Understanding and Configuring Dependency Injection

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Overview

What is dependency injection?

Providers

Injectors

Deciding where to provide services

Creating a Dependency

```
export class DashboardComponent {

  dataService: DataService;

  constructor() {

    this.dataService = new DataService();

  }

}
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Why Is Dependency Injection Important?

Loosely coupled code

More flexible code

Easier to test

Providers

A *provider* is a recipe for delivering a service associated with a *token*.

Angular Documentation

Define dependencies with providers

https://angular.io/guide/dependency-injection-in-action#define-dependencies-with-providers

Provider Tokens

```
@NgModule({
  declarations: [AppComponent,DashboardComponent],
  bootstrap: [AppComponent],
  providers: [DataService]
})
export class AppModule { }
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Provider Recipes

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    DataService,
    { provide: LoggerService, useClass: LoggerService }
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export class AppModule { }
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Provider Recipes

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Recipe

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Demo

Multiple ways to provide services

Injectors

The Roles of Injectors

- Deliver provided services when they're requested via constructor injection
- Maintain a single instance of each service provided
- Determine what to inject based on emitted metadata
- Delegate injection to parent injectors if necessary

```
{
  "compilerOptions": {
    "outDir": "./dist/out-tsc",
    "emitDecoratorMetadata": true,
    "experimentalDecorators": true,
    "target": "es5"
  }
}
```

The Importance of Metadata

Provides information about parameters to injectors

Enabled with the “emitDecoratorMetadata” compiler option

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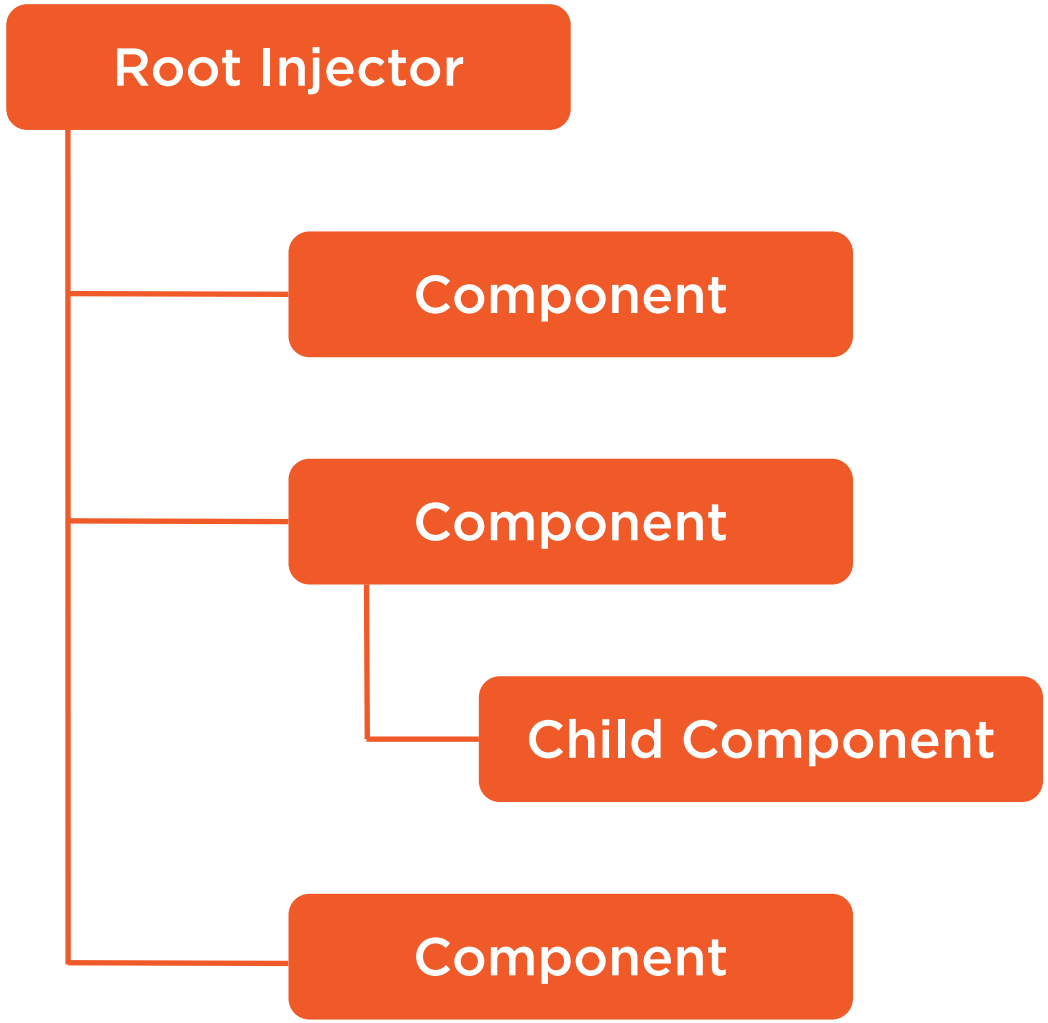
Enabled with the “emitDecoratorMetadata” compiler option

