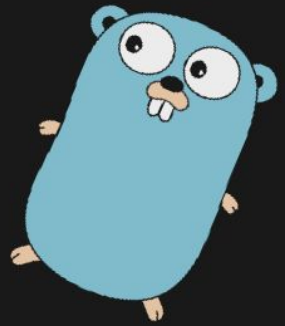
Day 0: Productive Developer Environments

Glenn Tatum



About Me

glenn@rit

Hometown: New York City
Major: Computer Science
Interests: Rock Climbing, Ice Skating, Ultimate Frisbee

Prev Experience:

FTC 3922 - Lead Software Engineer
- Internal Control Systems

Billion Oyster Project - Data Scientist
- Field Science Data Pipelines & Analytics
- Oyster Research Station Ambassador

Workshop Goals & Objectives

- Have high agility in producing quality applications
- Understand the tools within the process
- Become well-informed within modern computing

Lets Get Started...

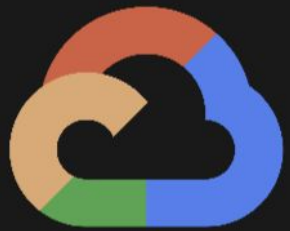
A Developers Toolkit

Operating System

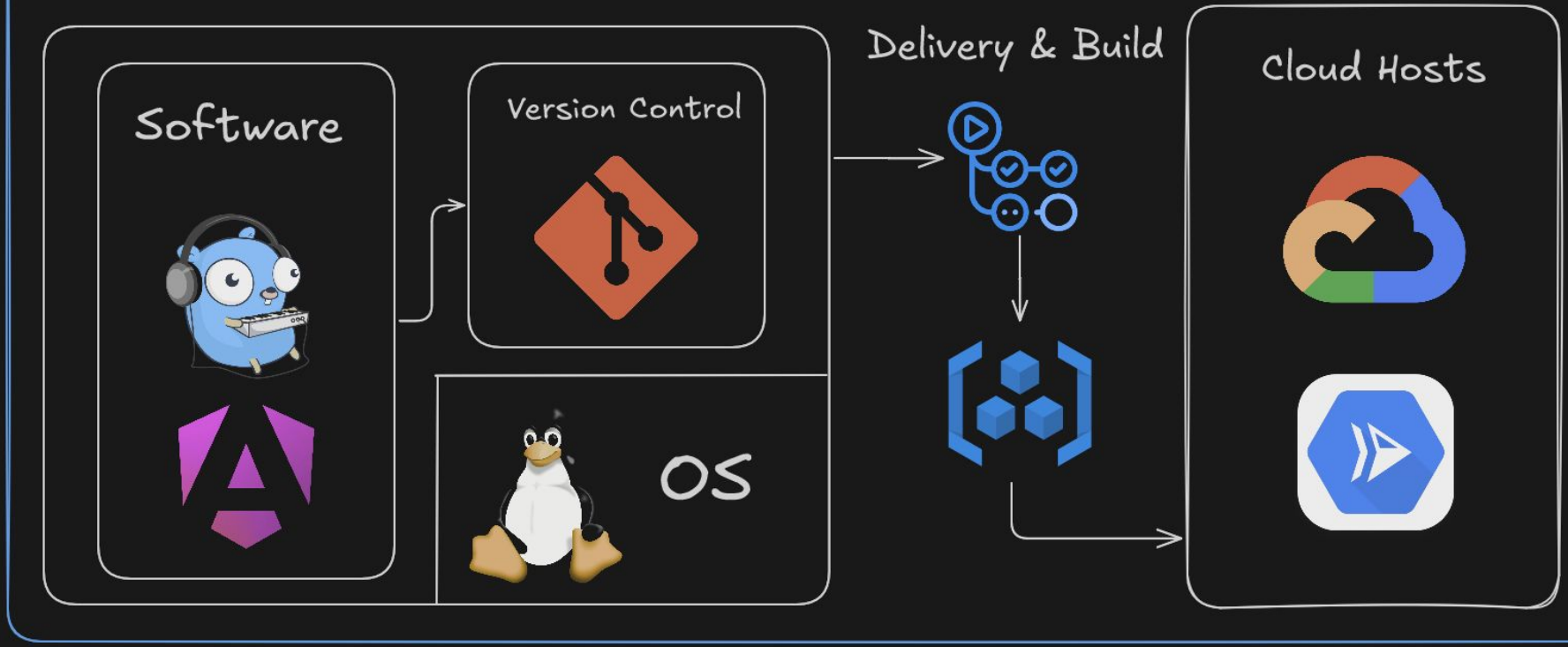
Software

Automation

Cloud



Architectural Overview



The Operating System

- Package Mangement
- Server/Dev Hosting
- Native Developer Tooling
  - Shell

The Software

- Programming Lanuages
- Frameworks
  - Frontend
  - Backend
- Databases

Deployment & Automation

- Git
- Containers
- Build Pipelines

Cloud

- Automated Infrastructure
- Compute Instances
- Other Cool Services

"The Cloud is just someone else's Computer" - Kelsey Hightower

Setting up our System

1. Enable Virtualization (Intel VT-X)
2. Microsoft Store -> "Ubuntu"
3. Docker Desktop
4. Launch "Ubuntu"

1. Docker Desktop

Creating Our Development Environment

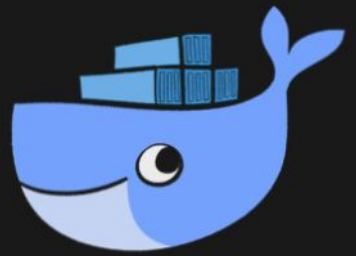
