The QuoteServices App Case Study: Eureka Microservice Structure & Functionality

Douglas C. Schmidt
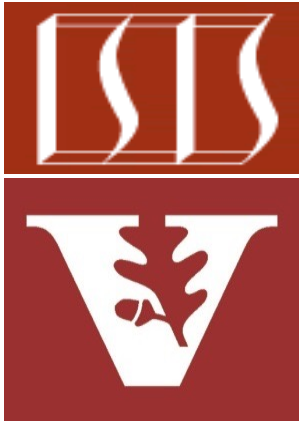### d.schmidt@vanderbilt.edu
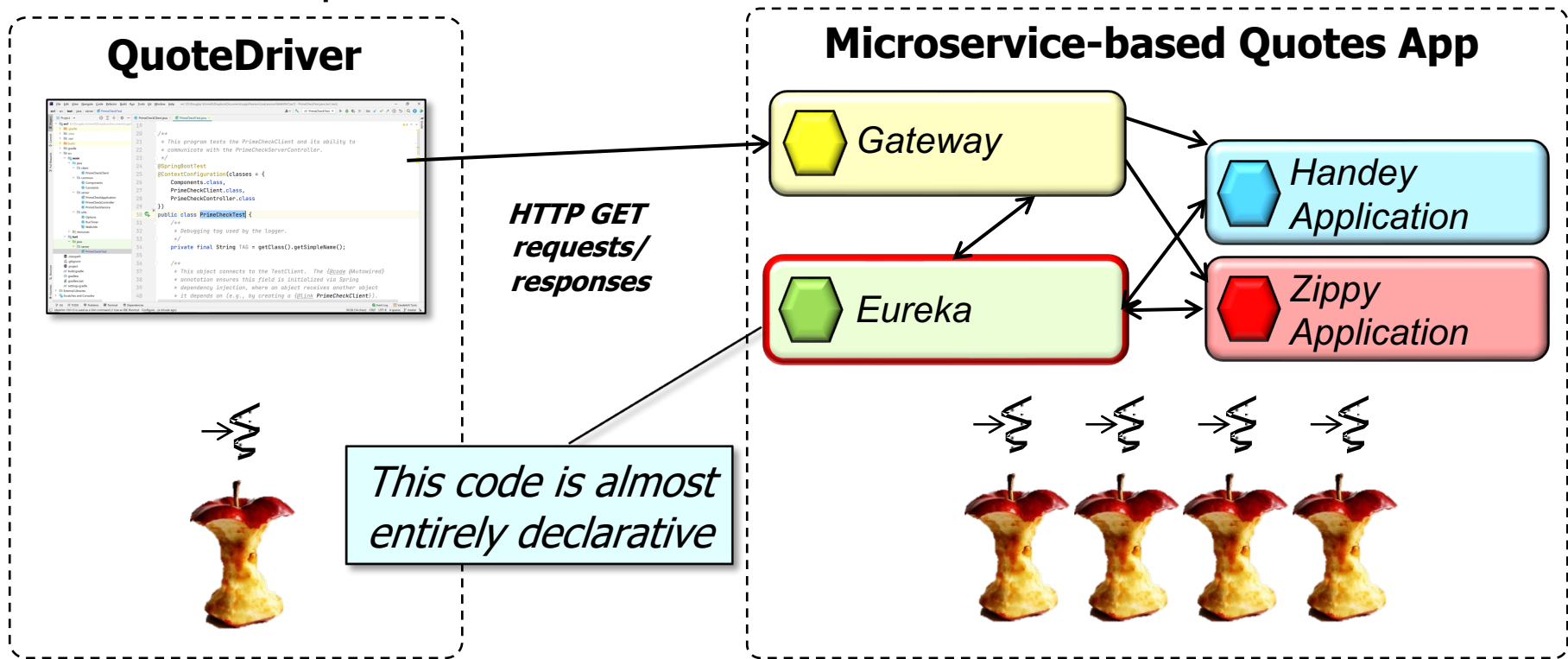### www.dre.vanderbilt.edu/~schmidt