@Injectable() and @Component() decorator added to output metadata

Hierarchical Injectors



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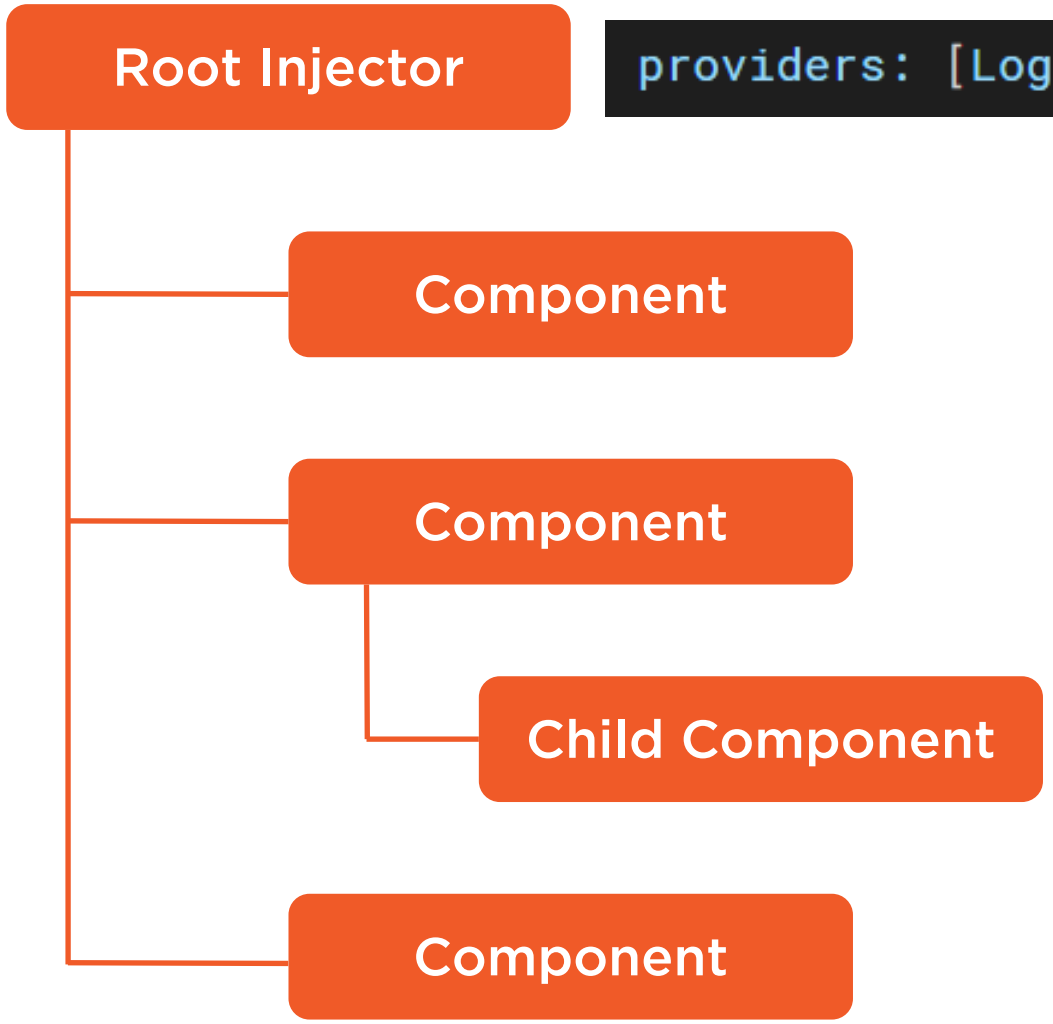

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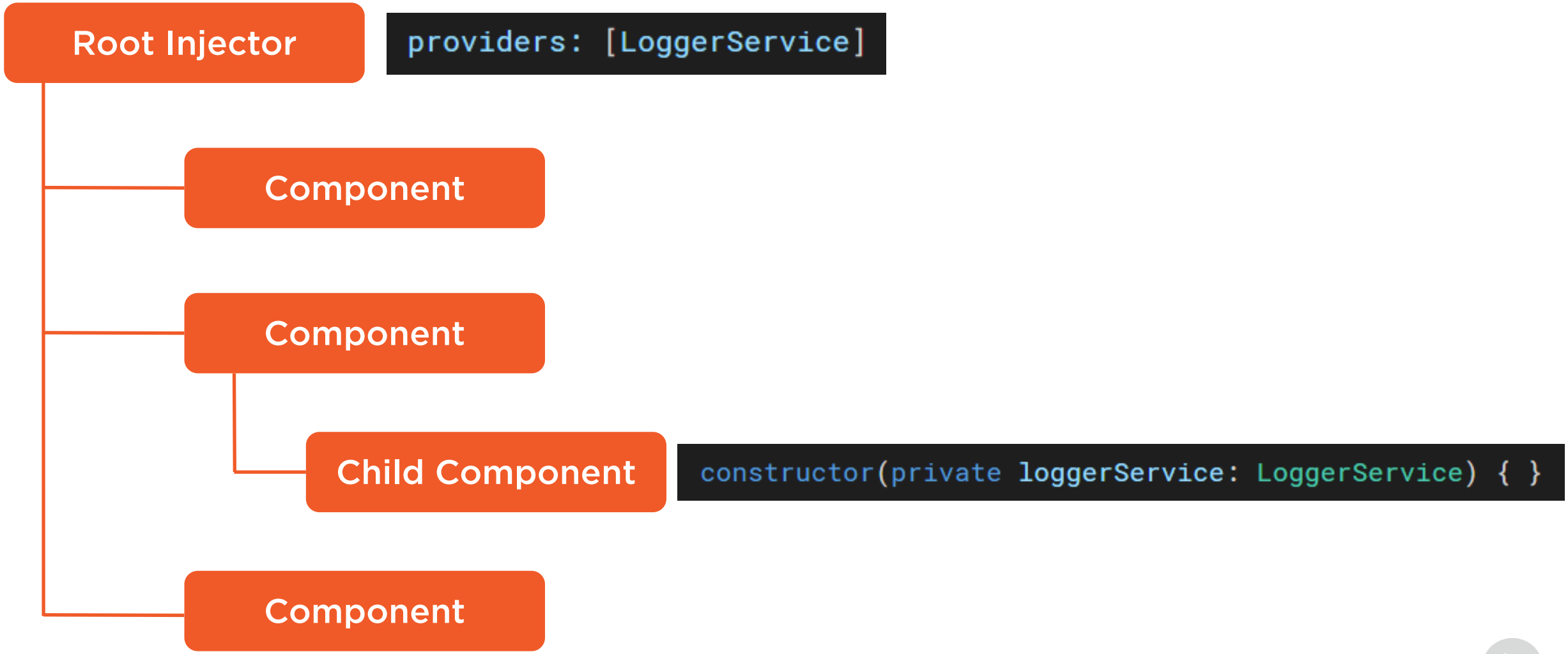

