CONTINUOUS ASSESSMENT

LAB 6

CLOUD DATA CENTRES

ZAPPC4202

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YEAR: 4

COURSE: INFORMATION TECHNOLOGY MANAGEMENT

ISSUED YEAR: 2024

LECTURER: LEI SHI

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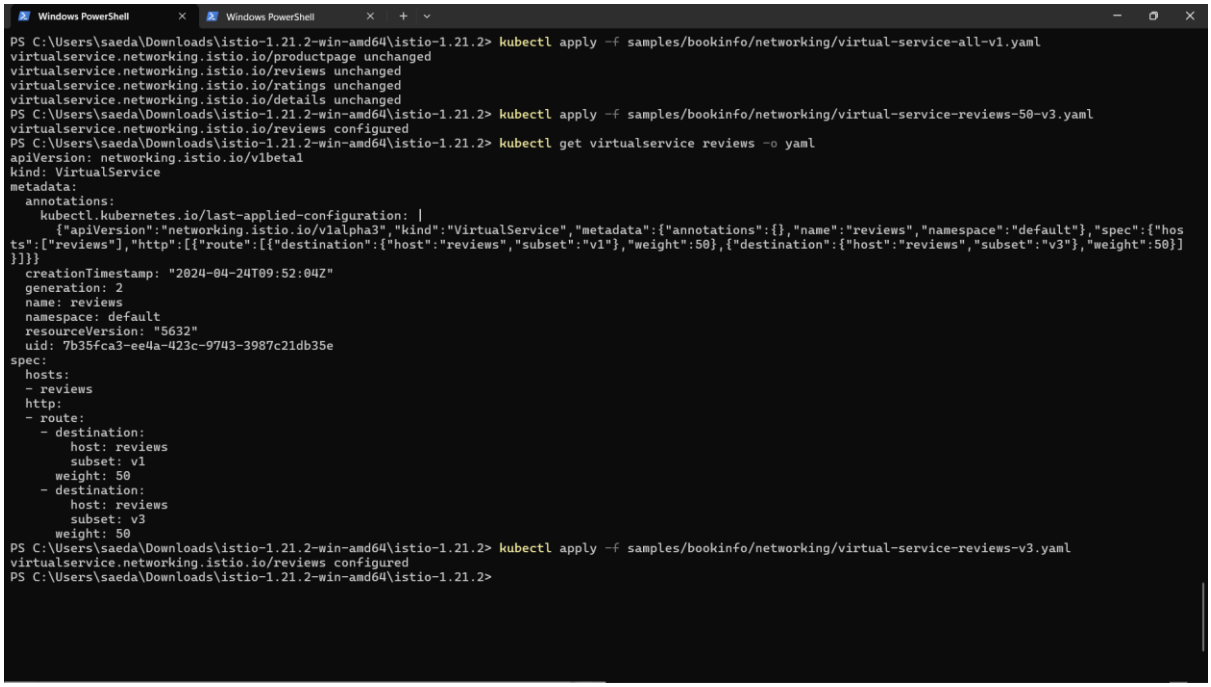
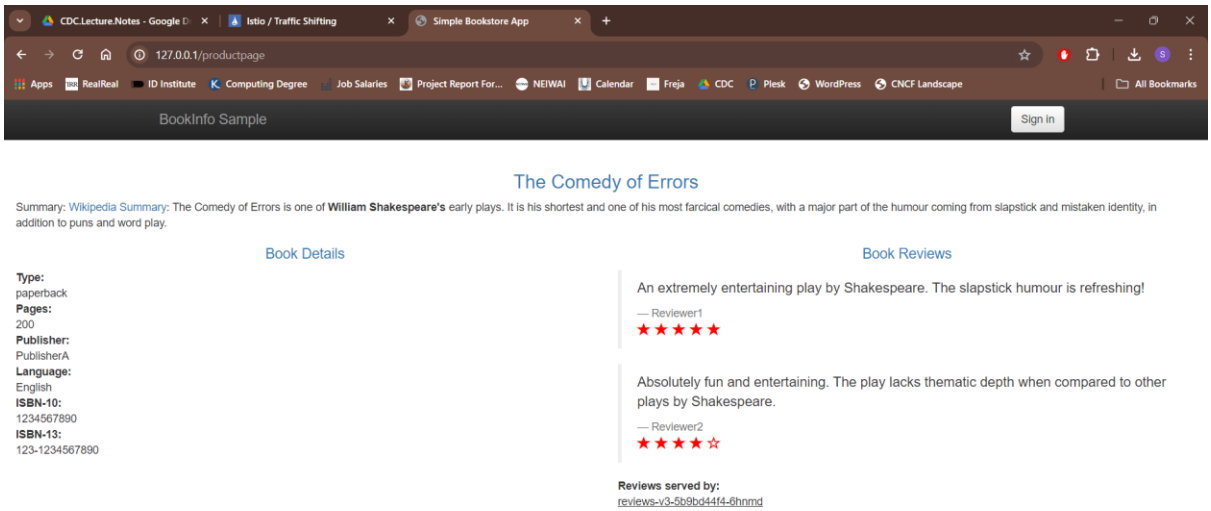
Traffic Shifting