Professor of Computer Science

Institute for Software Integrated Systems

Vanderbilt University Nashville, Tennessee, USA

Learning Objectives in this Part of the Lesson

- Understand the structure & functionality of the Eureka discovery service & its microservice implementation

QuoteDriver

HTTP GET requests/ responses

This code is almost entirely declarative

Microservice-based Quotes App

Gateway

Eureka

Handey Application

Zippy Application

See github.com/douglascraigschmidt/LiveLessons/tree/master/WebMVC/ex4/eureka

Overview of the Eureka Discovery Service

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Overview of the Eureka Discovery Service

- Eureka is a discovery service

  - It enables an API gateway to find & communicate with back -end microservices

1. Register

2. Lookup / Query

3. Connect

Euerka Server

Micoservices
(Eureka Clients)
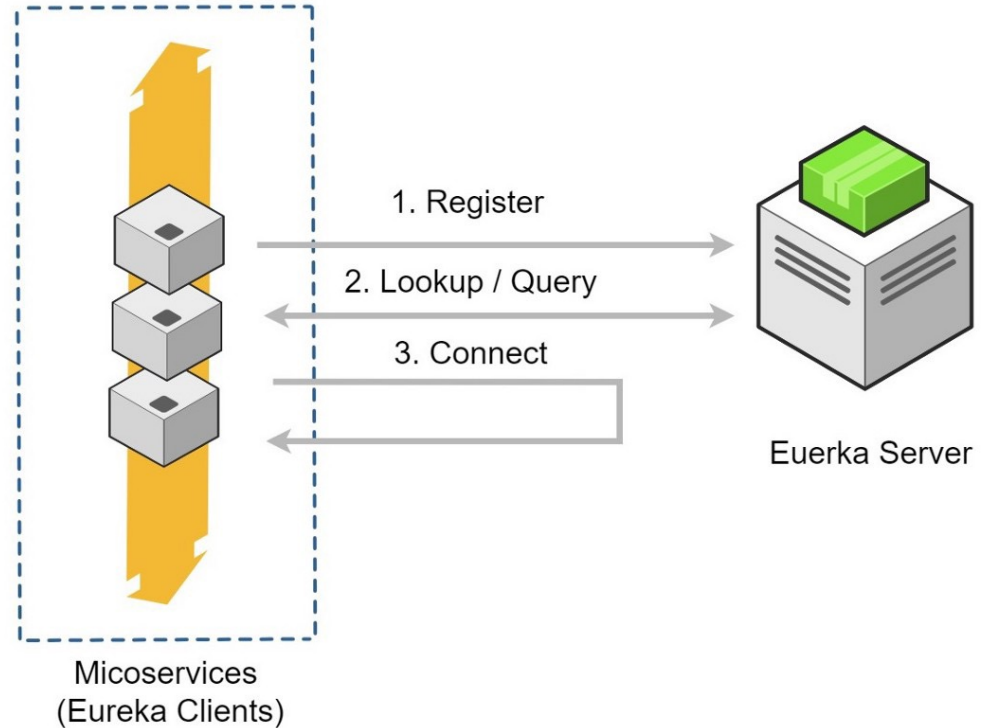
See www.baeldung.com/spring-cloud-netflix-eureka

