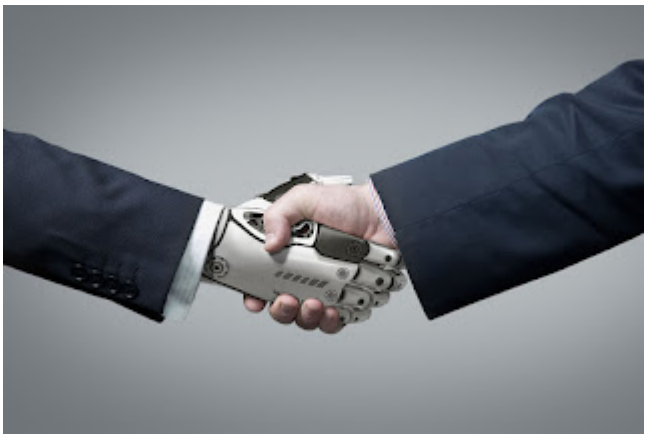
Xorcery Samples - Greeter

on **noviembre 13, 2023** in **xorcery** with **No hay comentarios.**



We are going to explain our first example with Xorcery called **Greeter**, which you will find in the following Github repository.

With **Xorcery** we can implement the API of service as a REST API (using JSON-API as a content type) for request/response needs or reactive stream web sockets (server publishers or subscribers) for streaming needs (like event sourcing or projections or log collection, etc.).

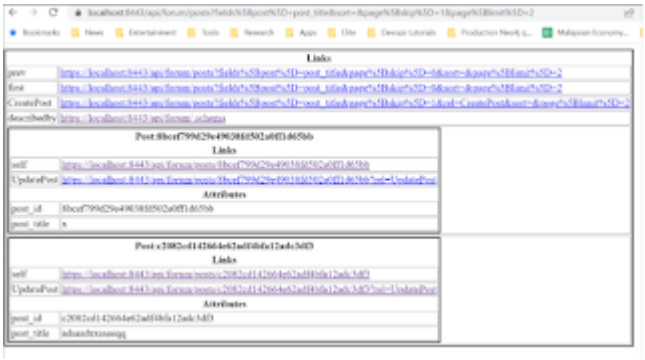
> ***Important fact: The entire implementation of Xorcery uses the Jakarta EE APIs and important libraries in the Java world. Xorcery for example uses HK2 a lightweight and dynamic injection framework.***

Why JSON:API

The election in JSON-API and JSONSchema is that then makes it possible to create a REST client, and not an HTTP client, which applications can use.

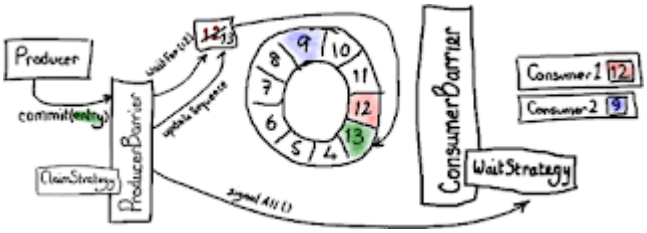
When done properly it leads to the situation that all application code interactions with REST clients are one of these two: follow links and submit forms. That's it. There's no constructing URLs, or figuring out what method to use, or any of that. This is all happening behind the scenes as it is defined by JSON: API and JSONSchema on the server. Application code just needs to bother with what link rel's it cares about, what information it needs to extract from resources in JSON: API, and how to submit forms (which know the URI and method to use).

We currently support URI templates in the JSON:API schemas and HTML sandbox. This way it is easier to test the API in a browser, as well as simplify filling out the URLs as a form.



Free HTML Sandbox stuff

Why Jetty Websockets + Disruptor



Xorcery makes a custom variation of the ReactiveStreams API with WebSockets to send events as headers plus bytes, as well as an integration with the Disruptor API. In the xorcery source code you will find services where the architecture is applied such as **publisher+subscriber**, **metrics events publisher+subscriber**, and **domain event publisher+subscriber** (subscriber maps into hashmap "database").

