The LockManager App Case Study: Client Structure & Functionality

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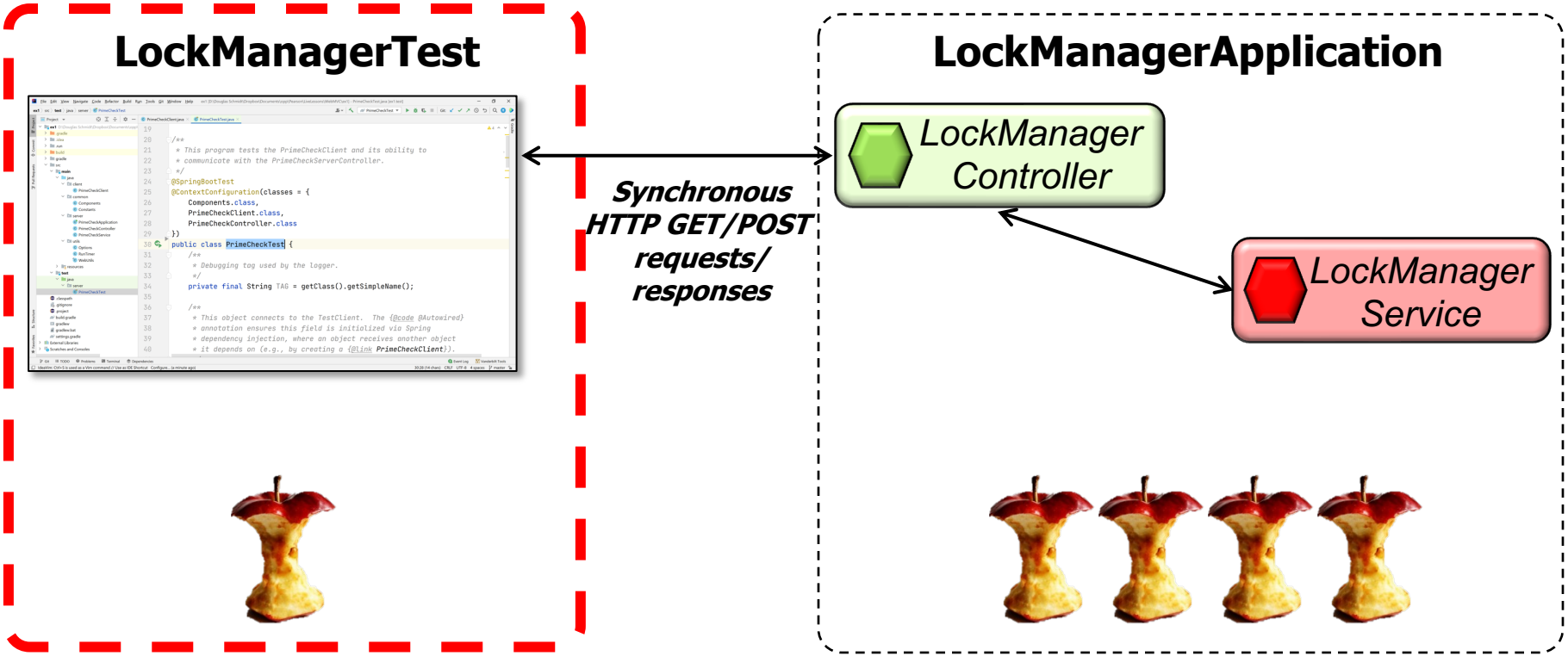
Learning Objectives in this Part of the Lesson

- Understand the structure & functionality of client components that send/receive HTTP GET/POST requests/responses to/from the microservice synchronously



See github.com/douglascraigschmidt/LiveLessons/tree/master/WebMVC/ex5

The Structure & Functionality of LockAPI Interface

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- The LockAPI interface hides details of remote method invocations via HTTP

```
public interface LockAPI {
  @PostExchange(CREATE)
  Boolean create(@RequestBody Integer maxLocks);

  @GetExchange(ACQUIRE_LOCK)
  Lock acquire();

  @GetExchange(ACQUIRE_LOCKS)
  List<Lock> acquire(@RequestParam Integer permits);

  @PostExchange(RELEASE_LOCK)
  Boolean release(@RequestBody Lock lock);

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}
```

This design uses the new Spring 6 declarative HTTP interface features

See www.baeldung.com/spring-6-http-interface

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These proxy methods shield clients from low-level details of HTTP programming

The Spring 6 HTTP interface features are much cleaner than using Retrofit!

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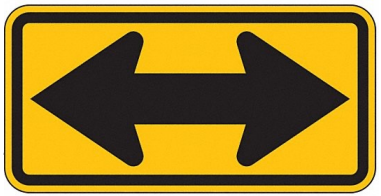

These calls are all synchronous & return conventional Java types

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These annotations mark a method as an HTTP endpoint

See http-declarative-http-client-httpexchange/#3-creating-an-http-service-interface

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These paths identify a specific HTTP endpoint

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These annotations are the same ones used by a Spring controller

See www.java67.com/2023/02/requestparam-vs-requestbody-in-spring.html

Creating an Instance of the LockAPI Interface

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- The ClientBeans class contains a factory method bean that creates the LockAPI proxy that uses the Spring 6 HTTP interface features

```
@Component
public class ClientBeans {
  @Bean
  public LockAPI getLockAPI() {
    var webClient = WebClient.builder()
        .baseUrl(LOCK_MANAGER_SERVER_BASE_URL).build();

    return HttpServiceProxyFactory
        .builder(WebClientAdapter
                 .forClient(webClient))
        .build()
        .createClient(LockAPI.class);
  ...
```

See WebMVC/ex5/src/test/java/edu/vandy/lockmanager/ClientBeans.java

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This @Bean annotation can be injected into classes using Spring's @Autowired annotation

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Create the main entry point for performing web requests (for both sync & async calls)

See www.baeldung.com/spring-5-webclient

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```

Adapt the WebClient to provide a synchronous proxy

See www.baeldung.com/spring-6-http-interface

End of the LockManager App Case Study: Client Structure & Functionality