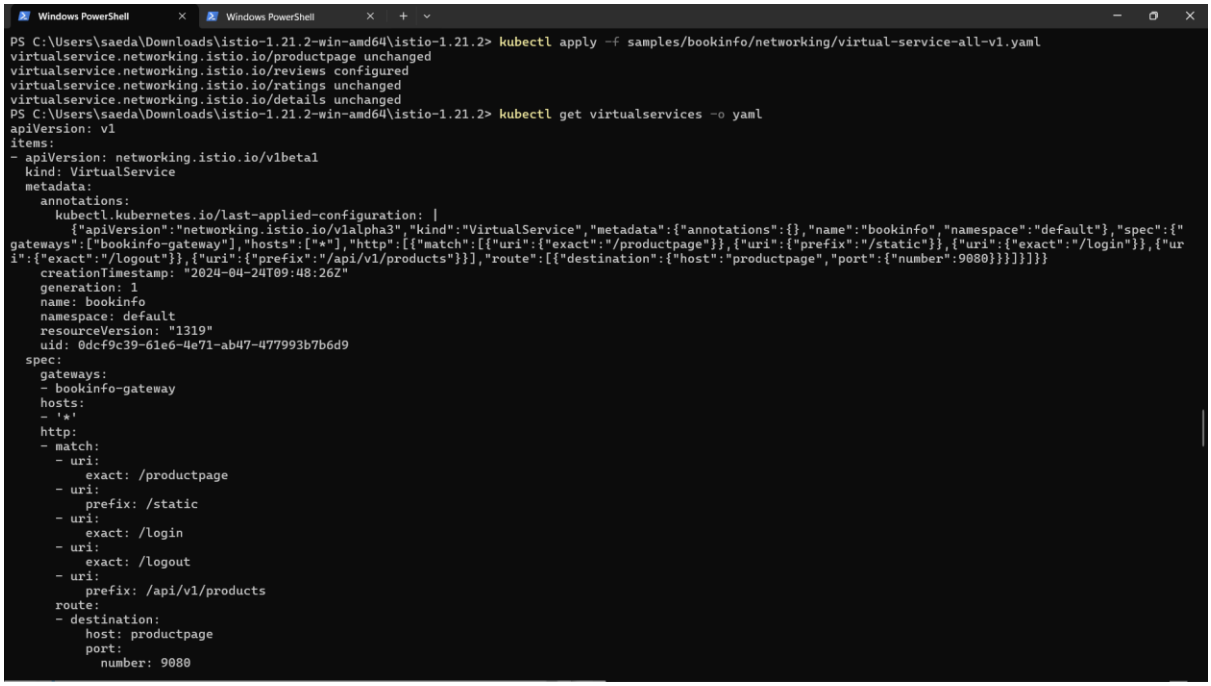
Apply weight-based routing

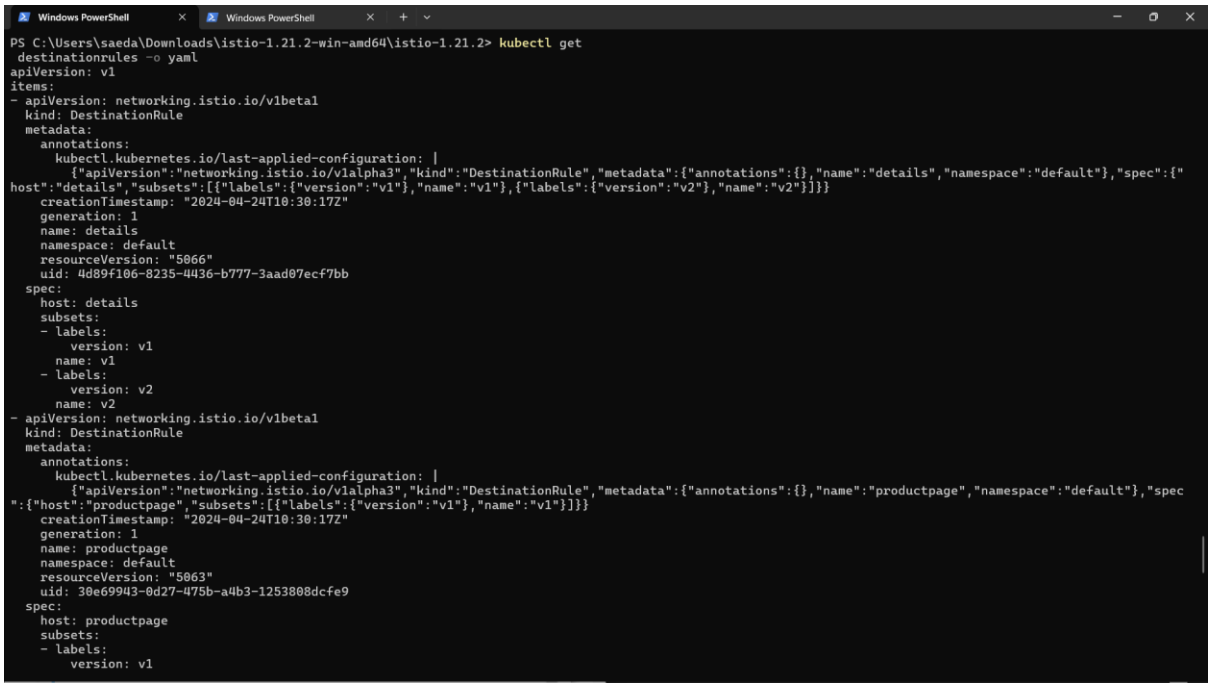


```
PS C:\Users\saeda\Downloads\istio-1.21.2-win-amd64\istio-1.21.2> kubectl apply -f samples/bookinfo/networking/virtual-service-all-v1.yaml
virtualservice.networking.istio.io/productpage unchanged
virtualservice.networking.istio.io/reviews unchanged
virtualservice.networking.istio.io/ratings unchanged
virtualservice.networking.istio.io/details unchanged
PS C:\Users\saeda\Downloads\istio-1.21.2-win-amd64\istio-1.21.2> kubectl apply -f samples/bookinfo/networking/virtual-service-reviews-50-v3.yaml
virtualservice.networking.istio.io/reviews configured
PS C:\Users\saeda\Downloads\istio-1.21.2-win-amd64\istio-1.21.2> kubectl get virtualservice reviews -o yaml
apiVersion: networking.istio.io/v1beta1
kind: VirtualService
metadata:
  annotations:
    kubectl.kubernetes.io/last-applied-configuration: |
      {"apiVersion":"networking.istio.io/v1alpha3","kind":"VirtualService","metadata":{"annotations":{},"name":"reviews","namespace":"default"},"spec":{"hos
ts":["reviews"],"http":[{"route":[{"destination":{"host":"reviews","subset":"v1"},"weight":50},{"destination":{"host":"reviews","subset":"v3"},"weight":50}]
}]}}
  creationTimestamp: "2024-04-24T09:52:04Z"
  generation: 2
  name: reviews
  namespace: default
  resourceVersion: "5632"
  uid: 7b35fca3-ee4a-423c-9743-3987c21db35e
spec:
  hosts:
  - reviews
  http:
  - route:
    - destination:
        host: reviews
        subset: v1
      weight: 50
    - destination:
        host: reviews
        subset: v3
      weight: 50
PS C:\Users\saeda\Downloads\istio-1.21.2-win-amd64\istio-1.21.2> kubectl apply -f samples/bookinfo/networking/virtual-service-reviews-v3.yaml
virtualservice.networking.istio.io/reviews configured
PS C:\Users\saeda\Downloads\istio-1.21.2-win-amd64\istio-1.21.2>
```