Overview of the Eureka Discovery Service

- Eureka is a discovery service

  - It enables an API gateway to find & communicate with back-end microservices

    - *Without* hard-coding ports & hostnames

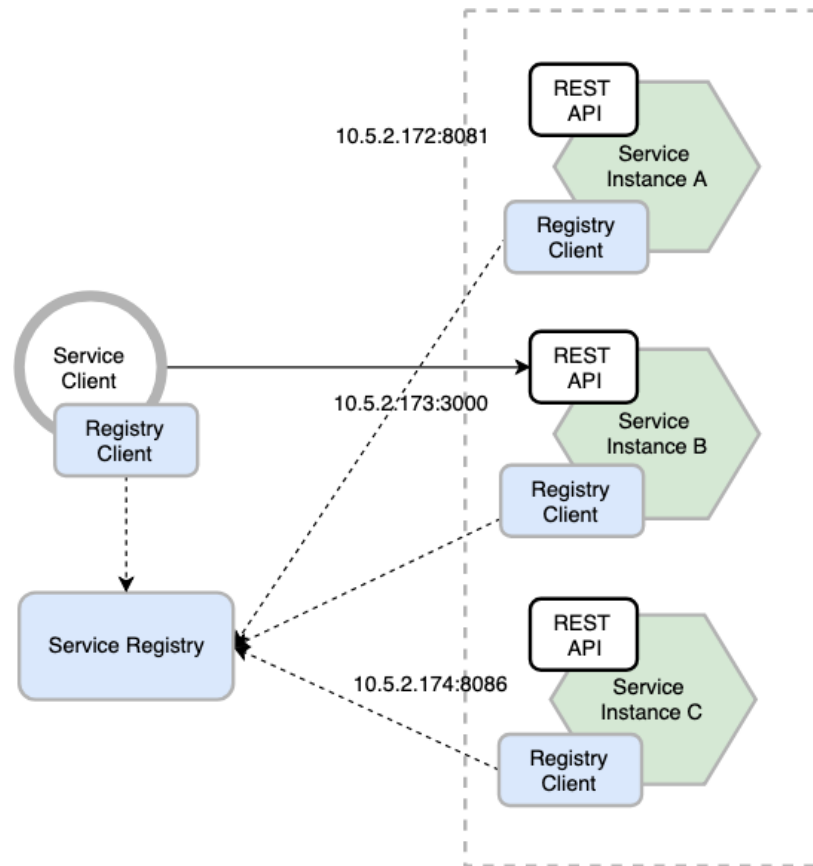See www.dev-garden.org/2011/08/20/six-things-you-should-never-hardcode

- A Eureka microservice must start prior to microservices that use it

Microservice-based Quotes App
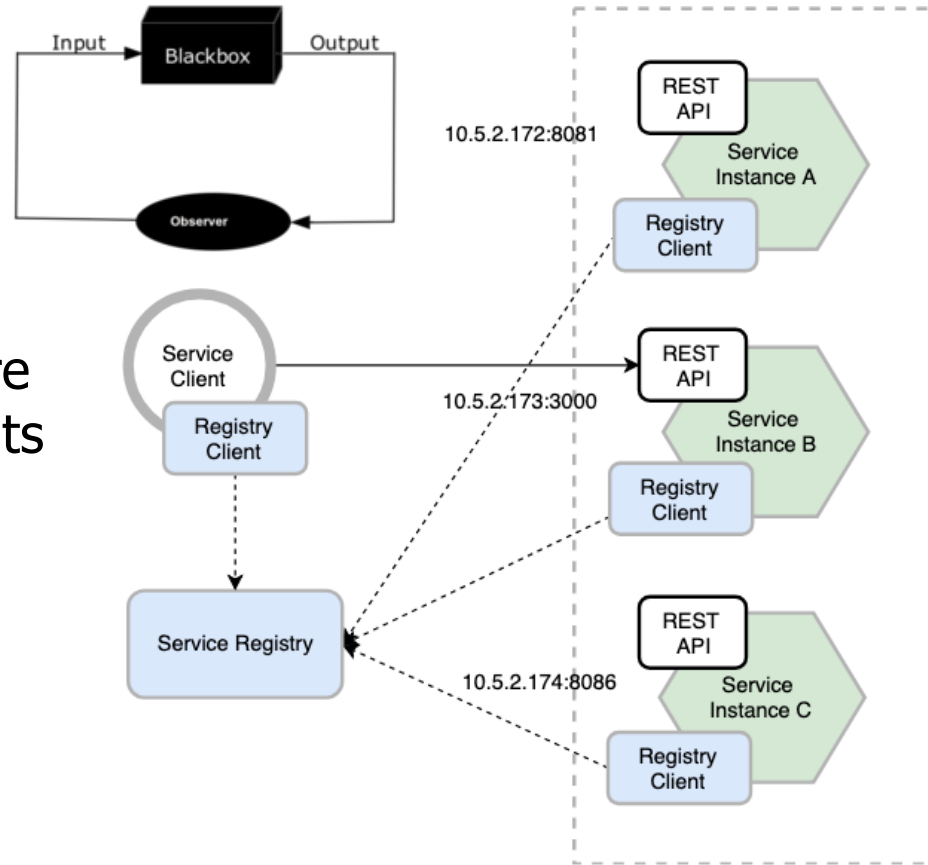
Overview of the Eureka Discovery Service