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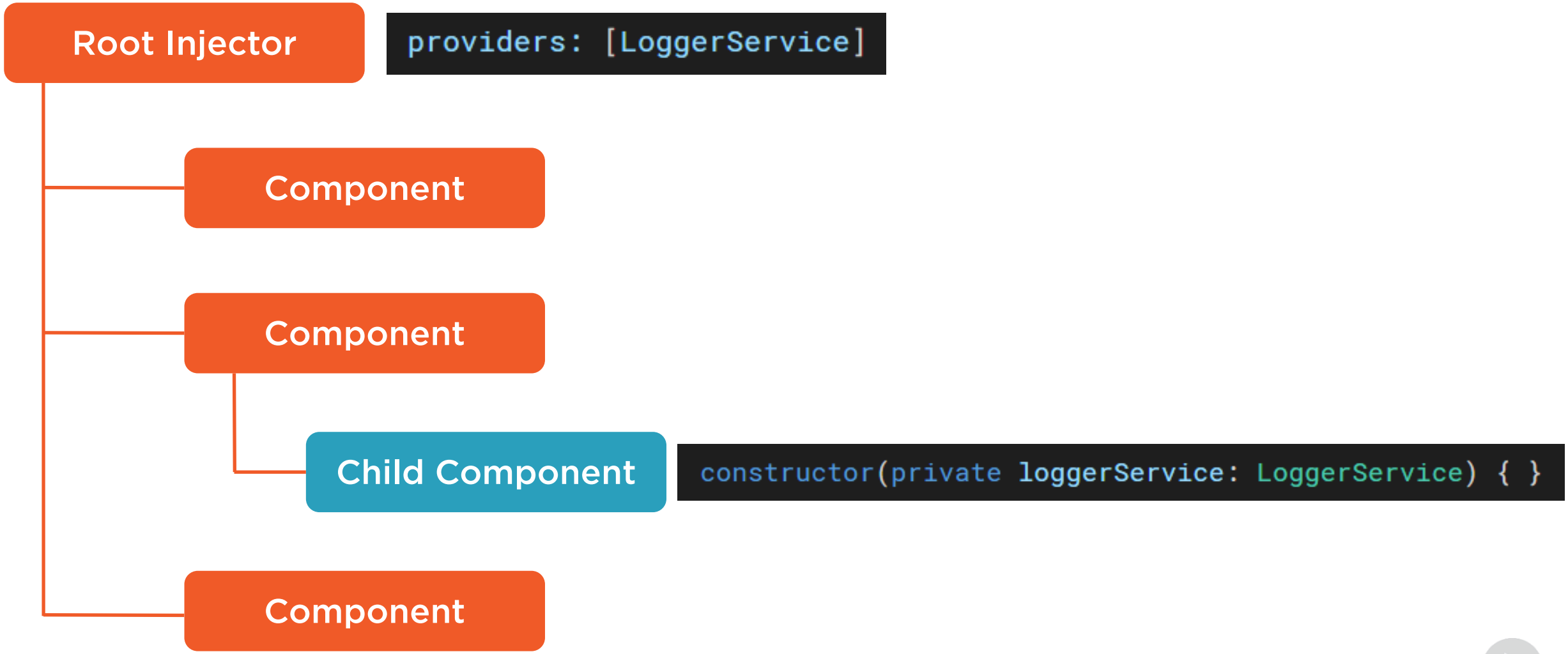

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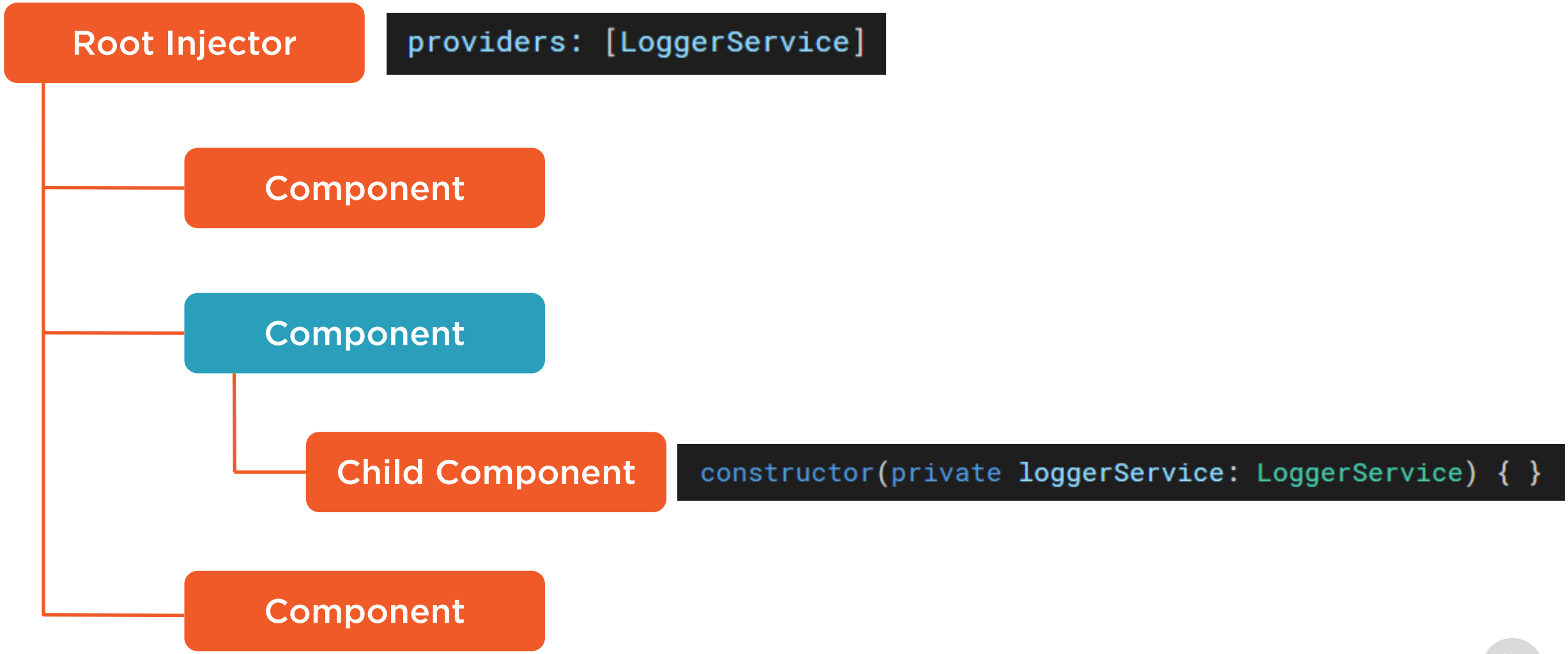