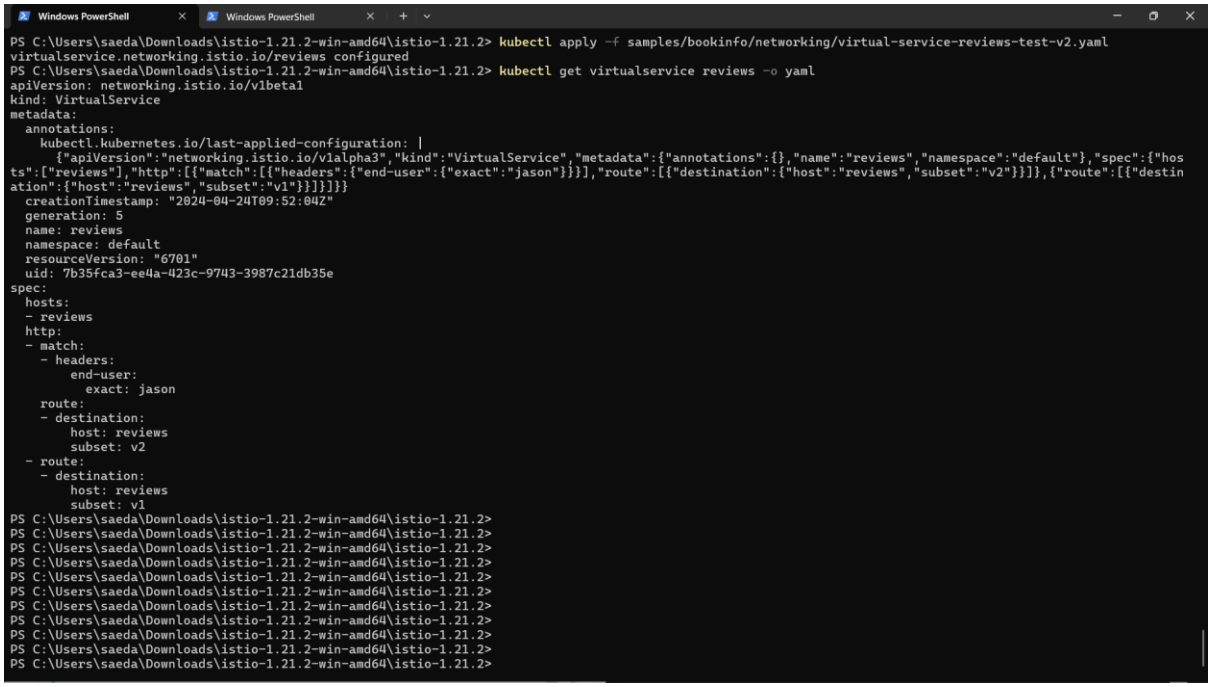
Understanding what happened



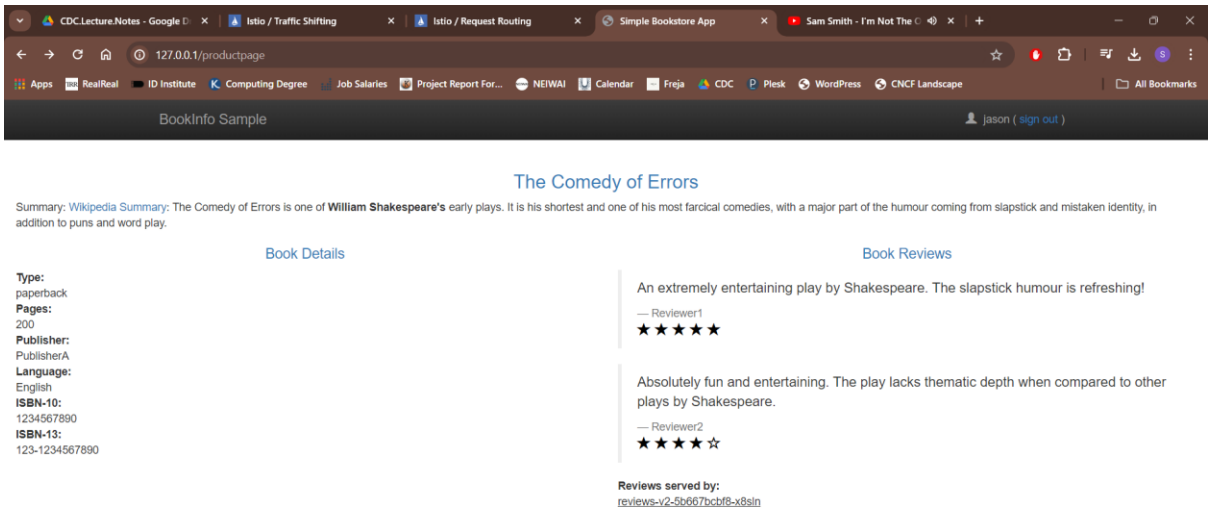


Request Routing

Route based on user identity



```
PS C:\Users\saeda\Downloads\istio-1.21.2-win-amd64\istio-1.21.2> kubectl apply -f samples/bookinfo/networking/virtual-service-reviews-test-v2.yaml
virtualservice.networking.istio.io/reviews configured
PS C:\Users\saeda\Downloads\istio-1.21.2-win-amd64\istio-1.21.2> kubectl get virtualservice reviews -o yaml
apiVersion: networking.istio.io/v1beta1
kind: VirtualService
metadata:
  annotations:
    kubectl.kubernetes.io/last-applied-configuration: |
      {"apiVersion":"networking.istio.io/v1alpha3","kind":"VirtualService","metadata":{"annotations":{},"name":"reviews","namespace":"default"},"spec":{"hos
ts":["reviews"],"http":[{"match":[{"headers":{"end-user":{"exact":"jason"}}}],"route":[{"destination":{"host":"reviews","subset":"v2"}}]},{"route":[{"destin
ation":{"host":"reviews","subset":"v1"}}]}]}
  creationTimestamp: "2024-04-24T09:52:04Z"
