

WEEK – 6

Creating Microservices for account and loan

```
AccountController.java  application.properties  AccountApplication.java  account/pom.xml
1 server.port=8080
2 spring.application.name=account-service
3 eureka.client.service-url.defaultZone=http://localhost:8761/eureka
4
```

```
AccountController.java  application.properties  AccountApplication.java  account/pom.xml
1 package com.cognizant.account.controller;
2 import org.springframework.web.bind.annotation.*;
3 import java.util.Map;
4
5 @RestController
6 public class AccountController {
7
8     @GetMapping("/accounts/{number}")
9     public Map<String, Object> getAccount(@PathVariable String number) {
10         return Map.of(
11             "number", number,
12             "type", "savings",
13             "balance", 234343
14         );
15     }
16 }
17
```

```
AccountController.java  application.properties  AccountApplication.java  account/pom.xml
1 package com.cognizant.account;
2
3 import org.springframework.boot.SpringApplication;
4 import org.springframework.cloud.client.discovery.EnableDiscoveryClient;
5 import org.springframework.boot.SpringApplication;
6 import org.springframework.boot.autoconfigure.SpringBootApplication;
7
8
9 @EnableDiscoveryClient
10 @SpringBootApplication
11 public class AccountApplication {
12     public static void main(String[] args) {
13         SpringApplication.run(AccountApplication.class, args);
14     }
15 }
16
17
```

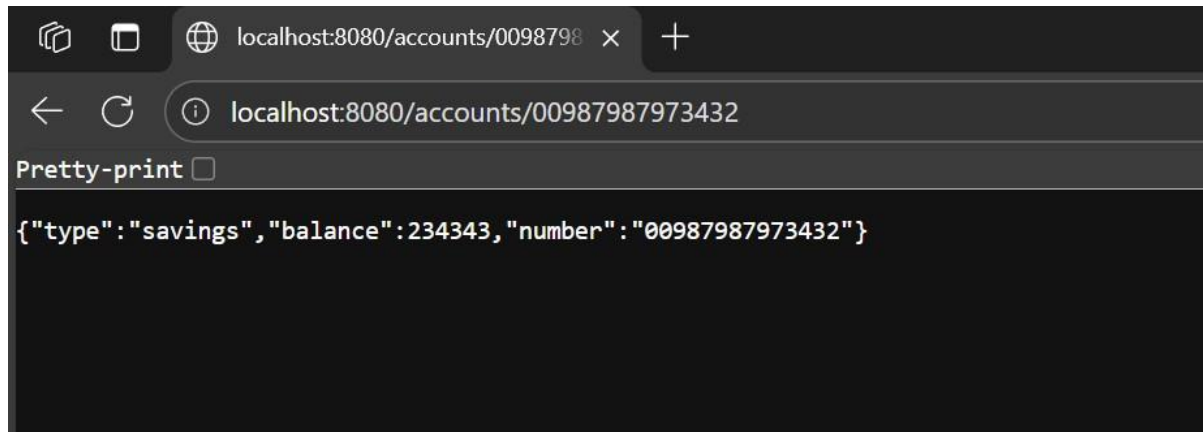
```
AccountController.java  application.properties  AccountApplication.java  account/pom.xml  LoanController.java ×
1 package com.cognizant.account.controller;
2
3 import java.util.Map;
4
5 import org.springframework.web.bind.annotation.GetMapping;
6 import org.springframework.web.bind.annotation.PathVariable;
7 import org.springframework.web.bind.annotation.RestController;
8
9 @RestController
10 public class LoanController {
11     @GetMapping("/loans/{number}")
12     public Map<String, Object> getLoan(@PathVariable String number) {
13         return Map.of(
14             "number", number,
15             "type", "car",
16             "loan", 400000,
17             "emi", 3258,
18             "tenure", 18
19         );
20     }
21 }
22
```

```
AccountController.java  application.properties  AccountApplication.java  *account/pom.xml ×
1 <?xml version="1.0" encoding="UTF-8"?>
2 <project xmlns="http://maven.apache.org/POM/4.0.0"
3     xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
4     xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 https://maven.apache.org/xsd
5     <modelVersion>4.0.0</modelVersion>
6
7     <parent>
8         <groupId>org.springframework.boot</groupId>
9         <artifactId>spring-boot-starter-parent</artifactId>
10        <version>3.3.2</version> <!-- ☒ Downgraded for compatibility -->
11        <relativePath/>
12    </parent>
13
14    <groupId>com.cognizant</groupId>
15    <artifactId>account</artifactId>
16    <version>0.0.1-SNAPSHOT</version>
17    <name>account</name>
18    <description>Demo project for Spring Boot</description>
19
20    <properties>
21        <java.version>21</java.version>
22        <spring-cloud.version>2023.0.1</spring-cloud.version>
23    </properties>
24
25
26    <dependencyManagement>
27        <dependencies>
28            <dependency>
29                <groupId>org.springframework.cloud</groupId>
30                <artifactId>spring-cloud-dependencies</artifactId>
31                <version>${spring-cloud.version}</version>
32                <type>pom</type>