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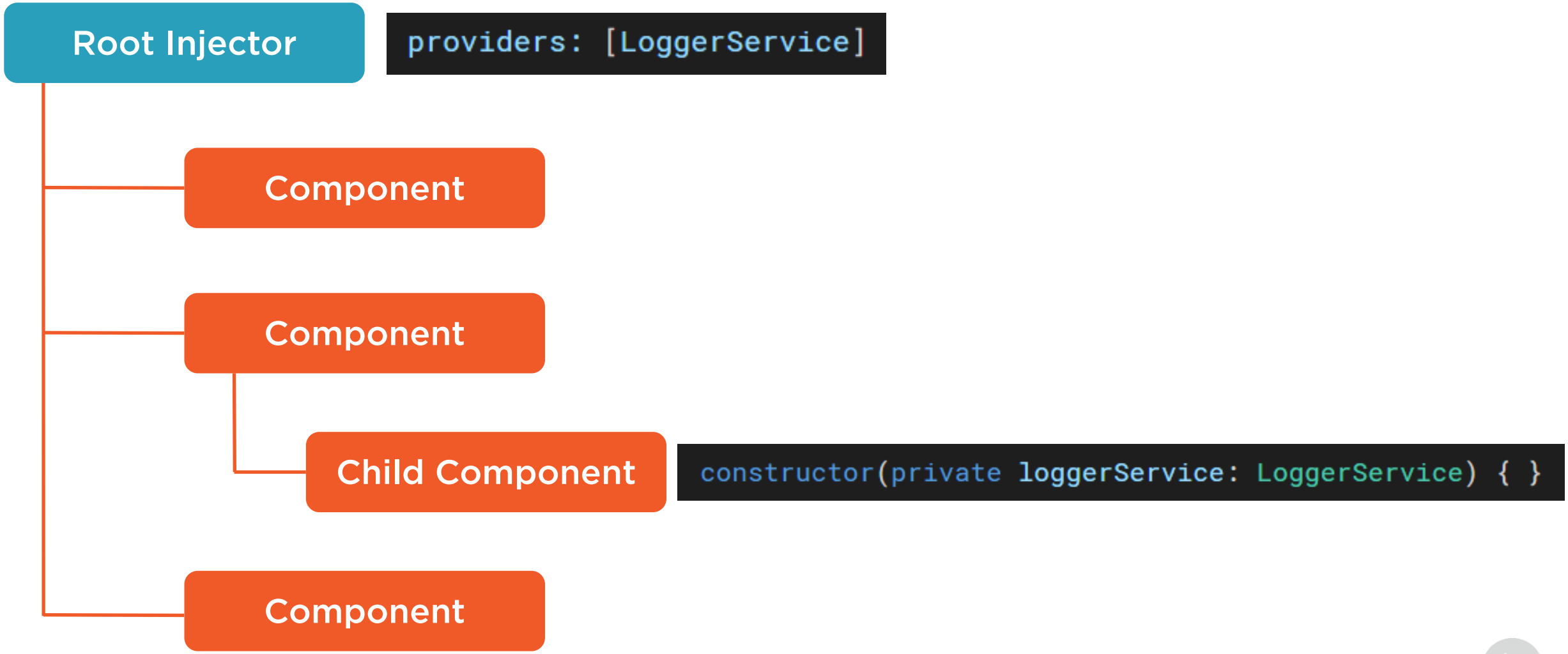

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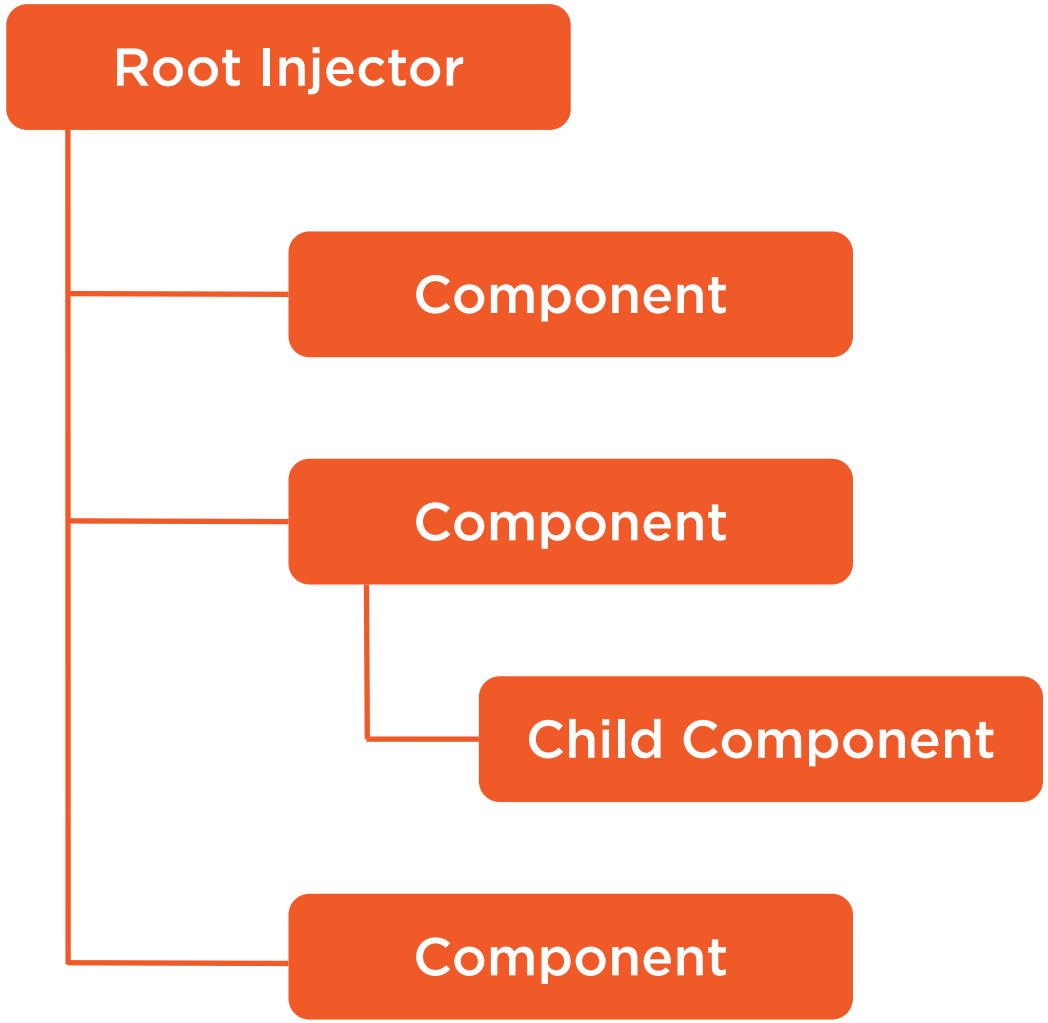

