Spring Boot Reactive File Service

Das folgende Programmscript zeigt den REST Controller ReactiveFileService mit dem wir anhand des Path URL Parameters eine lokale Datei laden und reactive mit Flux<DataBuffer> an den HTTP Client transferieren.

package ch.std.fileservice.rest;
import java.nio.channels.FileChannel;
import java.nio.charset.StandardCharsets;
import java.nio.file.Files;
import java.nio.file.Paths;
import java.nio.file.StandardOpenOption;
import java.util.List;
import javax.activation.MimetypesFileTypeMap;
import org.springframework.core.io.buffer.DataBuffer;
import org.springframework.core.io.buffer.DataBufferFactory;
import org.springframework.core.io.buffer.DataBufferUtils;
import org.springframework.http.server.reactive.ServerHttpResponse;
import org.springframework.web.bind.annotation.GetMapping;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RestController;
import org.springframework.web.server.ServerWebExchange;
import reactor.core.publisher.Flux;
@RestController
@RequestMapping(value = "/rest/file")
public class ReactiveFileService {
  public static final int defaultBufferSize = 1 << 12;
  public ReactiveFileService() {
    super();
  }
  @GetMapping
  public Flux<DataBuffer> get(ServerWebExchange webExchange) throws Exception {
    List pathList = webExchange.getRequest().getQueryParams().get("path");
    ServerHttpResponse serverHttpResponse = webExchange.getResponse();
    DataBufferFactory dataBufferFactory = webExchange.getResponse().bufferFactory();
    if (pathList == null) {
      serverHttpResponse.getHeaders().add("Content-Type", "text/html; charset=UTF-8");
      DataBuffer replyDataBuffer = dataBufferFactory.allocateBuffer(defaultBufferSize)
        .write("path is null".getBytes(StandardCharsets.UTF_8));
      return Flux.just(replyDataBuffer);
    }
    String path = pathList.get(0);
    String mimeType = Files.probeContentType(Paths.get(path));
    if (mimeType == null) {
      MimetypesFileTypeMap mimeTypesMap = new MimetypesFileTypeMap();
      mimeType = mimeTypesMap.getContentType(path);
    }
    serverHttpResponse.getHeaders().add("Content-Type", mimeType);
    Flux result = DataBufferUtils
      .readByteChannel(() -> FileChannel.open(Paths.get(path), StandardOpenOption.READ), dataBufferFactory, defaultBufferSize)
      .onErrorResume(ex -> {
        serverHttpResponse.getHeaders().add("Content-Type", "text/html; charset=UTF-8");
        DataBuffer replyDataBuffer = dataBufferFactory.allocateBuffer(defaultBufferSize).write(
          ("path " + path + " not found, ex = " + ex.getMessage()).getBytes(StandardCharsets.UTF_8));
        return Flux.just(replyDataBuffer);
      });
    return result;
  }
}
Das folgende Listing zeigt die Spring Boot Application:package ch.std.fileservice;
import org.springframework.boot.SpringApplication;
import org.springframework.boot.autoconfigure.SpringBootApplication;
@SpringBootApplication
public class ReactiveFileServiceApplication {
  public static void main(String[] args) {
    SpringApplication.run(ReactiveFileServiceApplication.class, args);
  }
}

Nach dem Start der Spring Boot Applikation ist der Reactive File Service aktiv und kann je nach Konfiguration wie folgt adressiert werden:http://localhost:8080/rest/file?path=/mypath/myfile.txtSofern das File existiert wird es zum Client reactive gestreamt.

Das folgende Listing zeigt den dazu passenden Spring Boot Reactive File Service Client entwickelt als Command Line Applikation:package ch.std.fileservice.client;
import java.io.FileOutputStream;
import java.net.URL;
import org.springframework.boot.ApplicationArguments;
import

org.springframework.boot.ApplicationRunner;
import org.springframework.boot.SpringApplication;
import org.springframework.boot.WebApplicationType;
import org.springframework.boot.autoconfigure.SpringBootApplication;
import org.springframework.core.io.buffer.DataBuffer;
import org.springframework.core.io.buffer.DataBufferUtils;
import org.springframework.web.reactive.function.client.WebClient;
import reactor.core.publisher.Flux;
@SpringBootApplication
public class ReactiveFileServiceClient implements ApplicationRunner {
  public static void main(String[] args) throws Exception {
  SpringApplication app = new SpringApplication(ReactiveFileServiceClient.class);
 app.setWebApplicationType(WebApplicationType.NONE);
  app.run(args);
  }
 @Override
  public void run(ApplicationArguments args) throws Exception {
  URL url = null;
  try {
  url = new URL(args.getOptionValues("url").get(0));
  } catch (Exception e) {
  System.err.println("missing --url option argument");
  this.help();
  return;
  }
  String out = null;
  try {
  out = args.getOptionValues("out").get(0);
  } catch (Exception e) {
  }
  String surl = url.getProtocol() + "://" + url.getHost() + ":" + url.getPort();
  String path = url.getFile();
 Flux<DataBuffer> data = WebClient.create(surl).get().uri(path).retrieve().bodyToFlux(DataBuffer.class);
  if (out != null) {
  try (FileOutputStream fos = new FileOutputStream(out)) {
 DataBufferUtils.write(data, fos).map(DataBufferUtils::release).blockLast();
  }
 System.out.println("result written to file " + out);
  }
  }
  private void help() {
  System.out.println("usage java -jar reactivefileclient-0.0.1-SNAPSHOT.jar --url= --out=");
  System.out.println("example:");
 System.out.println("java -jar reactivefileclient-0.0.1-SNAPSHOT.jar --url=http://localhost:8080/rest/file?path=in/bigimage.jpg --out=out/bigimage.jpg");
 }
}
Das File bigimage.jpg kann ersetzt werden durch eine real existierende Datei analog kann der Output Pfad angepasst werden.

Client und Service sind am besten in 2 separaten Spring Boot Projekten zu programmieren z.B. mit der Eclipse IDE.

Feedback

War dieser Blog für Sie wertvoll. Wir danken für jede Anregung und Feedback

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Impressum

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