33                <scope>import</scope>
34            </dependency>
35        </dependencies>
36    </dependencyManagement>
37
38    <dependencies>
39        <dependency>
40            <groupId>org.springframework.boot</groupId>
41            <artifactId>spring-boot-starter</artifactId>
42            <scope>compile</scope>
43        </dependency>
44        <dependency>
45            <groupId>com.cognizant</groupId>
46            <artifactId>account</artifactId>
47            <version>0.0.1-SNAPSHOT</version>
48            <scope>compile</scope>
49        </dependency>
50    </dependencies>
51
52    <build>
53        <plugins>
54            <plugin>
55                <groupId>org.springframework.boot</groupId>
56                <artifactId>spring-boot-maven-plugin</artifactId>
57            </plugin>
58        </plugins>
59    </build>
60
61    <profiles>
62        <profile>
63            <id>dev</id>
64            <activation>
65                <activeByDefault>true</activeByDefault>
66            </activation>
67            <properties>
68                <spring.profiles.active>dev</spring.profiles.active>
69            </properties>
70        </profile>
71    </profiles>
72
73    <reporting>
74        <plugins>
75            <plugin>
76                <groupId>org.apache.maven.plugins</groupId>
77                <artifactId>maven-project-info-reports-plugin</artifactId>
78                <version>3.5.0</version>
79            </plugin>
80        </plugins>
81    </reporting>
82
83    <test>
84        <resources>
85            <resource>
86                <directory>src/test/resources</directory>
87            </resource>
88        </resources>
89        <dependencies>
90            <dependency>
91                <groupId>org.springframework.boot</groupId>
92                <artifactId>spring-boot-starter-test</artifactId>
93                <scope>test</scope>
94            </dependency>
95        </dependencies>
96    </test>
97
98    <repositories>
99        <repository>
100            <id>central</id>
101            <url>https://repo.maven.apache.org/maven2</url>
102        </repository>
103    </repositories>
104
105    <pluginRepositories>
106        <pluginRepository>
107            <id>central</id>
108            <url>https://repo.maven.apache.org/maven2</url>
109        </pluginRepository>
110    </pluginRepositories>
111
112    <ciManagement>
113        <system>jenkins</system>
114        <url>https://jenkins.cognizant.com/job/account/</url>
115    </ciManagement>
116
117    <scm>
118        <connection>scm:git:ssh://git@github.com:cognizant/account.git</connection>
119        <developerConnection>scm:git:ssh://git@github.com:cognizant/account.git</developerConnection>
120        <url>https://github.com/cognizant/account</url>
121    </scm>
122
123    <mailingLists>
124        <mailingList>
125            <id>account</id>
126            <name>account</name>
127            <url>https://groups.google.com/g/account</url>
128        </mailingList>
129    </mailingLists>
130
131    <developers>
132        <developer>
133            <id>account</id>
134            <name>account</name>
135            <email>account@com.cognizant</email>
136        </developer>
137    </developers>
138
139    <licenses>
140        <license>
141            <id>account</id>
142            <name>account</name>
143            <url>https://github.com/cognizant/account</url>
144        </license>
145    </licenses>
146
147    <build.plugins>
148        <plugin>
149            <groupId>org.springframework.boot</groupId>
