CSE 331
Software Design & Implementation

Winter 2025

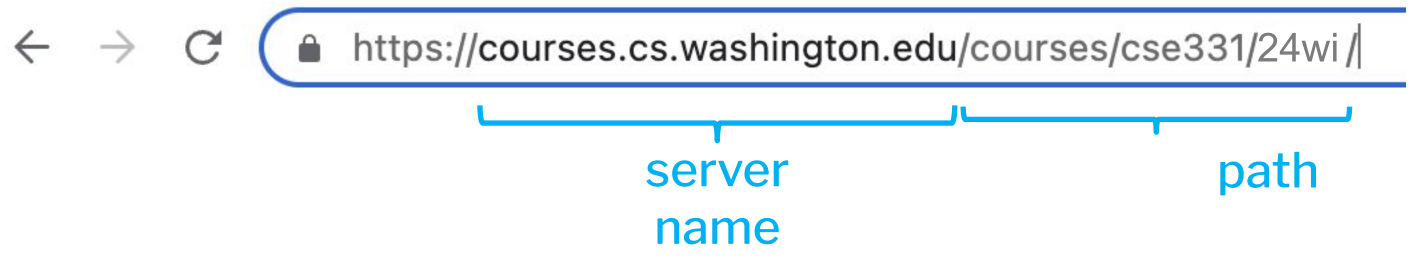
Section 2 – HW2 and Browser Operations

Administrivia

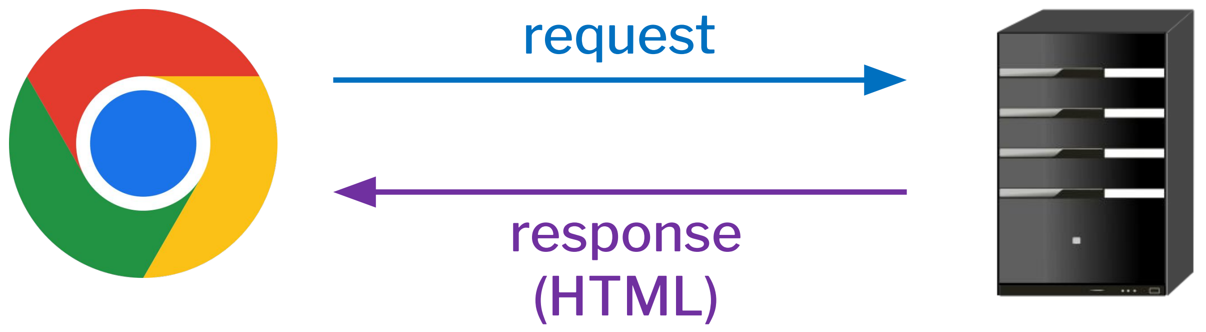
- **Homework 2:**
  - Due Wednesday, Jan 22th @ 11pm
  - Released this evening

Browser Operation (Review)

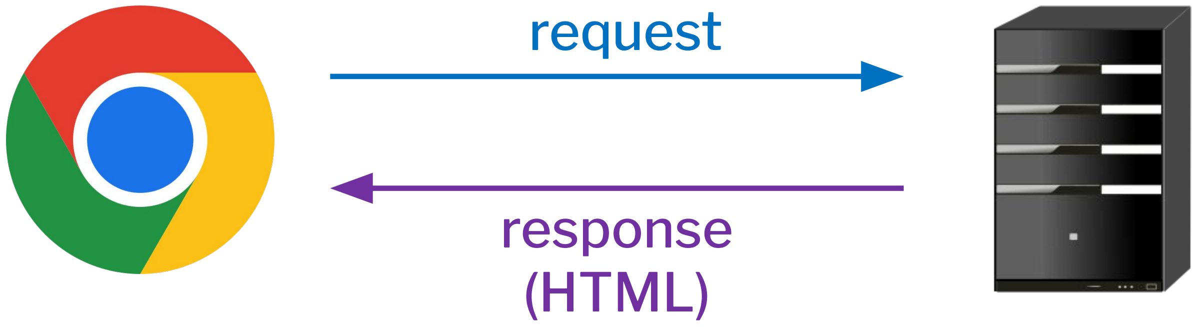
- Browser reads the URL to find the server to talk to



- Contact the given server and request the given path:



Browser Operation (Review)



- HTML page can load JavaScript
    - starter code’s `index.html` includes `index.tsx`

- Each time the page loads, browser executes `index.tsx`

React

- UI library with syntax called JSX:

```
const x = <p>Hi there!</p>;
```

- Breaks interface into components

```
class HiElem extends Component {
  constructor(props) {
   super(props);
  }
  render = () => {
   return <p>Hola, Kevin!</p>;
  };
}
```