- A Eureka microservice must start prior to microservices that use it
  - It implements a "server-side" discovery pattern

See microservices.io/patterns/server-side-discovery.html

Overview of the Eureka Discovery Service

- A Eureka microservice must start prior to microservices that use it

  - It implements a "server-side" discovery pattern

    - i.e., clients need not be aware how back-end microservices are deployed in server environments
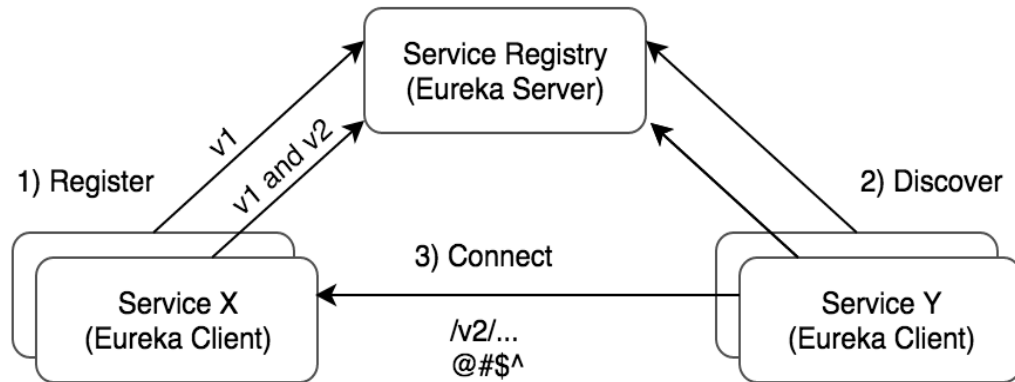

See microservices.io/patterns/server-side-discovery.html

Structure & Functionality of the Eureka Microservice

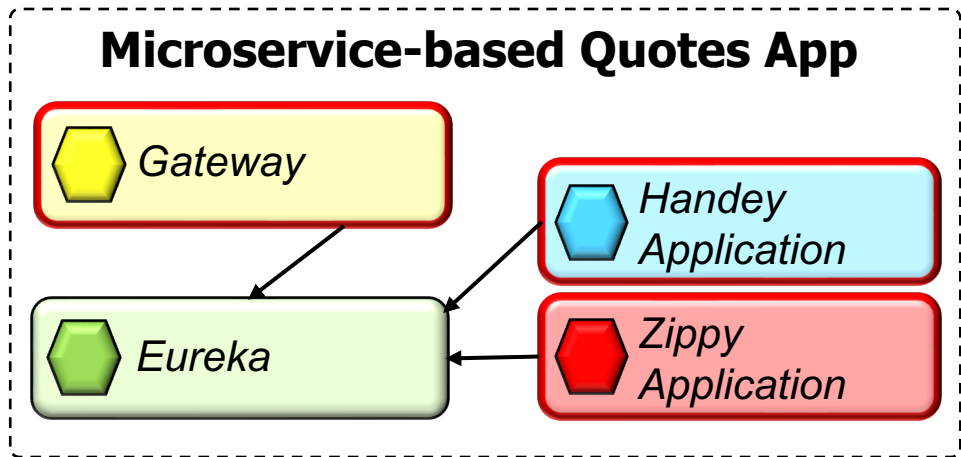# Structure & Functionality of the Eureka Microservice