150            <artifactId>spring-boot-maven-plugin</artifactId>
151        </plugin>
152    </build.plugins>
153
154    <build.testPlugins>
155        <plugin>
156            <groupId>org.springframework.boot</groupId>
157            <artifactId>spring-boot-test-maven-plugin</artifactId>
158        </plugin>
159    </build.testPlugins>
160
161    <reporting.plugins>
162        <plugin>
163            <groupId>org.apache.maven.plugins</groupId>
164            <artifactId>maven-project-info-reports-plugin</artifactId>
165            <version>3.5.0</version>
166        </plugin>
167    </reporting.plugins>
168
169    <test.testResources>
170        <testResource>
171            <directory>src/test/resources</directory>
172        </testResource>
173    </test.testResources>
174
175    <test.testDependencies>
176        <testDependency>
177            <groupId>org.springframework.boot</groupId>
178            <artifactId>spring-boot-starter-test</artifactId>
179            <scope>test</scope>
180        </testDependency>
181    </test.testDependencies>
182
183    <test.testRepositories>
184        <testRepository>
185            <id>central</id>
186            <url>https://repo.maven.apache.org/maven2</url>
187        </testRepository>
188    </test.testRepositories>
189
190    <test.testPluginRepositories>
191        <testTestRepository>
192            <id>central</id>
193            <url>https://repo.maven.apache.org/maven2</url>
194        </testTestRepository>
195    </test.testPluginRepositories>
196
197    <test.testMailingLists>
198        <testMailingList>
199            <id>account</id>
200            <name>account</name>
201            <url>https://groups.google.com/g/account</url>
202        </testMailingList>
203    </test.testMailingLists>
204
205    <test.testDevelopers>
206        <testDeveloper>
207            <id>account</id>
208            <name>account</name>
209            <email>account@com.cognizant</email>
210        </testDeveloper>
211    </test.testDevelopers>
212
213    <test.testLicenses>
214        <testLicense>
215            <id>account</id>
216            <name>account</name>
217            <url>https://github.com/cognizant/account</url>
218        </testLicense>
219    </test.testLicenses>
220
221    <test.testBuildPlugins>
222        <testBuildPlugin>
223            <groupId>org.springframework.boot</groupId>
224            <artifactId>spring-boot-maven-plugin</artifactId>
225        </testBuildPlugin>
226    </test.testBuildPlugins>
227
228    <test.testBuildTestPlugins>
229        <testBuildTestPlugin>
230            <groupId>org.springframework.boot</groupId>
231            <artifactId>spring-boot-test-maven-plugin</artifactId>
232        </testBuildTestPlugin>
233    </test.testBuildTestPlugins>
234
235    <test.testReportingPlugins>
236        <testReportingPlugin>
237            <groupId>org.apache.maven.plugins</groupId>
238            <artifactId>maven-project-info-reports-plugin</artifactId>
239            <version>3.5.0</version>
240        </testReportingPlugin>
241    </test.testReportingPlugins>
242
243    <test.testTestResources>
244        <testTestResource>
245            <directory>src/test/resources</directory>
246        </testTestResource>
247    </test.testTestResources>
248
249    <test.testTestDependencies>
250        <testTestDependency>
251            <groupId>org.springframework.boot</groupId>
252            <artifactId>spring-boot-starter-test</artifactId>
253            <scope>test</scope>
254        </testTestDependency>
