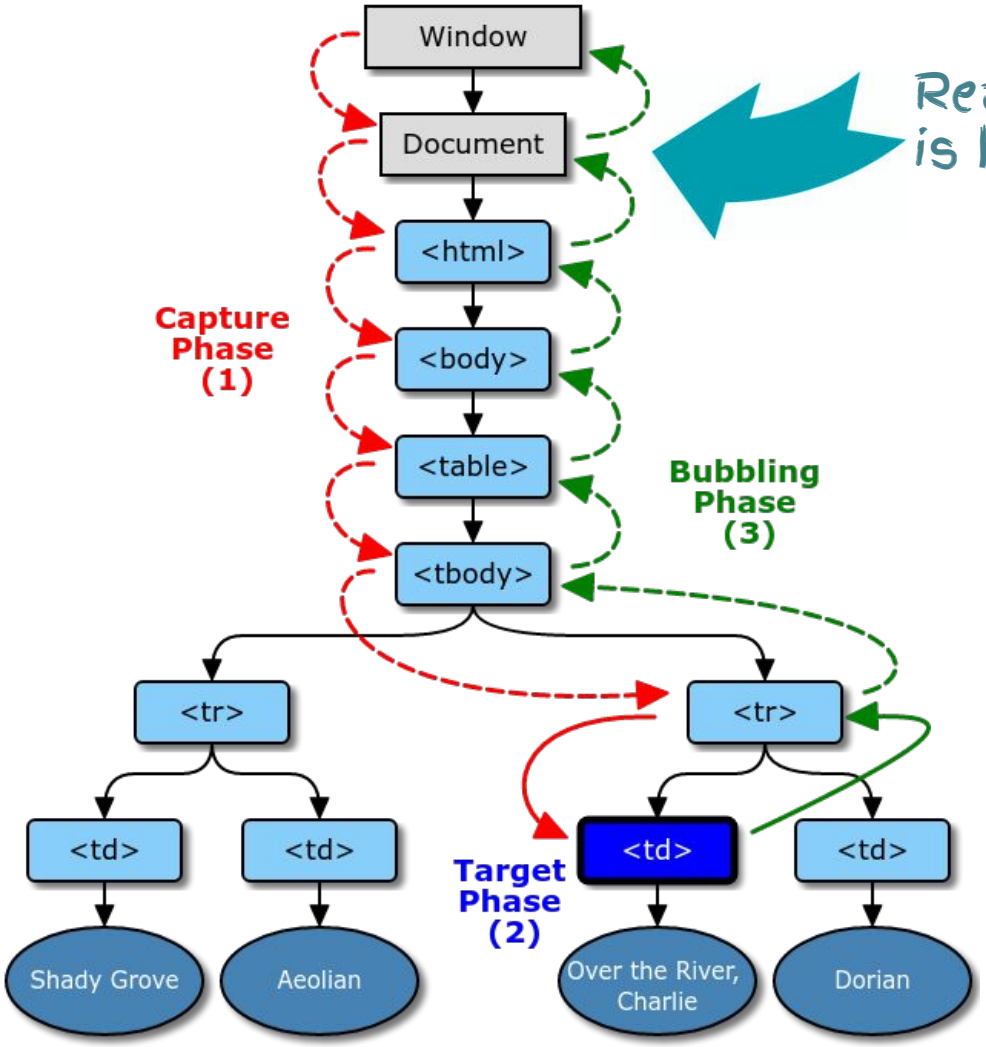
reactEvent.nativeEvent.stopImmediatePropagation()

...will work only for event connected to **document** and above

Does stopping the native event stop react's event?

- Yes… but it stops **all** react events

DOM events bubbling / capturing



Conclusion

- React takes care on events handling
- No connected to DOM events => no worrying
- But if you need complex behaviour you need to know it under the hood

Thank you!

It's questions time :)