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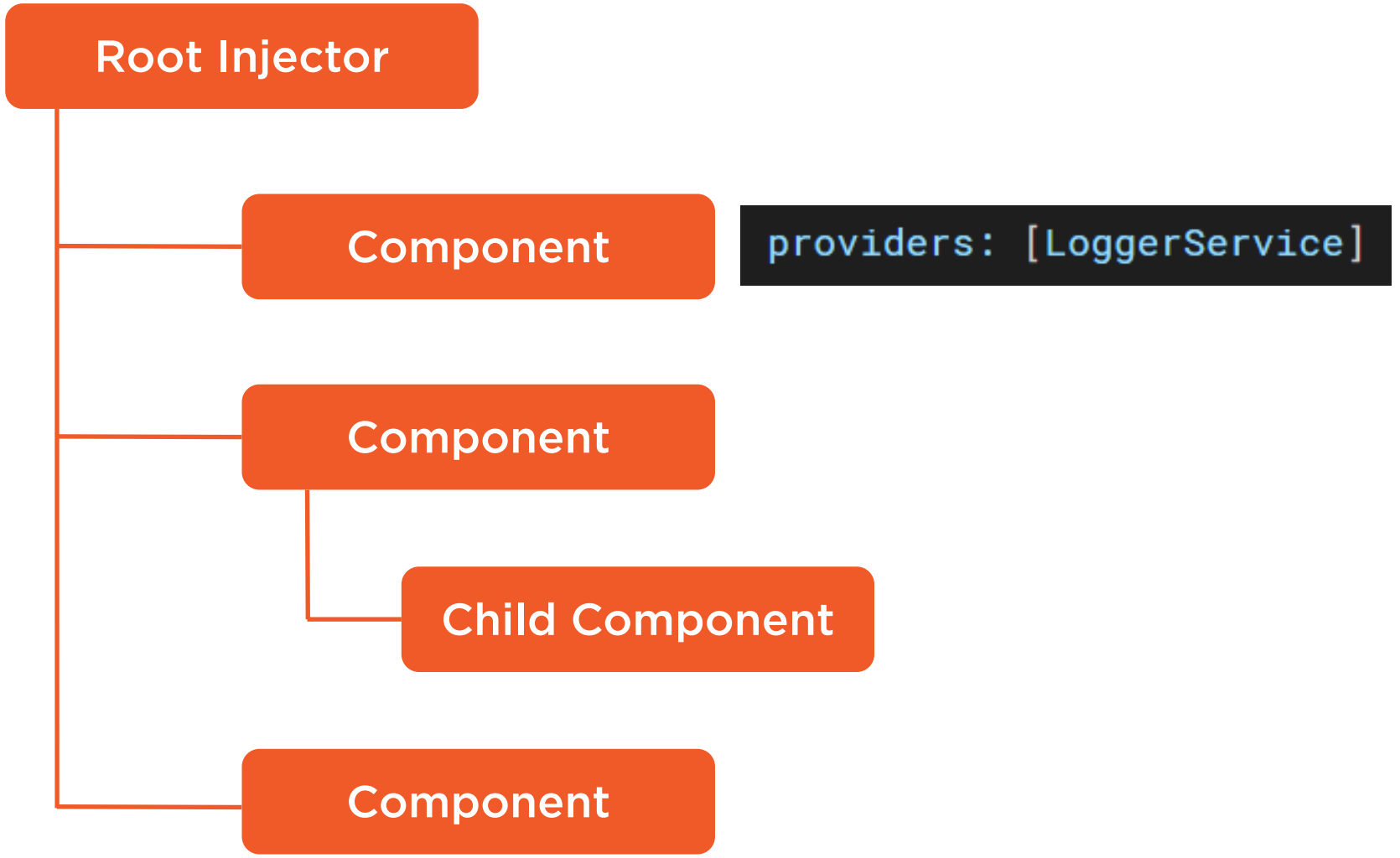