Greeter

In the GitHub repository, you will find xorcery-examples where a modular project has been created.

Here you will find the BOM, common dependencies, and plugins.

```
<?xml version="1.0" encoding="UTF-8
<project xmlns="http://maven.apache
  xmlns:xsi="http://www.w3.org/2001
  xsi:schemaLocation="http://maven.
  <modelVersion>4.0.0</modelVersion

  <groupId>com.exoreaction.xorcery.
  <artifactId>xorcery-examples</art
  <version>1.0-SNAPSHOT</version>
  <packaging>pom</packaging>
  <modules>
    <module>xorcery-example-greeter
  </modules>

  <properties>
    <maven.compiler.source>17</mave
    <maven.compiler.target>17</mave
    <project.build.sourceEncoding>U
    <project.reporting.outputEncodi

    <xorcery.version>0.62.2</xorcer
    <hk2.version>3.0.5</hk2.version
    <jersey.version>3.1.3</jersey.v
    <slf4j.version>2.0.7</slf4j.ver
    <log4j.version>2.21.1</log4j.ve

    <junit.version>5.10.0</junit.ve
    <junit.platform.version>1.9.0</
  </properties>

  <dependencyManagement>
    <dependencies>
      <dependency>
        <groupId>com.exoreaction.xo
        <artifactId>xorcery-bom</ar
```

```
            <version>${xorcery.version}
            <type>pom</type>
            <scope>import</scope>
          </dependency>
          <dependency>
            <groupId>org.apache.logging
            <artifactId>log4j-bom</arti
            <version>${log4j.version}</
            <type>pom</type>
            <scope>import</scope>
          </dependency>

          <dependency>
            <groupId>org.hamcrest</grou
            <artifactId>hamcrest</artif
            <version>2.2</version>
            <scope>test</scope>
          </dependency>
        </dependencies>

      </dependencyManagement>

      <build>
        <pluginManagement>
          <plugins>
            <plugin>
              <groupId>org.apache.maven
              <artifactId>maven-compile
              <version>3.11.0</version>
              <configuration>
                <annotationProcessorPat
                  <path>
                    <groupId>org.glassf
                    <artifactId>hk2-met
                    <version>${hk2.vers
                  </path>
```

```
                <annotationProcessorPa
              </configuration>
            </plugin>
            <plugin>
              <groupId>org.apache.maven
              <artifactId>maven-depende
              <version>3.6.1</version>
            </plugin>
            <plugin>
              <groupId>org.apache.maven
              <artifactId>maven-surefir
              <version>3.2.2</version>
              <dependencies>
                <dependency>
                  <groupId>me.fabricior
                  <artifactId>maven-sur
                  <version>1.2.1</versi
                </dependency>
              </dependencies>
              <configuration>
                <reportFormat>plain</re
                <consoleOutputReporter>
                  <disable>true</disabl
                </consoleOutputReporter
                <statelessTestsetInfoRe
              </configuration>
            </plugin>
          </plugins>
        </pluginManagement>
      </build>
      <repositories>
        <repository>
          <id>cantara-releases</id>
          <name>Cantara Release Reposit
          <url>https://mvnrepo.cantara.
        </repository>
```

```
    <repository>
      <id>cantara-snapshots</id>
      <name>Cantara Snapshot Reposi
      <url>https://mvnrepo.cantara.
    </repository>
  </repositories>

  <distributionManagement>
    <repository>
      <id>cantara</id>
      <name>Cantara Release Reposit
      <url>https://mvnrepo.cantara.
    </repository>
    <snapshotRepository>
      <id>cantara</id>
      <name>Cantara Snapshot Reposi
      <url>https://mvnrepo.cantara.
    </snapshotRepository>
  </distributionManagement>
</project>
```

It is important that you place the Cantara **repositories** and **distributionManagement** so that Xorcery dependencies can be downloaded without problems.