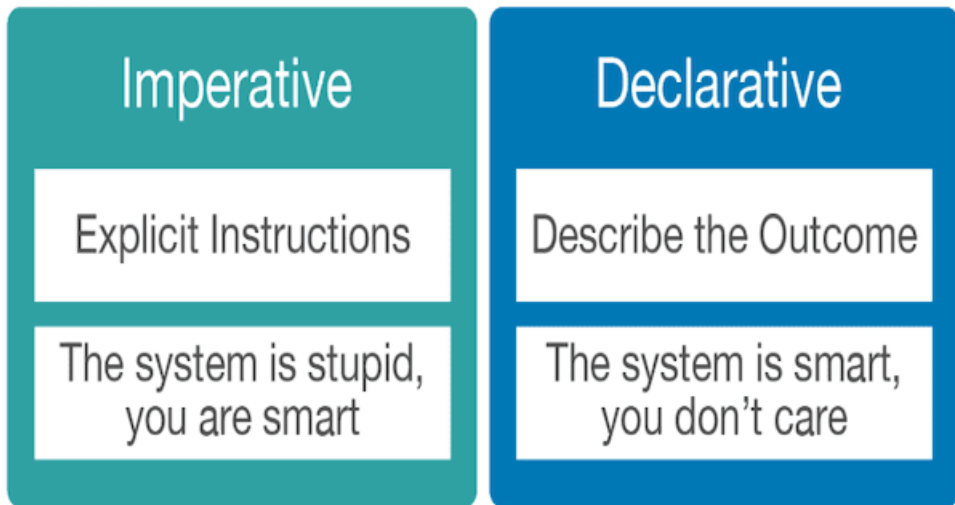- Back-end microservices register with the Eureka service registry when they start

Structure & Functionality of the Eureka Microservice

- Back-end microservices register with the Eureka service registry when they start

  - e.g., the Gateway, Handey, & Zippy microservices all register with the Eureka microservice when launched

Microservice-based Quotes App

- The QuotesServices Eureka micro-service is configured declaratively

Imperative	Declarative
Explicit Instructions	Describe the Outcome
The system is stupid, you are smart	The system is smart, you don't care

See www.educative.io/blog/declarative-vs-imperative-programming

Structure & Functionality of the Eureka Microservice

- The QuotesServices Eureka micro-service is configured declaratively, e.g.,
  - Via annotations

```
@SpringBootApplication
@EnableEurekaServer
public class EurekaApplication
{ ... }
```

This annotation makes a Spring Boot app act as a Eureka Server

See WebMVC/ex4/eureka/src/main/java/edu/vandy/quoteservices/eureka/EurekaApplication.java

Structure & Functionality of the Eureka Microservice

- The QuotesServices Eureka micro-service is configured declaratively, e.g.,
  - Via annotations
  - Via property files

```yaml
server:
  port: 8761
spring:
  application:
    name: eureka

eureka:
  instance:
    hostname: localhost
    prefer-ip-address: true
  client:
    register-with-eureka: false
    fetch-registry: false
    serviceUrl:
      defaultZone: ...
```