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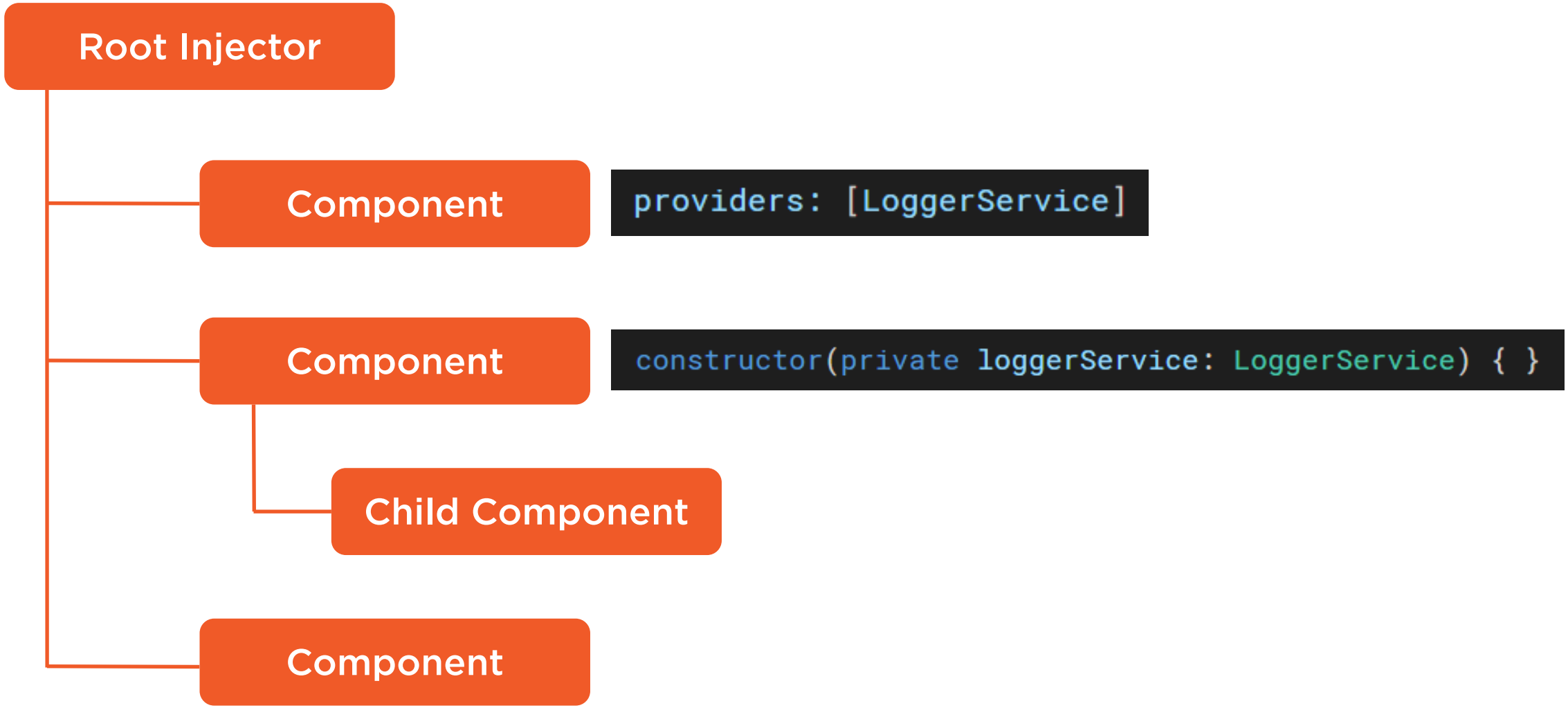

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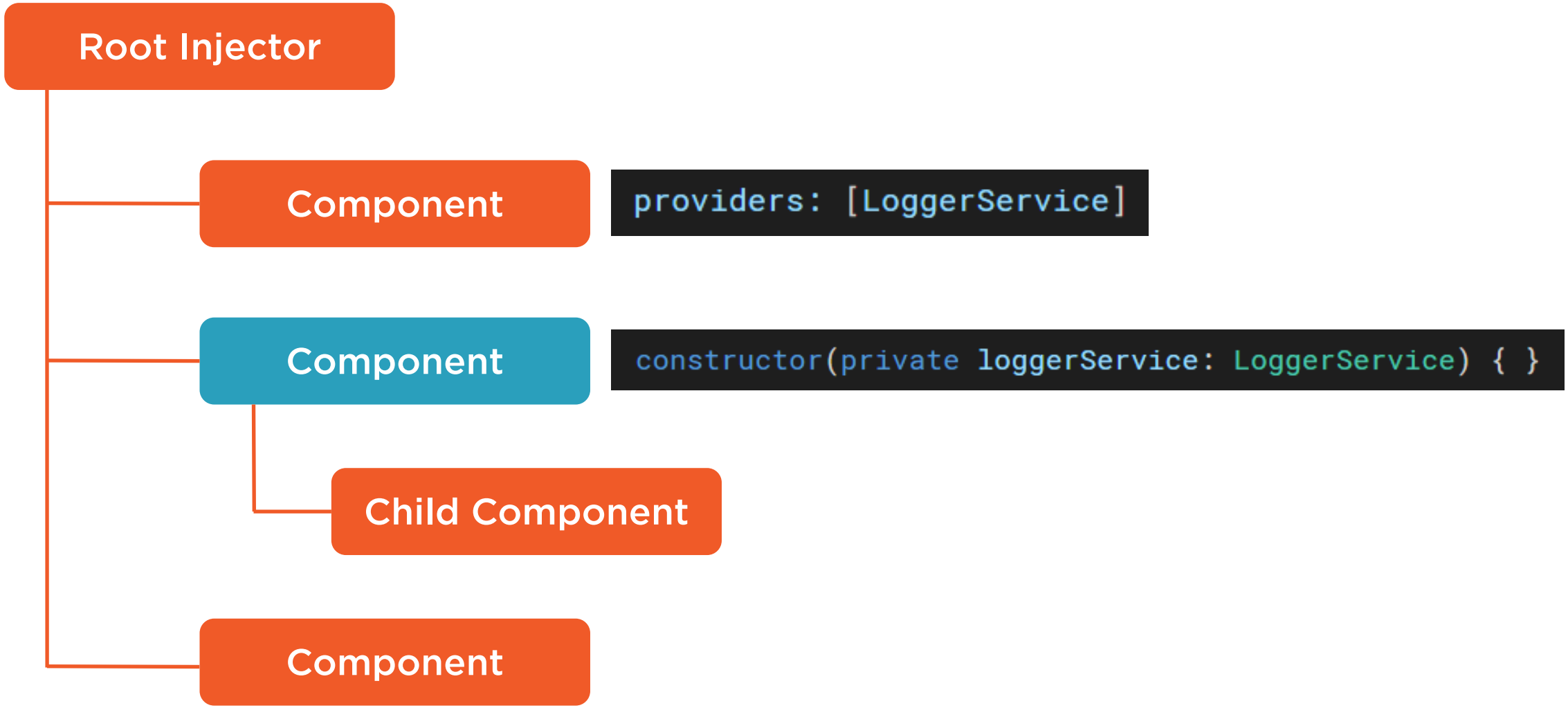