The test report is presented in a fancy tree output thanks to https://github.com/fabriciorby/maven-surefire-junit5-tree-reporter

Greeter

This project has xorcery-examples as its parent project.

```
<parent>
  <groupId>com.exoreaction.xorcery.
  <artifactId>xorcery-examples</art
  <version>1.0-SNAPSHOT</version>
</parent>
```

Then we add the core dependencies:

```
<dependency>
  <groupId>com.exoreaction.xorcery<
  <artifactId>xorcery-core</artifac
</dependency>
<dependency>
  <groupId>com.exoreaction.xorcery<
  <artifactId>xorcery-runner</artif
</dependency>
<dependency>
  <groupId>com.exoreaction.xorcery<
  <artifactId>xorcery-metadata</art
</dependency>
<dependency>
  <groupId>com.exoreaction.xorcery<
  <artifactId>xorcery-configuration
</dependency>
<dependency>
  <groupId>com.exoreaction.xorcery<
```

```
    <artifactId>xorcery-json</artifac
  </dependency>
```

The dependencies for REST API:

```
  <dependency>
    <groupId>com.exoreaction.xorcery<
    <artifactId>xorcery-jsonapi-jaxrs
  </dependency>
  <dependency>
    <groupId>com.exoreaction.xorcery<
    <artifactId>xorcery-jersey-server
  </dependency>
  <dependency>
    <groupId>com.exoreaction.xorcery<
    <artifactId>xorcery-handlebars</a
  </dependency>
  <dependency>
    <groupId>com.exoreaction.xorcery<
    <artifactId>xorcery-status-server
  </dependency>
```

Xorcery works with Jetty and Jersey as a Jakarta JAX-RS implementation.

The dependencies for service integration and implementation of reactive streams:

```
<dependency>
  <groupId>com.exoreaction.xorcery<
  <artifactId>xorcery-jersey-client
</dependency>
<dependency>
  <groupId>com.exoreaction.xorcery<
  <artifactId>xorcery-reactivestrea
</dependency>
<dependency>
  <groupId>com.exoreaction.xorcery<
  <artifactId>xorcery-reactivestrea
</dependency>
<dependency>
  <groupId>com.exoreaction.xorcery<
  <artifactId>xorcery-neo4j</artifa
  <scope>compile</scope>
  <exclusions>
    <exclusion>
      <groupId>org.glassfish.jersey
      <artifactId>jersey-container-
    </exclusion>
  </exclusions>
</dependency>
<dependency>
  <groupId>com.exoreaction.xorcery<
  <artifactId>xorcery-domainevents-
</dependency>
```

Dependencies for Logging:

```
<dependency>
  <groupId>com.exoreaction.xorcery<
  <artifactId>xorcery-log4j</artifa
</dependency>
<dependency>
  <groupId>org.apache.logging.log4j
  <artifactId>log4j-core</artifactI
</dependency>
<dependency>
  <groupId>org.apache.logging.log4j
  <artifactId>log4j-slf4j2-impl</ar
</dependency>
```

Integration with Junit:

```
<dependency>
  <groupId>com.exoreaction.xorcery<
  <artifactId>xorcery-junit</artifa
  <scope>test</scope>
</dependency>
```