- Must have a single root tag (must be a tree)

  e.g., cannot do this: `return <p>one</p><p>two</p>;`

React - Event Handler (Review)

- Passing method to be called as argument:

```
<button onClick={this.doEspClick}>Esp</button>
```

- Creating event handler:

```
doEspClick = (evt) => {
  this.setState({lang: "es"};
};
```

- Must call `setState` to change the state (*do not* directly modify `this.state`)

TypeScript Review

- TypeScript includes declared types for variables

- Compiler checks that the types are valid
  - extremely useful!
  - produces JS just by *removing* the types

- If you leave off the type, TS will try to <u>guess</u> it

Basic Data Types (Review)

`number`

`bigint`

`string`

`boolean`

`null`

`undefined`

`Object` (record types)

`Array` (e.g., `string[]` as in Java)

`unknown` (could be anything)

`any` (turns off type checking — *do not* use!)

literal values (ex “foo” or “foo” | “bar”)

Creating New Types (Review)

- **Union Types** `string | bigint`
  - can be either one of these

- **Record Types** (creator picks the names) **:**
  - anything with *at least* fields “x” and “s” (could have more fields)

    ```
    const p: {x: bigint, s: string} = {x: 1n, s: 'hi'};
    console.log(p.x);  // prints 1n
    ```

- **Tuple Types** (user picks the names)**:** `[bigint, string]`

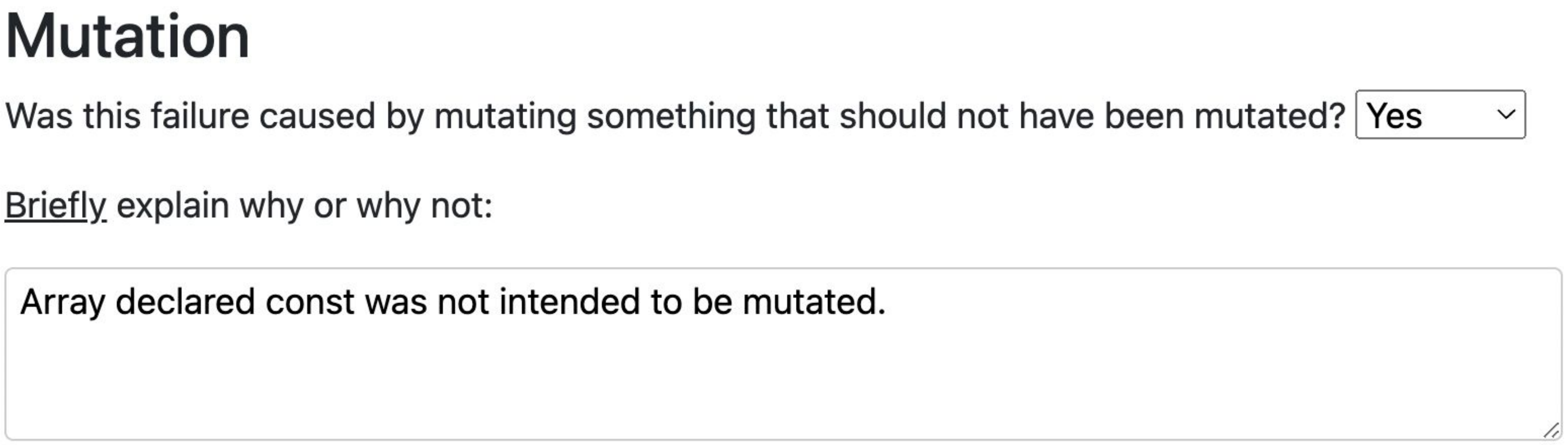
    ```
    const p: [bigint, string] = [1n, ‘hi’];
    ```

  - give names to the parts (“destructuring”) to use them

    ```
    const [x, y] = p;
    console.log(x);  // prints 1n
    ```

Bug Journaling

- https://comfy.cs.washington.edu/service/hw2-practice
- Make sure to save and wait for website to say “Saved” before closing
- Copy entire line of code into bug journal (not just line number)



Mutation

Was this failure caused by mutating something that should not have been mutated? Yes

Briefly explain why or why not:

Array declared const was not intended to be mutated.

Bug Journal Clarifications

- **Experiments:** *Any* steps taken to find the bug
  - be sure to document entire debugging process (can and most likely will include dead end experiments)
  - experiments should typically help inform you about the next experiment until you find the actual bug
- **Mutation:** This means mutating something that *should not have* been mutated (this does not mean mutating something incorrectly)