



## 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\n(config)"]
            direction TB
            subgraph OS ["Ubuntu (container OS) 🐧"]
                direction TB
                Node["Node.js\n(runtime) ⚙️"]
                NPM["npm / package manager 📦"]
            end
        end
        subgraph DevTools ["Dev tools & App"]
            direction TB
            Vite["Vite\n(dev server) ⚡"]
            HMR["HMR\n(Hot Module Replacement) 🔁"]
            React["React App\n(src/*.jsx / components) ⚛️"]
            Files["Project files\n(src/, public/) 📁"]
        end
        VSCode["VS Code\n(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:#3730a3;
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)