  generation: 5
  name: reviews
  namespace: default
  resourceVersion: "6701"
  uid: 7b35fca3-ee4a-423c-9743-3987c21db35e
spec:
  hosts:
  - reviews
  http:
  - match:
    - headers:
        end-user:
          exact: jason
    route:
    - destination:
        host: reviews
        subset: v2
  - route:
    - destination:
        host: reviews
        subset: v1
PS C:\Users\saeda\Downloads\istio-1.21.2-win-amd64\istio-1.21.2>
PS C:\Users\saeda\Downloads\istio-1.21.2-win-amd64\istio-1.21.2>
PS C:\Users\saeda\Downloads\istio-1.21.2-win-amd64\istio-1.21.2>
PS C:\Users\saeda\Downloads\istio-1.21.2-win-amd64\istio-1.21.2>
PS C:\Users\saeda\Downloads\istio-1.21.2-win-amd64\istio-1.21.2>
PS C:\Users\saeda\Downloads\istio-1.21.2-win-amd64\istio-1.21.2>
PS C:\Users\saeda\Downloads\istio-1.21.2-win-amd64\istio-1.21.2>
PS C:\Users\saeda\Downloads\istio-1.21.2-win-amd64\istio-1.21.2>
PS C:\Users\saeda\Downloads\istio-1.21.2-win-amd64\istio-1.21.2>
PS C:\Users\saeda\Downloads\istio-1.21.2-win-amd64\istio-1.21.2>
```