YAML data file configures a Eureka server microservice

See WebMVC/ex4/eureka/src/main/resources/application.yml

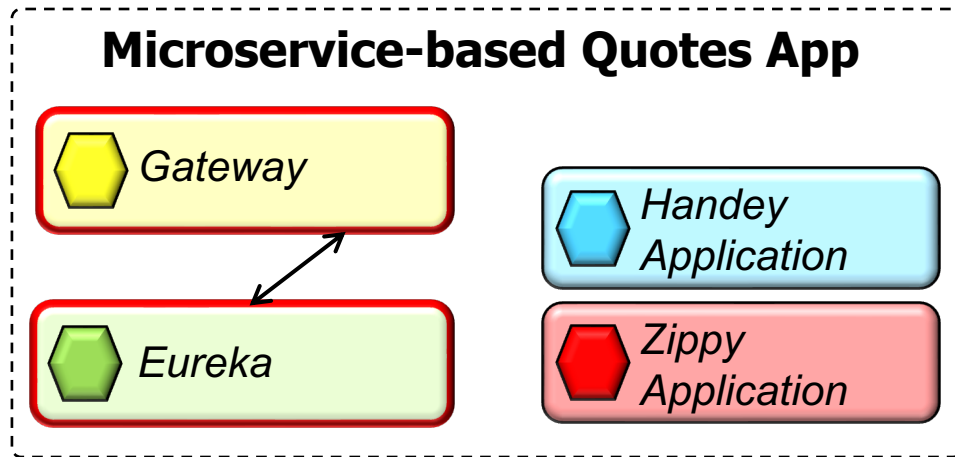# Structure & Functionality of the Eureka Microservice

- The QuotesServices Eureka micro-service is configured declaratively, e.g.,
  - Via annotations
  - Via property files

```yaml
eureka:
  instance:
    prefer-ip-address: true
  client:
    enabled: true
    register-with-eureka: true
    fetch-registry: true
    serviceUrl:
      defaultZone: …
```

YAML data file registers a microservice with Eureka

See WebMVC/ex4/gateway/src/main/resources/application.yml

Structure & Functionality of the Eureka Microservice

- The QuoteService API gateway uses the Eureka microservice to locate other microservices it encapsulates by name

Microservice-based Quotes App

Gateway

Eureka

Handey Application

Zippy Application

Structure & Functionality of the Eureka Microservice

- The QuoteService API gateway uses the Eureka microservice to locate other microservices it encapsulates by name

  - & then transparently forwards HTTP requests to the designated microservice

Microservice-based Quotes App
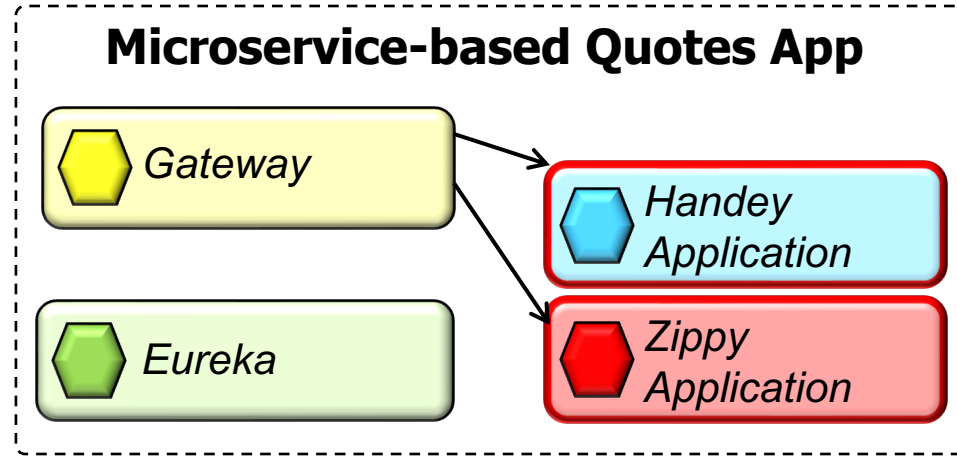
See upcoming lesson on the "*Gateway Microservice Structure & Functionality*"

End of the QuoteServices App Case Study: Eureka MicroService Structure & Functionality