```
curl -o- https://raw.githubusercontent.com/nvm-sh/nvm/v0.40.1/install.sh | bash
```

https://github.com/nvm-sh

```
nvm install 20.18.0

git clone https://github.com/GlennTatum/gdg.git
cd gdg/base

npm install -g @ionic/cli
npm install -g @angular/cli
npm install

docker compose up
```

What just happend

Whats in Our Toolkit?



Too many files...

```
.
├── Dockerfile
├── angular.json
├── capacitor.config.ts
├── compose.yml
├── ionic.config.json
├── karma.conf.js
├── node_modules
├── package-lock.json
├── package.json
├── server
├── src
├── tsconfig.app.json
├── tsconfig.json
└── tsconfig.spec.json
```

```
.
├── app
│   ├── app.component.html
│   ├── app.component.scss
│   ├── app.component.spec.ts
│   ├── app.component.ts
│   ├── app.routes.ts
│   └── home
├── assets
│   ├── icon
│   └── shapes.svg
├── environments
│   ├── environment.prod.ts
│   └── environment.ts
├── global.scss
├── index.html
├── main.ts
├── polyfills.ts
├── test.ts
├── theme
│   └── variables.scss
└── zone-flags.ts
```

```
.
├── Dockerfile
├── app.go
├── bin
│   └── air
├── cmd
│   └── main.go
├── go.mod
├── go.sum
└── main
```

Configuration & Build

```
.
├── Dockerfile
├── angular.json
├── capacitor.config.ts
├── compose.yml
├── ionic.config.json
├── karma.conf.js
├── node_modules
├── package-lock.json
├── package.json
├── server
├── src
├── tsconfig.app.json
├── tsconfig.json
└── tsconfig.spec.json
```