255    </test.testTestDependencies>
256
257    <test.testTestRepositories>
258        <testTestRepository>
259            <id>central</id>
260            <url>https://repo.maven.apache.org/maven2</url>
261        </testTestRepository>
262    </test.testTestRepositories>
263
264    <test.testTestPluginRepositories>
265        <testTestTestRepository>
266            <id>central</id>
267            <url>https://repo.maven.apache.org/maven2</url>
268        </testTestTestRepository>
269    </test.testTestPluginRepositories>
270
271    <test.testTestMailingLists>
272        <testTestMailingList>
273            <id>account</id>
274            <name>account</name>
275            <url>https://groups.google.com/g/account</url>
276        </testTestMailingList>
277    </test.testTestMailingLists>
278
279    <test.testTestDevelopers>
280        <testTestDeveloper>
281            <id>account</id>
282            <name>account</name>
283            <email>account@com.cognizant</email>
284        </testTestDeveloper>
285    </test.testTestDevelopers>
286
287    <test.testTestLicenses>
288        <testTestLicense>
289            <id>account</id>
290            <name>account</name>
291            <url>https://github.com/cognizant/account</url>
292        </testTestLicense>
293    </test.testTestLicenses>
294
295    <test.testTestBuildPlugins>
296        <testTestBuildPlugin>
297            <groupId>org.springframework.boot</groupId>
298            <artifactId>spring-boot-maven-plugin</artifactId>
299        </testTestBuildPlugin>
300    </test.testTestBuildPlugins>
301
302    <test.testTestBuildTestPlugins>
303        <testTestBuildTestPlugin>
304            <groupId>org.springframework.boot</groupId>
305            <artifactId>spring-boot-test-maven-plugin</artifactId>
306        </testTestBuildTestPlugin>
307    </test.testTestBuildTestPlugins>
308
309    <test.testTestReportingPlugins>
310        <testTestReportingPlugin>
311            <groupId>org.apache.maven.plugins</groupId>
312            <artifactId>maven-project-info-reports-plugin</artifactId>
313            <version>3.5.0</version>
314        </testTestReportingPlugin>
315    </test.testTestReportingPlugins>
316
317    <test.testTestTestResources>
318        <testTestTestResource>
319            <directory>src/test/resources</directory>
320        </testTestTestResource>
321    </test.testTestTestResources>
322
323    <test.testTestTestDependencies>
324        <testTestTestDependency>
325            <groupId>org.springframework.boot</groupId>
326            <artifactId>spring-boot-starter-test</artifactId>
327            <scope>test</scope>
328        </testTestTestDependency>
329    </test.testTestTestDependencies>
330
331    <test.testTestTestRepositories>
332        <testTestTestRepository>
333            <id>central</id>
334            <url>https://repo.maven.apache.org/maven2</url>
335        </testTestTestRepository>
336    </test.testTestTestRepositories>
337
338    <test.testTestTestPluginRepositories>
339        <testTestTestTestRepository>
340            <id>central</id>
341            <url>https://repo.maven.apache.org/maven2</url>
342        </testTestTestTestRepository>
343    </test.testTestTestPluginRepositories>
344
345    <test.testTestTestMailingLists>
346        <testTestTestMailingList>
347            <id>account</id>
348            <name>account</name>
349            <url>https://groups.google.com/g/account</url>
350        </testTestTestMailingList>
351    </test.testTestTestMailingLists>
352
