The MathServices App Case Study: GCD Microservice Structure & Functionality

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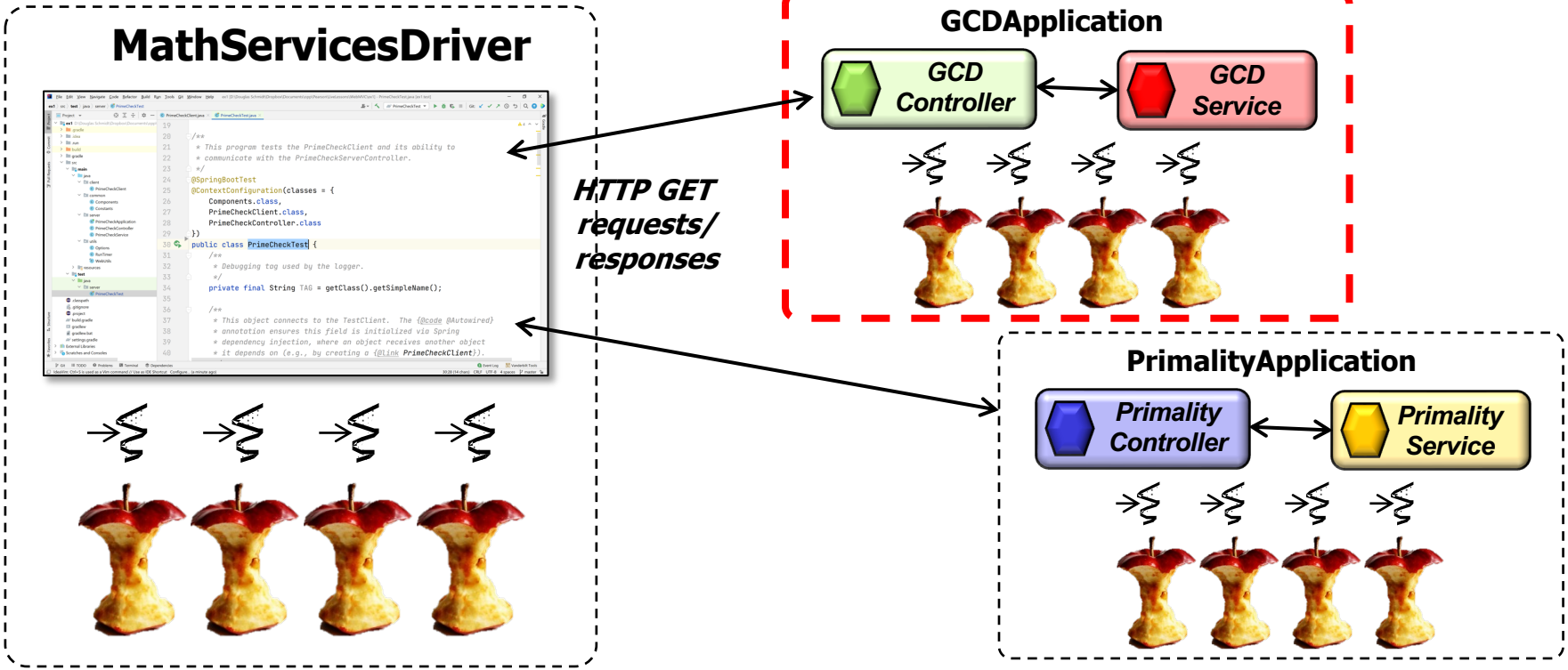
Learning Objectives in this Part of the Lesson

- Understand the structure & functionality of the GCDController/GCDService microservice implementation & how it applies Java parallel streams



Structure & Functionality of the GCDController

Structure & Functionality of the GCDController

- Client HTTP GET requests are mapped to endpoint handler methods via the GCDController class

```
@RestController
public class GCDController {
  @Autowired
  GCDService mService;

  @GetMapping("computeGCDList")
  public List<GCDResult>
  computeGCDs
    (@RequestParam List<Integer>
       integers) {
    mService
      .computeGCDs(integers);
  }
}
```

See mathservices/microservices/gcd/GCDController.java

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This annotation ensures request handling methods in the controller class automatically serialize return objects into HttpResponse objects

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See www.baeldung.com/spring-controller-vs-restcontroller

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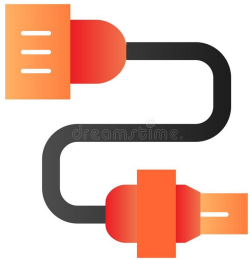

This field is auto-wired by Spring's dependency injection framework

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See www.baeldung.com/spring-autowire

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This method just forwards to the GCDService method & returns the results back

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This annotation maps HTTP GET requests onto endpoint handler methods

See www.baeldung.com/spring-new-requestmapping-shortcuts

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This string is used to automatically identify the endpoint handler methods from incoming GET requests

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This annotation maps to query parameters, form data, & parts in multipart requests

See www.baeldung.com/spring-request-param

Structure & Functionality of the GCDService

Structure & Functionality of the GCDService

- The GCDService class defines implementation methods that are called by the GCDController

```
@Service
public class GCDService
  public List<GCDResult> computeGCDs
    (List<Integer> integers) {
    return StreamSupport
      .stream(new ListSpliterator(integers),
              true)

      .map(GCDService::computeGCD)

      .toList();
    }
  } ...
```

See mathservices/microservices/gcd/GCDService.java

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```

This annotation indicates the class implements "business logic" & enables auto-detection & wiring of dependent classes via classpath scanning

See www.baeldung.com/spring-component-repository-service

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```

Concurrently compute the GCD of the integers param & return GCDResult objects

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```

Use Java parallel streams to perform all the GCD computations in parallel

See docs.oracle.com/javase/tutorial/collections/streams/parallelism.html

End of the MathServices App Case Study: GCD MicroService Structure & Functionality