COMP[29]041 18s2

Week 11 Tutorial

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Sample Answers

1. NOTE: For the next two weeks' exercises and tutorial material, all code will be provided through a special git repository.

2. How is HTML parsed by the browser? What considerations are there for the way we load scripts, images and other assets?

   When an HTML document is first downloaded by the browser it is parsed element by element in a depth first traversal. Every time an external asset (src="some/asset") is parsed it must also be loaded via a network request. For scripts, the default behaviour is that they are also executed once loaded. All of this slows down the load time of our page.

   Generally, we want to defer the execution, and parsing of non-critical assets/scripts as they slow down our initial page load. There are many strategies to achieve this. See the course material.

3. What is the DOM?

   The DOM or Document Object Model is the abstraction layer provided by the browser to interact with a web document.

4. Why do we generally put our <script> tags at the end of our out HTML file? What does this do?

   Scripts that interact with the DOM need the DOM to fully load before they begin their manipulations. Scripts that are added at the bottom of the body tag are deferred in execution until the rest of the DOM has loaded.

   Putting scripts at the bottom of the page does not guarantee safe execution of scripts however. Consider the (likely) possibility that we may have multiple scripts on our page.

   In these instances we can hold off execution until `DOMContentLoaded` or window `load` DOM events are fired. Thus ensuring we can safely interact with the DOM.

5. How do we query elements in the DOM? Can you name a few common methods and how they work?

   Some possibilities:

   ```
   document.querySelector();
   document.querySelectorAll();
   document.getElementsByTagName();
   document.getElementById();
   document.getElementsByClassName();
   document.getElementsByName();
   ```

6. How do we manage events in the DOM via JavaScript?

   JavaScript uses a callback/observable pattern to manage events firing in the browser. That is, by using functions that we attach to certain types of events; click, keydown, mousemove etc, we can manage user behaviour. These functions are called EventListeners.

7. EXERCISE (list.js)
   Write a short JavaScript program that renders the following shopping list as <li> elements inside an <ol> parent.

   ```
   Apple
   Orange
   Strawberry
   Bananas
   Sausages
   ```

   Answer in the repo.

8. EXERCISE (events.js)
   Write a short JavaScript program to handle a click event on the window and inserts the x and y position of the click as text into the DOM.

   Answer in the repo.

Revision questions

The remaining tutorial questions are primarily intended for revision - either this week or later in session.
Your tutor may still choose to cover some of the questions time permitting.

9. How can we create simple animations in the DOM with JS/CSS?

   Lots of possible answers here, but a very simple way is to lean on the CSS transition property and use our JavaScript to 'toggle' a CSS class which triggers our animation. See the Week 2 lecture example for more on this.