Composition vs Inheritance

DEVELOPING APPLICATIONS USING REACTJS

Objectives

- To understand Composition and the use of containment and specialisation
- To understand why inheritance is rarely used with React

Composition

- One of key features of ReactJS
- Components by different developers should work well together
- Important that functionality can be added to component without affecting the codebase
  - E.g. Should be possible to add local state to component without affecting its children
  - State and lifecycle hooks in components should be used in moderation

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Composition - Containment

- React has special *children* prop to pass children elements directly into the output of a parent component
- Useful in cases where parent component doesn't know what their children will be ahead of time
- Can be used in functions or in classes
  - Works as equally well in either

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COMPOSITION - CONTAINMENT

```
function ContainmentComponent(props) {
   return (
      <div className={'conStyle conStyleBorder' + props.color}>
         {props.children}
      </div>
   );
}

function ParentComponent() {
   return (
      <ContainmentComponent color="red">
        <h1 className="title">Welcome</h1>
        <p className="message">Thanks for coming!</p>
      </ContainmentComponent>
   );
}
```

EXAMPLE 1 – a containment component for other components.

The containment component can be the same for all children elements inside it

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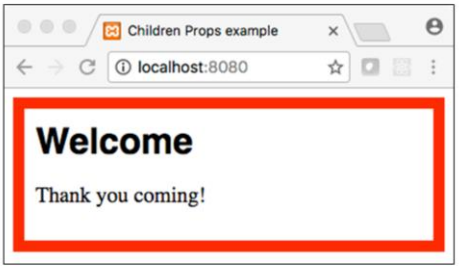
Composition - Containment

```
<style>
        .conStyle {
        padding: 10px 10px;
        border: 10px solid;
        }
        .conStyle-red {
                border-color: red;
       }
        .title {
                margin: 0;
                font-family: sans-serif;
        }
        . message {
                font-size: larger;
        }
</style>
```

- EXAMPLE 1 – a containment component for other components
  - Given a stylesheet applied as on the left, the output would look as below...



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The component <LeftSplit> will return I am the left split

The component <RightSplit> will return I am the right split

These are just objects and so can be passed as props like any other data.

Composition - Containment

- EXAMPLE 2 – a containment component addressing sub-components
  - Given a stylesheet applied as on the right, the output would look as below...


```
<style>
  html, body, #app {
    width: 100%;
    height: 100%;
  }
  .SplitterComponent {
    width: 100%;
    height: 100%;
  }
  .SplitterComponent-left {
    float: left;
    width: 30%;
    height: 100%;
  }
  .SplitterComponent-right {
    float: left;
    width: 70%;
    height: 100%;
  }
  .LeftSplit {
    width: 100%;
    height: 100%;
    background: green;
  }
  .RightSplit {
    width: 100%;
    height: 100%;
    background: yellow;
  }
</style>
```

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Anything inside the <ContainerComponent> JSX tag in the <ParentComponent> get passed into the <ContainerComponent> as a children prop. Since <ContainerComponent> renders {props.children} inside a , the passed elements appear in the final output.

Given that the <ContainmentComponent> and styling are as in the first example for Containment, the output should be the same.

A further example can be seen at: http://codepen.io/gaearon/pen/gwZbYa?editors=0010

Inheritance

- Facebook (the developers of React) have not found any cases where component inheritance hierarchies would be recommended
- Props and composition give all flexibility needed to customise component look and behaviour

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Exercise Time

- No exercise for this chapter.

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