TypeScript

Rachael McQuater + Drew Colthorp

Atomic Object

```
git pull; npm install
```

Or

```
git clone https://github.com/atomicobject/beer-city-ts-workshop.git`
cd beer-city-ts-workshop; npm install
```

Why TypeScript?

Why ~~TypeScript~~?
EcmaScript?

TypeError: undefined is not an object (evaluating 'undefined.foo')

— Some runtime exception

TypeScript is Modern EcmaScript

- Modules – `import`, `export`, etc.
- Async/await – Syntax for `promise.then(...)`
- Arrow functions – `x => x+1`
- Classes
- `for/of`
- Generator functions
- Decorators
- And more

TypeScript is Modern EcmaScript

with a Type System

```
const x = 2
const y = "bar";
x * y // Error: y is not a number

interface Point {
    x: number,
    y: number
}
const point: Point = { x: 1 } // Error: y is missing on type Point
```

TypeScript is a compiler

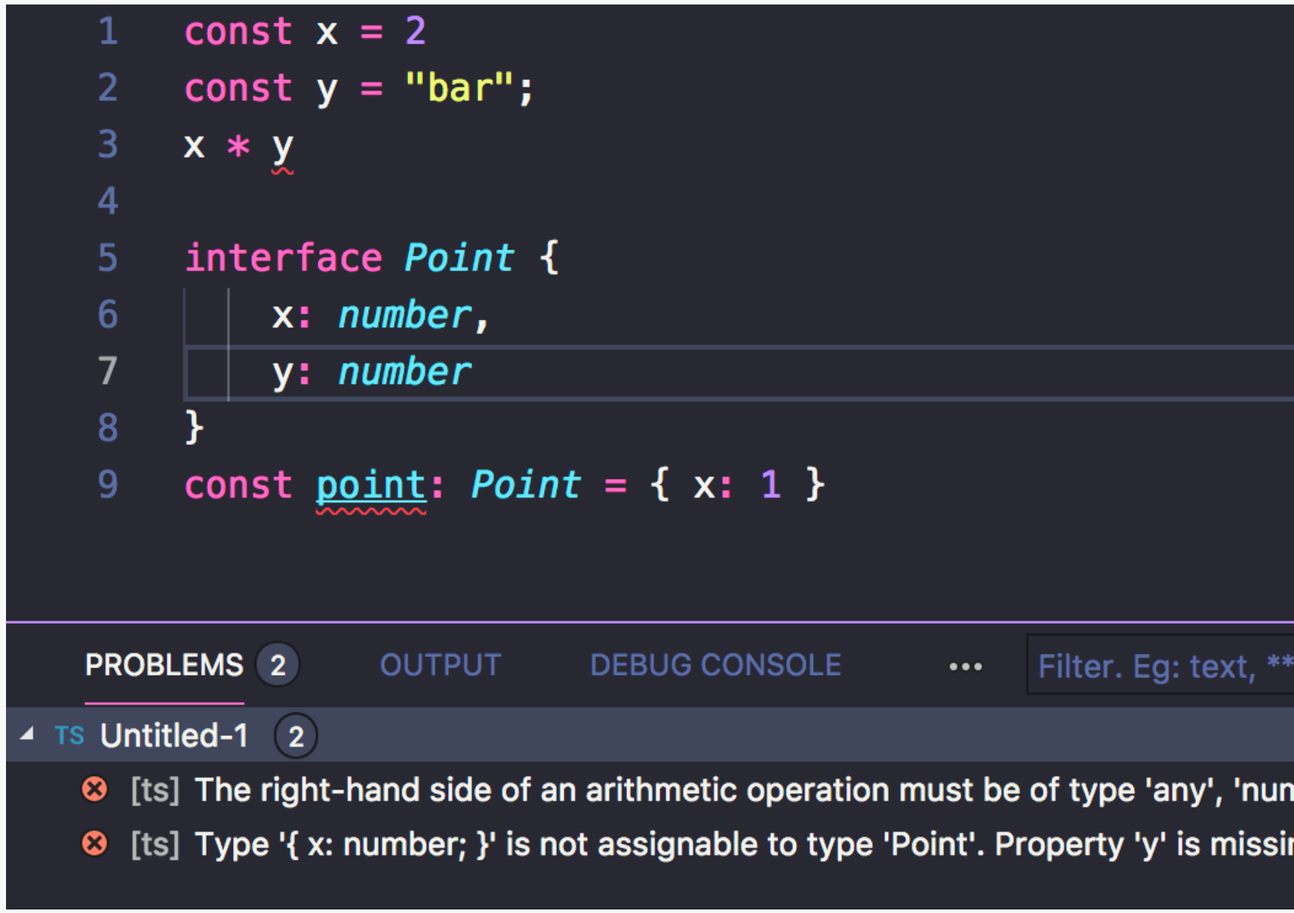
- Like Babel: Compiles TypeScript to modern or older versions of EcmaScript
- You can even target IE 8
- It *also* compiles **EcmaScript** to EcmaScript. You can rely solely on TypeScript without Babel

TypeScript provides IDE infrastructure

Autocomplete, type checking as you type, and refactoring are built into the language server that's officially part of TypeScript.

Many editors provide some level of IDE-like support.

Visual Studio Code's is the best. The editor is written in TypeScript, so you'd hope so.



TypeScript is configurable

- Targets many versions of EcmaScript
- Configurable module behavior to interop with babel or node
- Configurable strictness
- JSX Support
- Can serve many purposes: find obvious errors in mostly-dynamic EcmaScript
- Or strict static typing

Why TypeScript?

- Analysis: navigate and understand foreign code.
- Guides: make the correct path the easiest path while you're maximally immersed in the problem.'
- Safety: make most invalid states unrepresentable.
- Rapid feedback: great editor support means all this happens *in your editor, as you type*.

```
const bookMarkQuery = require("client/graphql/queries/BookmarkList.graphql");

const PureBookmarkList: React.SFC<PureProps> = props => {
  return (
    <div className="bookmark-list">
      <div className="bookmark-list-title">
        <T tag="header.recentlyUsedBookmars" />
      </div>
      {props.bookmarks.length > 0 ? (      You, 6 months ago • Move bookmark butt
        <ul className="bookmark-list-items">
          {props.bookmarks.map(document => (
            <li key={document.id}>
              <a onClick={() => props.goToBookmarkedDocument(document.id)}>
                {document.title}
              </a>
            </li>
          ))}
        </ul>
      ) : (
        <div className="bookmark-list-none">
```

```ts
type BlogId = Flavor<number, "BlogId">;
type PersonId = Flavor<number, "PersonId">;

function findBlog(id: BlogId) { /* ... */ }

const personId: PersonId = 1;
findBlog(personId);
```

Today