353    <test.testTestTestDevelopers>
354        <testTestTestDeveloper>
355            <id>account</id>
356            <name>account</name>
357            <email>account@com.cognizant</email>
358        </testTestTestDeveloper>
359    </test.testTestTestDevelopers>
360
361    <test.testTestTestLicenses>
362        <testTestTestLicense>
363            <id>account</id>
364            <name>account</name>
365            <url>https://github.com/cognizant/account</url>
366        </testTestTestLicense>
367    </test.testTestTestLicenses>
368
369    <test.testTestTestBuildPlugins>
370        <testTestTestBuildPlugin>
371            <groupId>org.springframework.boot</groupId>
372            <artifactId>spring-boot-maven-plugin</artifactId>
373        </testTestTestBuildPlugin>
374    </test.testTestTestBuildPlugins>
375
376    <test.testTestTestBuildTestPlugins>
377        <testTestTestBuildTestPlugin>
378            <groupId>org.springframework.boot</groupId>
379            <artifactId>spring-boot-test-maven-plugin</artifactId>
380        </testTestTestBuildTestPlugin>
381    </test.testTestTestBuildTestPlugins>
382
37
```

```
AccountController.java  application.properties  AccountApplication.java  *account/pom.xml X
34         </dependency>
35     </dependencies>
36 </dependencyManagement>
37
38 <dependencies>
39     <!-- Web -->
40 <dependency>
41     <groupId>org.springframework.boot</groupId>
42     <artifactId>spring-boot-starter-web</artifactId>
43 </dependency>
44
45     <!-- Eureka Client -->
46 <dependency>
47     <groupId>org.springframework.cloud</groupId>
48     <artifactId>spring-cloud-starter-netflix-eureka-client</artifactId>
49 </dependency>
50
51     <!-- Devtools -->
52 <dependency>
53     <groupId>org.springframework.boot</groupId>
54     <artifactId>spring-boot-devtools</artifactId>
55     <scope>runtime</scope>
56     <optional>true</optional>
57 </dependency>
58
59     <!-- Test -->
60 <dependency>
61     <groupId>org.springframework.boot</groupId>
62     <artifactId>spring-boot-starter-test</artifactId>
63     <scope>test</scope>
64 </dependency>
65 </dependencies>
66
```

```
Overview  Dependencies  Dependency Hierarchy  Effective POM  pom.xml
Problems  Javadoc  Declaration  Console X  Terminal  Eclipse IDE for Java Developers 2025-06 Release
<terminated> AccountApplication [Java Application] C:\Program Files\Java\jdk-22\bin\javaw.exe (20-Jul-2025, 6:53:31 pm - 7:00:48 pm elapsed: 0:07:17.260) [pid: 8768]
2025-07-20T18:59:39.152+05:30 INFO 8768 --- [account-service] [freshExecutor-0] com.netflix.discovery.DiscoveryClient : Disal
2025-07-20T18:59:39.152+05:30 INFO 8768 --- [account-service] [freshExecutor-0] com.netflix.discovery.DiscoveryClient : Singi
2025-07-20T18:59:39.152+05:30 INFO 8768 --- [account-service] [freshExecutor-0] com.netflix.discovery.DiscoveryClient : Forc
2025-07-20T18:59:39.152+05:30 INFO 8768 --- [account-service] [freshExecutor-0] com.netflix.discovery.DiscoveryClient : Appl
2025-07-20T18:59:39.152+05:30 INFO 8768 --- [account-service] [freshExecutor-0] com.netflix.discovery.DiscoveryClient : Regi
2025-07-20T18:59:39.152+05:30 INFO 8768 --- [account-service] [freshExecutor-0] com.netflix.discovery.DiscoveryClient : Appl
2025-07-20T18:59:39.152+05:30 INFO 8768 --- [account-service] [freshExecutor-0] com.netflix.discovery.DiscoveryClient : Gett
2025-07-20T18:59:39.183+05:30 INFO 8768 --- [account-service] [freshExecutor-0] c.n.d.s.t.d.RedirectingEurekaHttpClient : Requ
at org.springframework.web.client.RestTemplate.createResourceAccessException(RestTemplate.java:915)