Finally, we add the profile to use jpackage introduced in Java 14 and create the image of an application and install it.

```
<profiles>
  <profile>
    <id>jpackage</id>
    <activation>
      <os>
        <name>linux</name>
        <arch>amd64</arch>
      </os>
    </activation>
    <build>
      <plugins>
        <plugin>
          <groupId>org.apache.maven
          <artifactId>maven-depende
          <executions>
            <execution>
              <id>copy-dependencies
              <phase>package</phase
              <goals>
                <goal>copy-dependen
              </goals>
              <configuration>
                <includeScope>compi
                <outputDirectory>${
                <overWriteReleases>
                <overWriteSnapshots
                <overWriteIfNewer>t
              </configuration>
            </execution>
```

```
      </executions>
    </plugin>
    <plugin>
      <groupId>org.apache.maven
      <artifactId>maven-antrun-
      <executions>
        <execution>
          <id>copy-modularized-
          <phase>package</phase
          <goals>
            <goal>run</goal>
          </goals>
          <configuration>
            <target>
              <copy file="${pro
                tofile="${proje
                overwrite="true
            </target>
          </configuration>
        </execution>
      </executions>
    </plugin>
    <plugin>
      <artifactId>maven-resourc
      <version>3.3.1</version>
      <executions>
        <execution>
          <id>copy-app-resource
          <phase>package</phase
          <goals>
            <goal>copy-resource
          </goals>
          <configuration>
            <outputDirectory>${
            <resources>
              <resource>
```

```
                <directory>src/
                <filtering>true
              </resource>
            </resources>
          </configuration>
        </execution>
      </executions>
    </plugin>
    <plugin>
      <groupId>com.github.akman
      <artifactId>jpackage-mave
      <version>0.1.5</version>
      <executions>
        <execution>
          <phase>package</phase
          <goals>
            <goal>jpackage</goa
          </goals>
          <configuration>
            <resourcedir>${proj
            <input>${project.bu
            <mainjar>lib/${proj
            <mainclass>com.exor

            <name>greeter</name
            <appversion>${proje
            <copyright>Copyrigh
            <description>Descri
            <vendor>eXOReaction
            <installdir>/opt/ex
            <javaoptions>-Dfile
            <dest>${project.bui
          </configuration>
        </execution>
      </executions>
    </plugin>
```

```
        </plugins>
      </build>
    </profile>
  </profiles>
```

At **GreeterResourceTest** we use the Xorcery extension for the configuration that tests that use Xorcery need via @RegisterExtension

---

```
public class GreeterResourceTest {

  @RegisterExtension
  static XorceryExtension xorceryEx
      .configuration(ConfigurationB
      .addYaml(String.format("""
                    jetty.server.ht
                    jetty.server.ss
                    """, Sockets.ne
      .build();
```

We tested the GET first of a Rest API by instantiating an Xorcery client.

```
@Test
void updateGreeting() throws Except
```

```
    Configuration configuration = xor
    URI baseUri = InstanceConfigurati
    Client client = xorceryExtension.

    {
      String content = client.target(
          .path("/api/greeter")
          .request()
          .get(String.class);
      System.out.println(content);
    }

  }
```

This is a configuration where we indicate that we want to generate an **SSL certificate** for the local hostname, the **REST API resources**, and the **log4j2 configuration** are declared. Its configuration is located in **resources/xorcery.yaml**.

```
  instance.name: "greeter"
  instance.home: "{{ SYSTEM.jpackage_
  jpackage.app: "{{ SYSTEM.jpackage_a

  # So that we can generate a SSL cer
  instance.domain: local

  # Add local convenience names for y
  certificates:
```

```
    dnsNames:
      - localhost
      - "{{ instance.host }}"
    ipAddresses:
      - 127.0.0.1
      - "{{ instance.ip }}"

  # REST API resources
  jersey.server.register:
    - com.exoreaction.xorcery.example


  log4jpublisher.enabled: false
  log4jsubscriber.enabled: false

  log4j2.Configuration:
```

Extract from the original

The service **GreeterApplication** permits queries and domain events that are generated and projected into the database.

```
  @Service
  @Named(GreeterApplication.SERVICE_T
  public class GreeterApplication {
    public static final String SERVIC
```

```
    private final DomainEventPublishe
    private final DomainEventMetadata
    private final GraphDatabase graph

    @Inject
    public GreeterApplication(DomainE
        GraphDatabase graphDatabase)

      this.domainEventPublisher = dom
      this.graphDatabase = graphDatab
      this.domainEventMetadata = new
          .add("domain", "greeter")
          .build());
    }


    public CompletionStage<String> ge

      return graphDatabase.execute("M
              Map.ofEntries(entry("id
          .thenApply(r ->
          {
            try (GraphResult result =
              return result.getResult
            } catch (Exception e) {
              throw new CompletionExc
            }
          });
    }
  }
```