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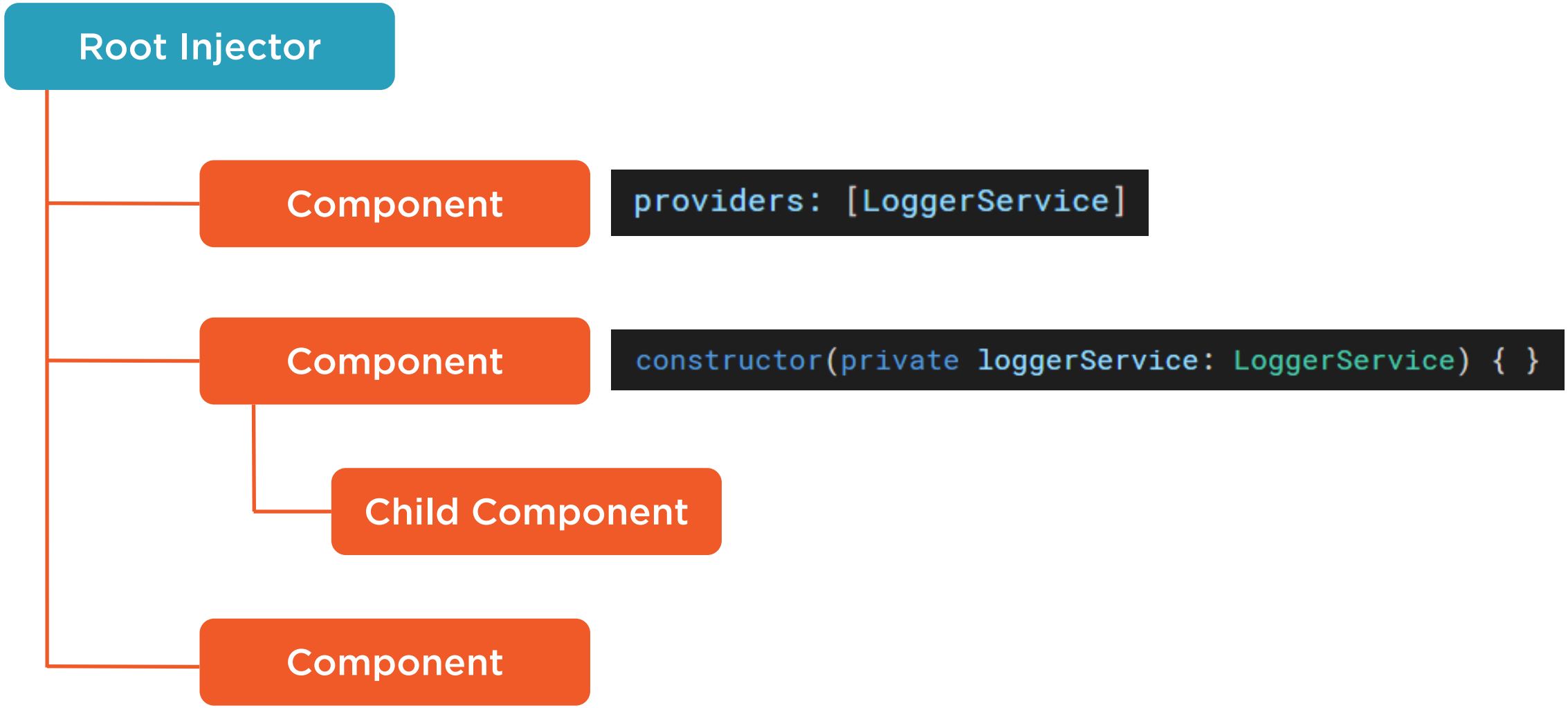

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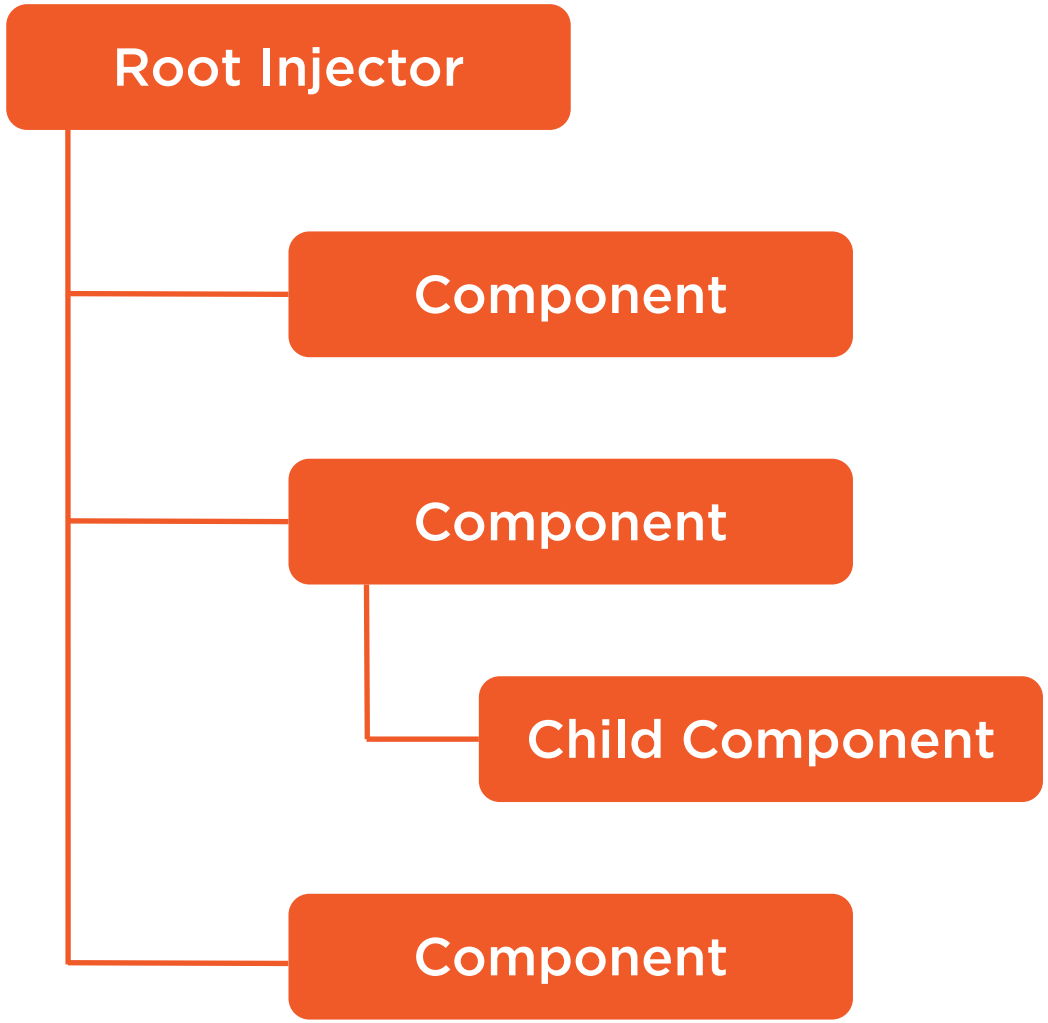

