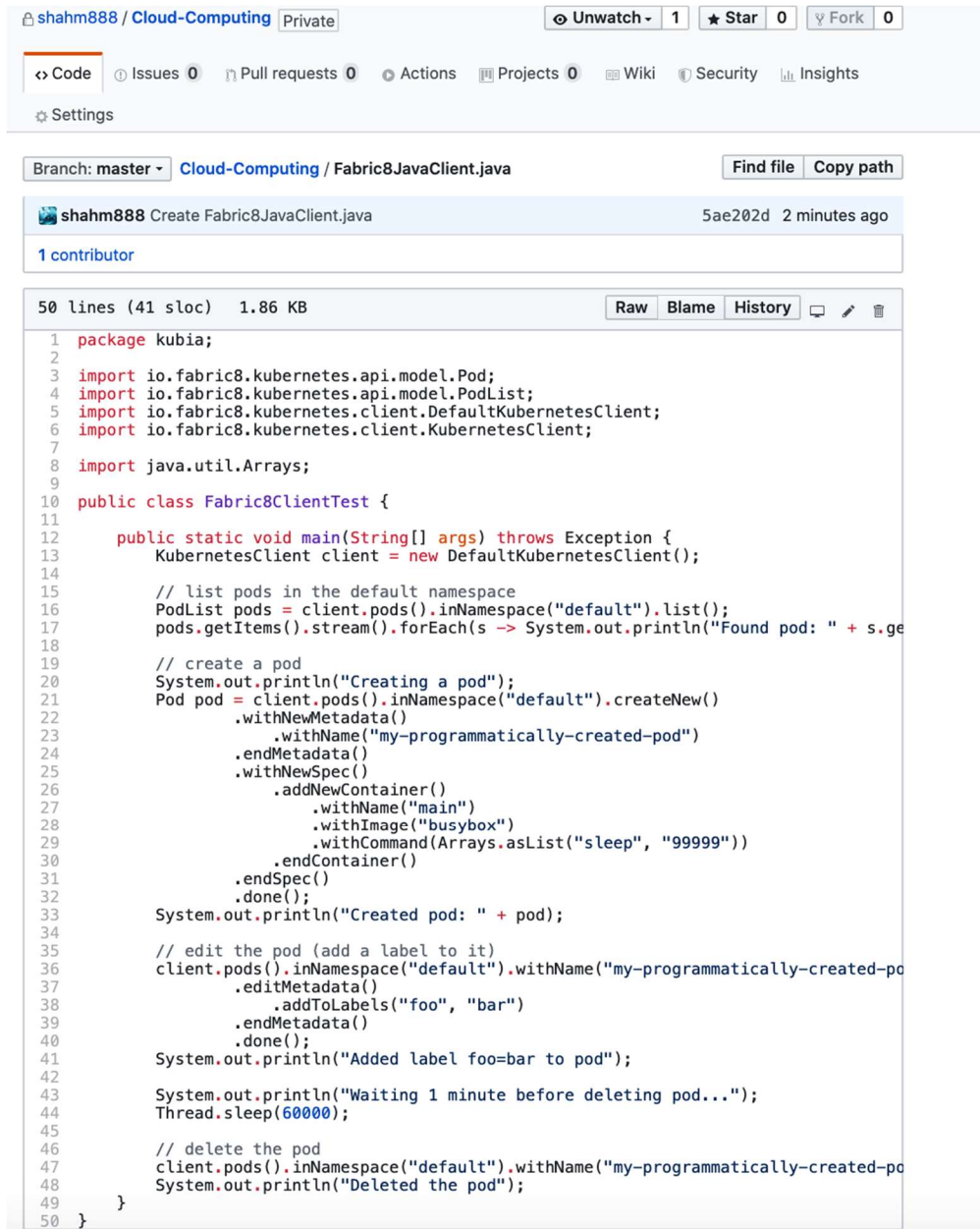


CS571
Mansi Shah
(19526)
Week 12

Using client libraries to talk to the API server

- Listing, creating, updating, and deleting pods with the Fabric8 Java client



The screenshot displays a GitHub repository for 'shahm888 / Cloud-Computing'. The file 'Fabric8JavaClient.java' is selected, showing its commit history and code. The code is a Java program that uses the Fabric8 Java client to interact with the Kubernetes API. It includes imports for Fabric8 client classes and Java utility classes. The main method creates a DefaultKubernetesClient, lists pods in the default namespace, creates a new pod with a specific configuration, adds a label to the pod, waits for one minute, and then deletes the pod. The code is as follows:

```
1 package kubern;
2
3 import io.fabric8.kubernetes.api.model.Pod;
4 import io.fabric8.kubernetes.api.model.PodList;
5 import io.fabric8.kubernetes.client.DefaultKubernetesClient;
6 import io.fabric8.kubernetes.client.KubernetesClient;
7
8 import java.util.Arrays;
9
10 public class Fabric8ClientTest {
11
12     public static void main(String[] args) throws Exception {
13         KubernetesClient client = new DefaultKubernetesClient();
14
15         // list pods in the default namespace
16         PodList pods = client.pods().inNamespace("default").list();
17         pods.getItems().stream().forEach(s -> System.out.println("Found pod: " + s.ge
18
19         // create a pod
20         System.out.println("Creating a pod");
21         Pod pod = client.pods().inNamespace("default").createNew()
22             .withNewMetadata()
23                 .withName("my-programmatically-created-pod")
24             .endMetadata()
25             .withNewSpec()
26                 .addNewContainer()
27                     .withName("main")
28                     .withImage("busybox")
29                     .withCommand(Arrays.asList("sleep", "99999"))
30             .endContainer()
31             .endSpec()
32             .done();
33         System.out.println("Created pod: " + pod);
34
35         // edit the pod (add a label to it)
36         client.pods().inNamespace("default").withName("my-programmatically-created-po
37             .editMetadata()
38                 .addToLabels("foo", "bar")
39             .endMetadata()
40             .done();
41         System.out.println("Added label foo=bar to pod");
42
43         System.out.println("Waiting 1 minute before deleting pod...");
44         Thread.sleep(60000);
45
46         // delete the pod
47         client.pods().inNamespace("default").withName("my-programmatically-created-po
48         System.out.println("Deleted the pod");
49     }
50 }
```