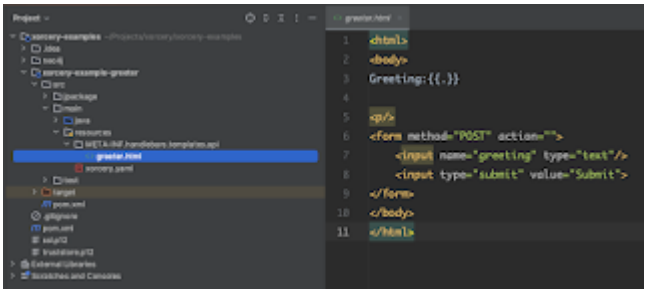
In **GreeterResource** see a full cycle of creating domain events, publishing, then subscribing with Neo4jDomainEventsService and projecting into the database, which then can be read through the GraphDatabase wrapper.

Reads

```
@Path("api/greeter")
public class GreeterResource extend

  private GreeterApplication applic

  @Inject
  public GreeterResource(GreeterApp
    this.application = application;
  }

  @GET
  public CompletionStage<Context> g
    return application.get("greetin
    {
      if (t != null)
      {
        LogManager.getLogger(getCla
        return "";
      } else
      {
        return g;
      }
    }).thenApply(Context::newContex
  }
```

```
}
```

If we run the test we will see that the call to **/api/greeter** returns the content of the API HTML template:



Tests result:

Writes

We now test publishing a domain event and projection to neo4j.

```
// Writes
public CompletionStage<Metadata> ha
```

```
    Metadata.Builder metadata = new D
        .timestamp(System.currentTime

    try {
      DomainEvents domainEvents = (Do
      Metadata md = metadata.add("com
      return domainEventPublisher.pub
    } catch (Throwable e) {
      return CompletableFuture.failed
    }
  }

  private DomainEvents handle(UpdateG
    return DomainEvents.of(new Update
  }
```

We add the necessary domain event and command.

```
  public record UpdateGreeting(String
  }
```

```
public record UpdatedGreeting(Strin
    implements DomainEvent {
}
```

Finally, if we want to see the HTML sandbox generated thanks to JSON:API and JSONSchema, we have to add the Main.java to use the runner.

```
package com.exoreaction.xorcery.exa

public class Main {

  public static void main(String[]

    com.exoreaction.xorcery.runner.
  }

}
```

2023-11-13 12:24:18,506 [RunLevelControllerThread-1699896252353] INFO

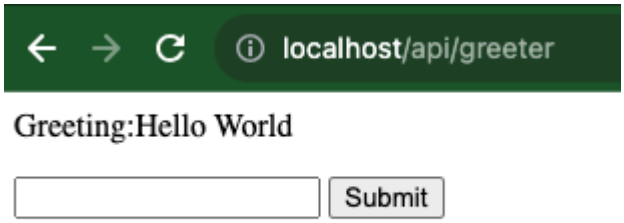
```
 c.e.x.j.s.JettyLifecycleService: Started Jetty
server

2023-11-13 12:24:18,507
[RunLevelControllerThread-
1699896252353] DEBUG
c.e.x.c.RunLevelLogger: Reached run level 18

2023-11-13 12:24:18,507
[RunLevelControllerThread-
1699896253228] DEBUG
c.e.x.c.RunLevelLogger: Reached run level 19

2023-11-13 12:24:18,508
[RunLevelControllerThread-
1699896253228] DEBUG
c.e.x.c.RunLevelLogger: Reached run level
20

2023-11-13 12:24:18,509 [main] DEBUG
macbook-pro-de-jose.local.genericserver
c.e.x.c.Xorcery: Services:
```

Note: Observe how xorcery executes the level settings when launching the project:

```
* 0: Configuration refresh
* 2: Certificate refresh
* 4: Servers
* 6: Server publishers/subscribers
* 8: Client publishers/subscribers
* 20: DNS registration
```

The HTML sandbox:

If we want to publish the domain event and project it to neo4j we can try this URL **http://localhost/api/greeter**



In subsequent posts, we will continue examining more examples of using Xorcery.

Enjoy!

Jose

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