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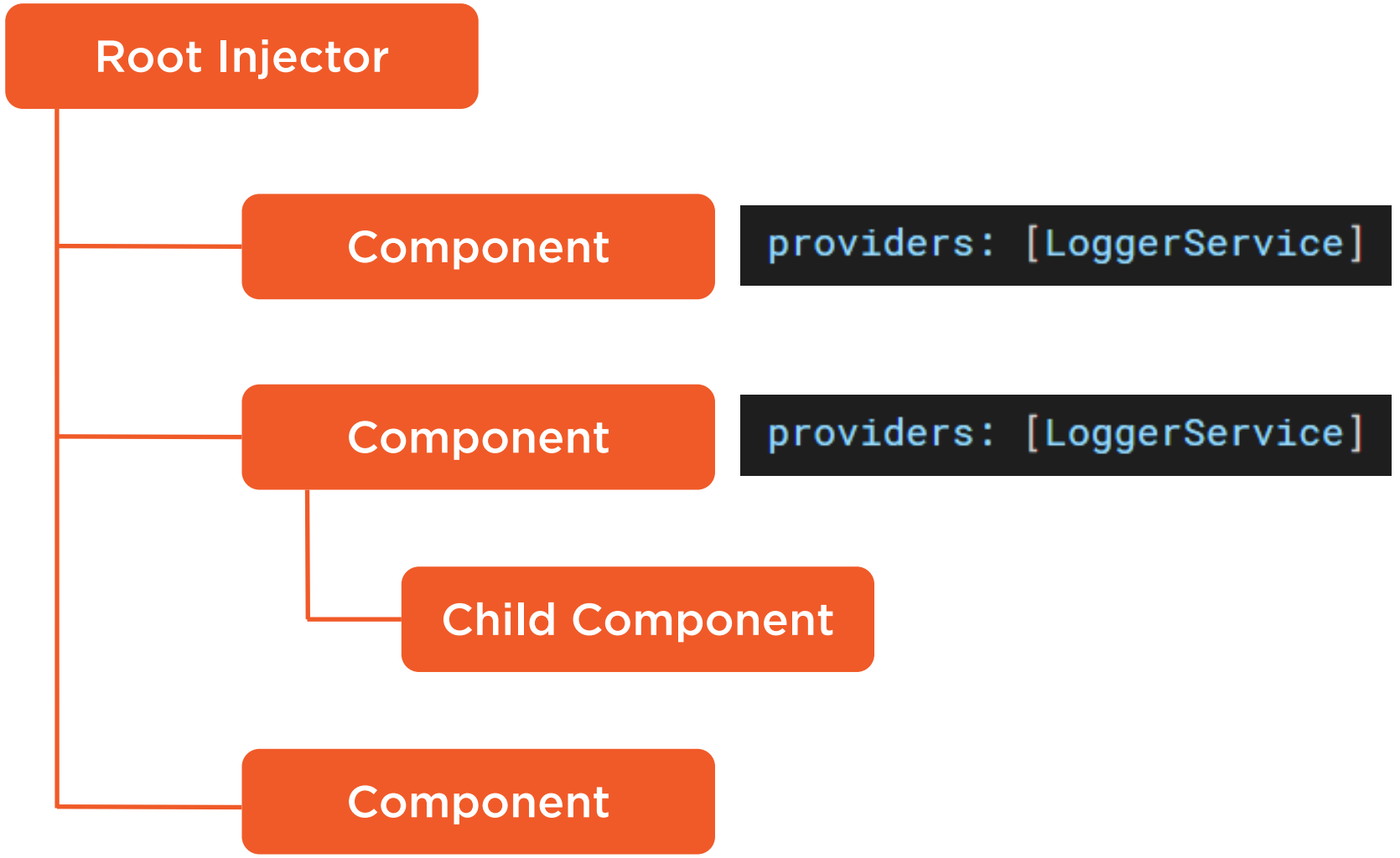

Demo

Hierarchical injectors

Deciding Where to Provide Services

- Provide in an NgModule if needed everywhere
- Provide at the root AppModule rather the root AppComponent
- Provide component-specific services directly to component
- Consider creating a core module

Demo

Providing feature services

Demo

Creating a core module

Summary

- Providers
- Injectors
- Recipes for providers
- Injector hierarchy
- Deliver the right service at the right time