



# Session 01 — Dev Environment Architecture

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A visual diagram showing relationships between GitHub Codespaces, OS, runtimes, dev tools, and the browser preview.

## Mermaid diagram (preferred)

```
graph TD
    subgraph Dev ["Developer (Browser or VS Code Desktop)"]
        direction TB
        Browser["Browser Preview"]
    end

    subgraph Codespace ["GitHub Codespace 🐙"]
        direction TB
        subgraph DevContainer [".devcontainer (config)"]
            direction TB
            subgraph OS ["Ubuntu (container OS) 🐧"]
                direction TB
                Node["Node.js (runtime) ⚙️"]
                NPM["npm / package manager 📦"]
            end
            subgraph DevTools ["Dev tools & App"]
                direction TB
                Vite["Vite (dev server) ⚡"]
                HMR["HMR (Hot Module Replacement) 🔁"]
                React["React App (src/*.jsx / components) ⚛️"]
                Files["Project files (src/, public/) 📁"]
            end
        end
        VSCode["VS Code (remote editor) 💻"]
    end

    Dev -->|opens remote session| VSCode
    VSCode -->|remote connection| Codespace
    Dev -->|open preview| Browser

    DevContainer --> OS
    OS --> Node
    Node --> NPM
    NPM --> Vite
    NPM --> React
    Files --> React
    React -->|built / served by| Vite
    Vite --> HMR
    HMR --> Browser
    Vite -->|serves on localhost| Browser

    class Dev,Browser actorClass
    class Node,NPM osClass
    class Vite,HMR,React devtoolsClass
```

```
class VSCode codespaceToolClass
class DevContainer,Files diagNotes

%% Visual style definitions
classDef actorClass fill:#ffffff,stroke:#94a3b8,stroke-width:1px,color:#0f172a;
classDef osClass fill:#ecfdf5,stroke:#34d399,stroke-width:1px,color:#065f46;
classDef devtoolsClass fill:#fff7ed,stroke:#fb923c,stroke-width:1px,color:#92400e;
classDef codespaceToolClass fill:#eef2ff,stroke:#7c3aed,stroke-width:1px,color:#37
classDef diagNotes fill:#f8fafc,stroke:#e2e8f0,stroke-width:1px,color:#0f172a;

%% Optional styling for clarity (some renderers support 'style' for nodes)
style Codespace fill:#f0f9ff,stroke:#60a5fa,stroke-width:2px
```

## Legend / Notes

- Codespace = remote container running Ubuntu with your project's config (.devcontainer).
- Node + npm = runtime + package manager used to install/run Vite and the React app.
- Vite = dev server with HMR; serves the app on localhost to the Browser preview.
- VS Code (remote) = editor connected to the Codespace for live editing.

## ASCII fallback (for plaintext renderers)