Dockerfile ← Docker Manifest for Ionic

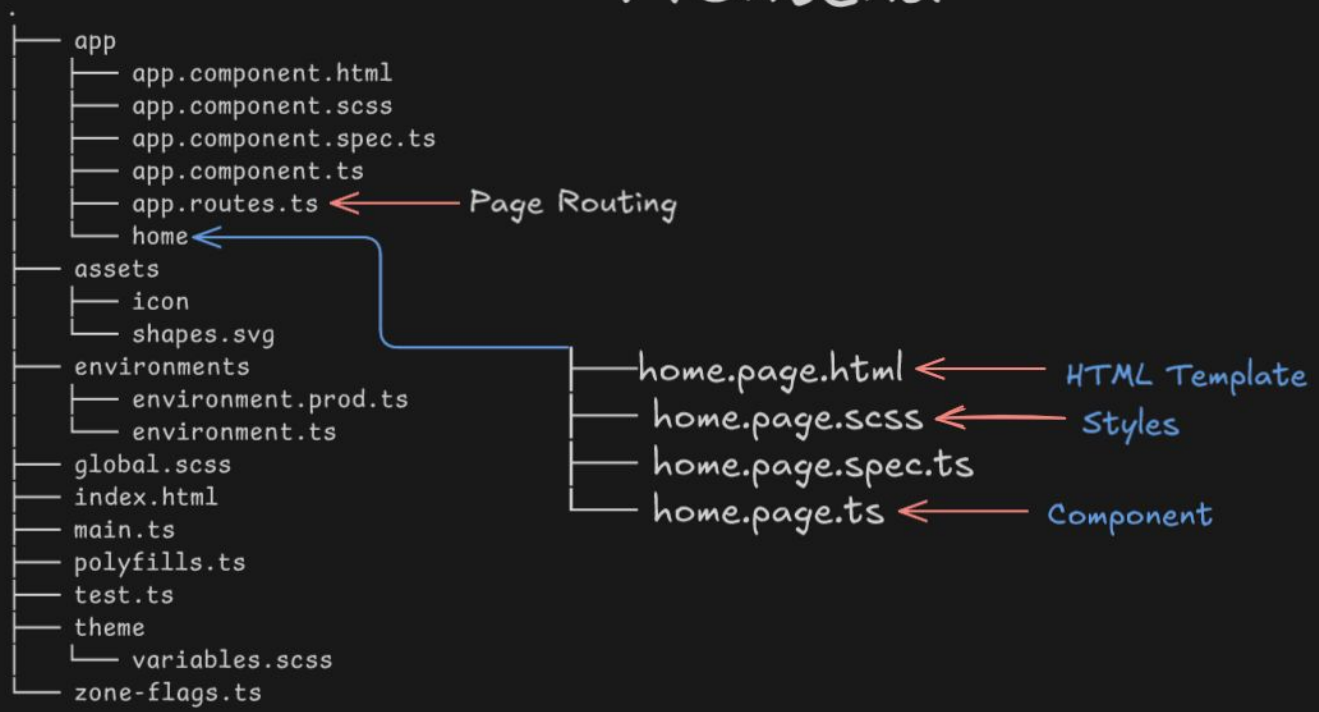
compose.yml ← Docker Compose

node_modules ← NPM Dependencies

package.json ← NPM Dependencies

tsconfig.json ← Typescript Compiler Options (Warnings/hints)

Frontend


.
app
app.component.html
app.component.scss
app.component.spec.ts
app.component.ts
app.routes.ts
Page Routing
home
assets
icon
shapes.svg
environments
environment.prod.ts
environment.ts
global.scss
index.html
main.ts
polyfills.ts
test.ts
theme
variables.scss
zone-flags.ts
home.page.html
HTML Template
home.page.scss
Styles
home.page.spec.ts
home.page.ts
Component

Backend

```
.
├── Dockerfile      <-- Docker Manifest for API Server
├── app.go          <-- API Services
├── bin
│   └── air         <-- Hot-Reload Service
├── cmd
│   └── main.go     <-- Entry Point
├── go.mod          <-- Go Dependincies
├── go.sum
└── main            <-- Main Binary (Compiled)
```

Lets Explore!

Angular: Components

```
@Component({
  selector: 'app-dynamicbutton',
  templateUrl: './dynamicbutton.component.html',
  styleUrls: ['./dynamicbutton.component.scss'],
  standalone: true,
  imports: [MatButton]
})
export class DynamicbuttonComponent  implements OnInit
```

Component Tag

Template

Easy Imports

CSS

External Components

Events

```
< (click)="function()">
```

Propogate browser API events to functions inside of a component

https://developer.mozilla.org/en-US/docs/Web/API/Element/click_event

Data Binding

```
< [disabled]="isdisabled">
```

Bind variables to html attributes

HTML Templates

{{ variable }}

Variable -> Template (View)

HTML Templates

{{ variable }}

Variable -> Template (View)

Conditionals

```
@if (condition) {
    ...
} @else {
    ...
}
```

Conditionals

```
@if (condition) {
    ...
} @else {
    ...
}
```

for of (not for each)

```
@for (item of items; track item.id) {
    {{ item }}
}
```