Your question to answer:

1. Describe the Redux cycle. How does it work, and how does it connect to the backend?

Answer to the question you are asking:

1. What is React’s virtual DOM and why is it used? How does the diffing algorithm work?

The virtual DOM is a simpler and faster abstraction of the HTML DOM. While it might be more expensive to manage two DOMs in some respects, being able to traverse and perform operations on the virtual DOM saves React from having to have costly interactions with the real one, only updating it when it absolutely needs to.

When rendering, React creates a tree of React elements. When state or props update, React then renders a tree of potentially different elements. The diffing algorithm figures out how to efficiently update the DOM, removing old DOM nodes and replacing them only when necessary. We give unique HTML elements unique IDs so the diffing algorithm can tell them apart.

This algorithm solves the problem of generating the fewest number of operations needed to manage re-rendering. The React diffing algorithm manages to run in O(n) time (where n is the number of HTML elements) using a series of rules to determine when a node will need to be updated.