Debugging

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MSDV Major Studio 2

What counts as a bug?

- Expected behavior not present
- Unexpected behavior present
- Inconsistent behavior
- Errors (e.g., console or network)
- Browser crash (e.g., out of memory)

Why do bugs happen?

- Computers do exactly what we tell them to do, and nothing more
- Sometimes, when we translate human expectations or intentions into computer instructions, the instructions are incomplete or incorrect
- We may not anticipate possible failure modes, like different user setups (browsers, devices, network bandwidth) or different sequences of interactions than we intended

Debugging strategy

- Start with a theory
  - What conditions cause the bug?
  - Can you consistently reproduce it?
  - What code might be causing the buggy behavior?
  - What code are you confident is *not* causing the buggy behavior?
- Gather evidence
  - See what the computer is seeing: use `console.log`, `debugger`, your browser's dev tools, and any framework-specific dev tools extension
  - Isolate the problem: comment out lines of code to narrow down the cause
  - Create a minimal reproducible example in a sandbox environment like CodePen or Repl
- Research
  - Read documentation, StackOverflow, and examples to better understand the code