at org.springframework.web.client.RestTemplate.doExecute(RestTemplate.java:895)
at org.springframework.web.client.RestTemplate.execute(RestTemplate.java:790)
at org.springframework.web.client.RestTemplate.exchange(RestTemplate.java:672)
at org.springframework.cloud.netflix.eureka.http.RestTemplateEurekaHttpClient.register(RestTemplateEurekaHttpClient.java
at com.netflix.discovery.shared.transport.decorator.EurekaHttpClientDecorator$1.execute(EurekaHttpClientDecorator.java:5
at com.netflix.discovery.shared.transport.decorator.RedirectingEurekaHttpClient.executeOnNewServer(RedirectingEurekaHttp
at com.netflix.discovery.shared.transport.decorator.RedirectingEurekaHttpClient.execute(RedirectingEurekaHttpClient.java
at com.netflix.discovery.shared.transport.decorator.EurekaHttpClientDecorator.register(EurekaHttpClientDecorator.java:56
at com.netflix.discovery.shared.transport.decorator.EurekaHttpClientDecorator$1.execute(EurekaHttpClientDecorator.java:5
at com.netflix.discovery.shared.transport.decorator.RetryableEurekaHttpClient.execute(RetryableEurekaHttpClient.java:120
at com.netflix.discovery.shared.transport.decorator.EurekaHttpClientDecorator.register(EurekaHttpClientDecorator.java:56
at com.netflix.discovery.shared.transport.decorator.EurekaHttpClientDecorator$1.execute(EurekaHttpClientDecorator.java:5
at com.netflix.discovery.shared.transport.decorator.SessionedEurekaHttpClient.execute(SessionedEurekaHttpClient.java:77)
at com.netflix.discovery.shared.transport.decorator.EurekaHttpClientDecorator.register(EurekaHttpClientDecorator.java:56
at com.netflix.discovery.DiscoveryClient.register(DiscoveryClient.java:820)
at com.netflix.discovery.InstanceInfoReplicator.run(InstanceInfoReplicator.java:121)
at java.base/java.util.concurrent.Executors$RunnableAdapter.call(Executors.java:572)
at java.base/java.util.concurrent.FutureTask.run(FutureTask.java:317)
at java.base/java.util.concurrent.ScheduledThreadPoolExecutor$ScheduledFutureTask.run(ScheduledThreadPoolExecutor.java:3
at java.base/java.util.concurrent.ThreadPoolExecutor.runWorker(ThreadPoolExecutor.java:1144)
at java.base/java.util.concurrent.ThreadPoolExecutor$Worker.run(ThreadPoolExecutor.java:642)
at java.base/java.lang.Thread.run(Thread.java:1570)
Caused by: org.apache.hc.client5.http.HttpHostConnectException: Connect to http://localhost:8761 [localhost/127.0.0.1, localhost
at java.base/sun.nio.ch.Net.pollConnect(Native Method)
at java.base/sun.nio.ch.Net.pollConnectNow(Net.java:682)
at java.base/sun.nio.ch.NioSocketImpl.timedFinishConnect(NioSocketImpl.java:542)
```

OUTPUT

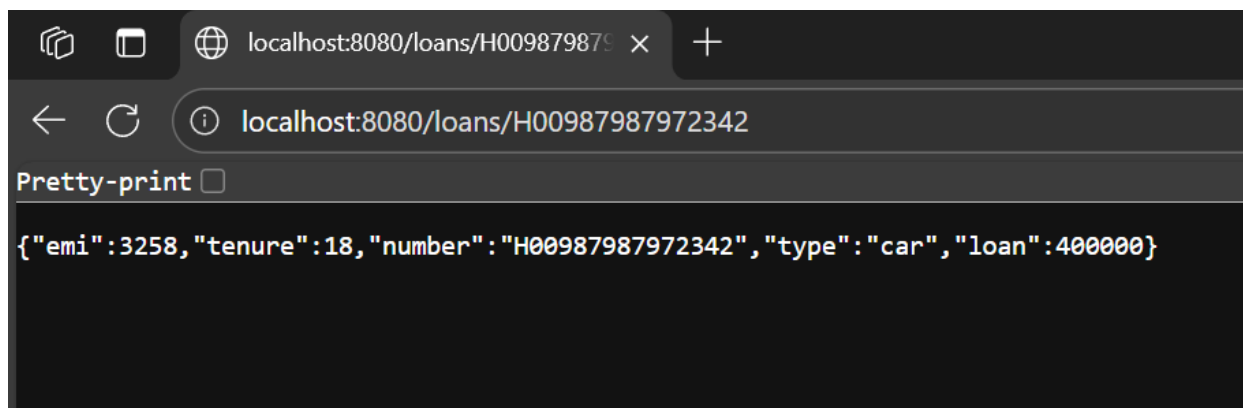


A screenshot of a web browser window. The address bar shows the URL `localhost:8080/accounts/00987987973432`. Below the address bar, there is a "Pretty-print" button with a checkbox. The main content area displays a JSON object: `{"type": "savings", "balance": 234343, "number": "00987987973432"}`.

```
localhost:8080/accounts/00987987973432
```

Pretty-print ☐

```
{"type": "savings", "balance": 234343, "number": "00987987973432"}
```



A screenshot of a web browser window. The address bar shows the URL `localhost:8080/loans/H00987987972342`. Below the address bar, there is a "Pretty-print" button with a checkbox. The main content area displays a JSON object: `{"emi": 3258, "tenure": 18, "number": "H00987987972342", "type": "car", "loan": 400000}`.

```
localhost:8080/loans/H00987987972342
```

Pretty-print ☐

```
{"emi": 3258, "tenure": 18, "number": "H00987987972342", "type": "car", "loan": 400000}
```