- Exploring the API with Swagger UI

```
mansishah@macbookpro downward % minikube start --extra-config=apiserver.enable-swagger-ui=true
🔔 minikube 1.9.2 is available! Download it: https://github.com/kubernetes/minikube/releases/tag/v1.9.2
💡 To disable this notice, run: 'minikube config set WantUpdateNotification false'

😄 minikube v1.8.2 on Darwin 10.15.4
🌟 Using the hyperkit driver based on existing profile
🕒 Reconfiguring existing host ...
🔄 Starting existing hyperkit VM for "minikube" ...
🐳 Preparing Kubernetes v1.17.3 on Docker 19.03.6 ...
   ▪ apiserver.enable-swagger-ui=true
🚀 Launching Kubernetes ...
🌟 Enabling addons: default-storageclass, storage-provisioner
👉 Done! kubectl is now configured to use "minikube"
mansishah@macbookpro downward % kubectl get po
NAME                READY   STATUS    RESTARTS   AGE
curl                 1/1     Running   3           41h
curl-with-ambassador 2/2     Running   6           39h
downward             0/1     Error     0           45h
my-job-nglj9         0/1     Completed 0           44h
mansishah@macbookpro downward % kubectl proxy &
[1] 26455
mansishah@macbookpro downward % Starting to serve on 127.0.0.1:8001
[]

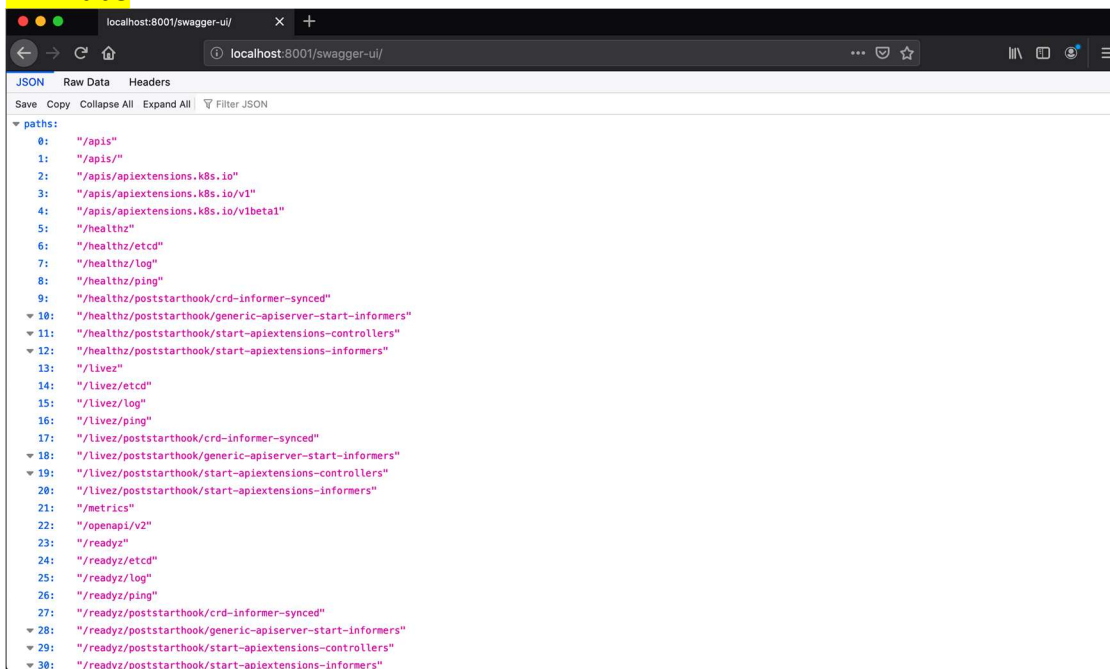
mansishah@macbookpro downward % kubectl cluster-info
Kubernetes master is running at https://192.168.64.5:8443
KubeDNS is running at https://192.168.64.5:8443/api/v1/namespaces/kube-system/services/kube-dns:dns/proxy

To further debug and diagnose cluster problems, use 'kubectl cluster-info dump'.
mansishah@macbookpro downward %
```

Accessing and Invoking the API

Visit <http://localhost:8000/swagger-ui/> from the browser to access Swagger.

This may not be available if you are using Minikube. Please see below for the result when using Minikube.



You can still explore all PATH from Browser
`/api/v1`

JSON	Raw Data	Headers
Save Copy Collapse All Expand All Filter JSON		
<pre>kind: "APIResourceList" groupVersion: "v1" resources: 0: name: "bindings" singularName: "" namespaced: true kind: "Binding" verbs: 0: "create" 1: name: "componentstatuses" singularName: "" namespaced: false kind: "ComponentStatus" verbs: 0: "get" 1: "list" shortNames: 0: "cs" 2: name: "configmaps" singularName: "" namespaced: true kind: "ConfigMap" verbs: 0: "create" 1: "delete" 2: "deletecollection" 3: "get" 4: "list" 5: "patch"</pre>		

`/apis/authorization.k8s.io/v1`

JSON	Raw Data	Headers
Save Copy Collapse All Expand All Filter JSON		
<pre>kind: "APIResourceList" apiVersion: "v1" groupVersion: "authorization.k8s.io/v1" resources: 0: name: "localsubjectaccessreviews" singularName: "" namespaced: true kind: "LocalSubjectAccessReview" verbs: 0: "create" 1: name: "selfsubjectaccessreviews" singularName: "" namespaced: false kind: "SelfSubjectAccessReview" verbs: 0: "create" 2: name: "selfsubjectrulesreviews" singularName: "" namespaced: false kind: "SelfSubjectRulesReview" verbs: 0: "create" 3: name: "subjectaccessreviews" singularName: "" namespaced: false kind: "SubjectAccessReview" verbs: 0: "create"</pre>		

`/metrics`

localhost:8001/metrics
<pre># HELP aggregator_openapi_v2_regeneration_count [ALPHA] Counter of OpenAPI v2 spec regeneration count broken down by causing APIService name and reason. # TYPE aggregator_openapi_v2_regeneration_count counter aggregator_openapi_v2_regeneration_count{apiservice="*",reason="startup"} 0 # HELP aggregator_openapi_v2_regeneration_duration [ALPHA] Gauge of OpenAPI v2 spec regeneration duration in seconds. # TYPE aggregator_openapi_v2_regeneration_duration gauge aggregator_openapi_v2_regeneration_duration{reason="startup"} 0.556527362 # HELP apiserver_admission_controller_admission_duration_seconds [ALPHA] Admission controller latency histogram in seconds, identified by name and broken out for each operation and API resource and type (validate or admit). # TYPE apiserver_admission_controller_admission_duration_seconds histogram apiserver_admission_controller_admission_duration_seconds_bucket{name="DefaultStorageClass",operation="CREATE",rejected="false",type="admit",le="0.005"} 124 apiserver_admission_controller_admission_duration_seconds_bucket{name="DefaultStorageClass",operation="CREATE",rejected="false",type="admit",le="0.025"} 124 apiserver_admission_controller_admission_duration_seconds_bucket{name="DefaultStorageClass",operation="CREATE",rejected="false",type="admit",le="0.1"} 124 apiserver_admission_controller_admission_duration_seconds_bucket{name="DefaultStorageClass",operation="CREATE",rejected="false",type="admit",le="0.5"} 124 apiserver_admission_controller_admission_duration_seconds_bucket{name="DefaultStorageClass",operation="CREATE",rejected="false",type="admit",le="2.5"} 124 apiserver_admission_controller_admission_duration_seconds_bucket{name="DefaultStorageClass",operation="CREATE",rejected="false",type="admit",le="+Inf"} 124 apiserver_admission_controller_admission_duration_seconds_sum{name="DefaultStorageClass",operation="CREATE",rejected="false",type="admit"} 5.4204000000000002e-05 apiserver_admission_controller_admission_duration_seconds_count{name="DefaultStorageClass",operation="CREATE",rejected="false",type="admit"} 124 apiserver_admission_controller_admission_duration_seconds_bucket{name="DefaultTolerationSeconds",operation="CREATE",rejected="false",type="admit",le="0.005"} 124 apiserver_admission_controller_admission_duration_seconds_bucket{name="DefaultTolerationSeconds",operation="CREATE",rejected="false",type="admit",le="0.025"} 124 apiserver_admission_controller_admission_duration_seconds_bucket{name="DefaultTolerationSeconds",operation="CREATE",rejected="false",type="admit",le="0.1"} 124 apiserver_admission_controller_admission_duration_seconds_bucket{name="DefaultTolerationSeconds",operation="CREATE",rejected="false",type="admit",le="0.5"} 124 apiserver_admission_controller_admission_duration_seconds_bucket{name="DefaultTolerationSeconds",operation="CREATE",rejected="false",type="admit",le="2.5"} 124 apiserver_admission_controller_admission_duration_seconds_bucket{name="DefaultTolerationSeconds",operation="CREATE",rejected="false",type="admit",le="+Inf"} 124 apiserver_admission_controller_admission_duration_seconds_sum{name="DefaultTolerationSeconds",operation="CREATE",rejected="false",type="admit"} 4.8822999999999998e-05</pre>