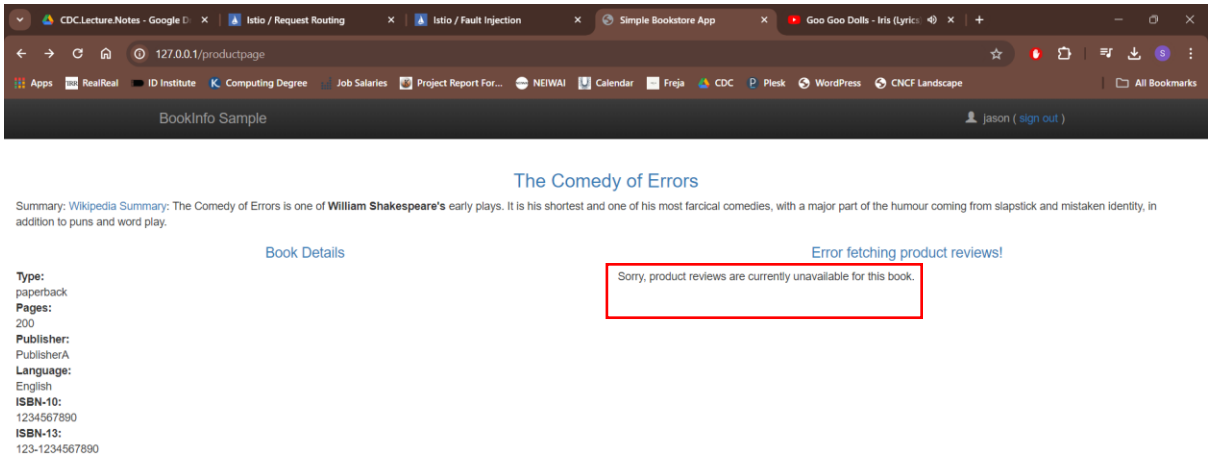


Fault Injection

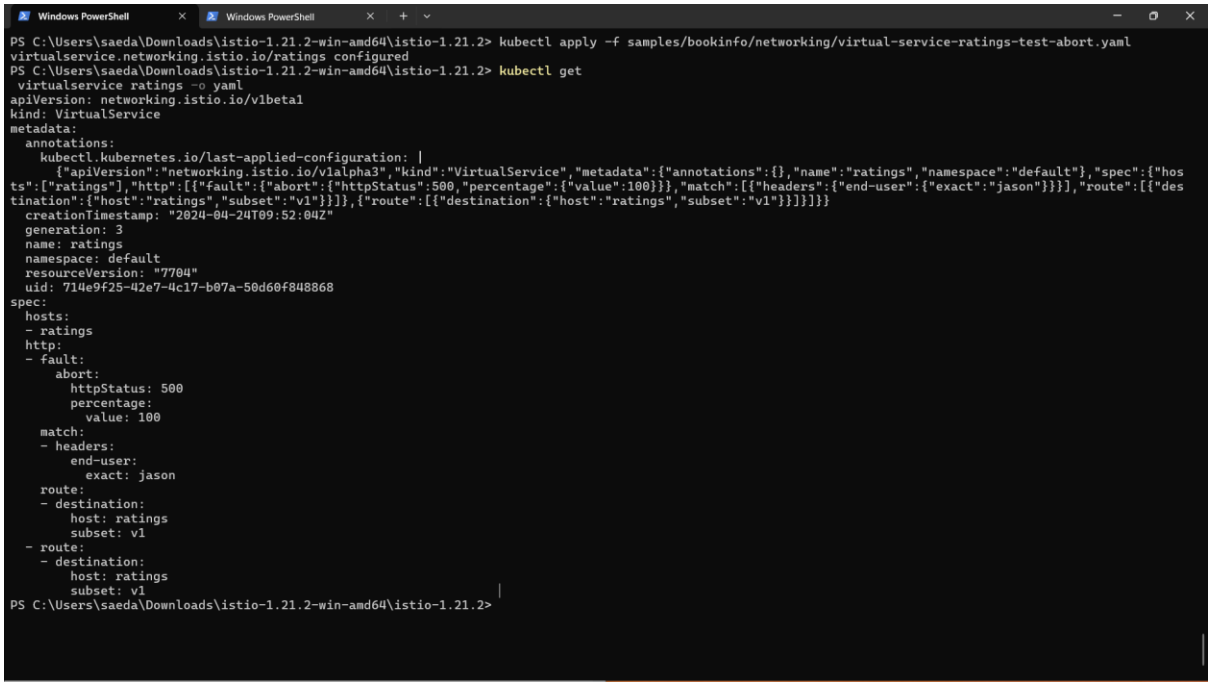
Injecting an HTTP delay fault

```
Windows PowerShell
Windows PowerShell
PS C:\Users\saeda\Downloads\istio-1.21.2-win-amd64\istio-1.21.2> kubectl apply -f samples/bookinfo/networking/virtual-service-all-v1.yaml
virtualservice.networking.istio.io/productpage unchanged
virtualservice.networking.istio.io/reviews configured
virtualservice.networking.istio.io/ratings unchanged
virtualservice.networking.istio.io/details unchanged
PS C:\Users\saeda\Downloads\istio-1.21.2-win-amd64\istio-1.21.2> kubectl apply -f samples/bookinfo/networking/virtual-service-reviews-test-v2.yaml
virtualservice.networking.istio.io/reviews configured
PS C:\Users\saeda\Downloads\istio-1.21.2-win-amd64\istio-1.21.2> kubectl apply -f samples/bookinfo/networking/virtual-service-ratings-test-delay.yaml
virtualservice.networking.istio.io/ratings configured
PS C:\Users\saeda\Downloads\istio-1.21.2-win-amd64\istio-1.21.2> kubectl get virtualservice ratings -o yaml
apiVersion: networking.istio.io/v1beta1
kind: VirtualService
metadata:
  annotations:
    kubectl.kubernetes.io/last-applied-configuration: |
      {"apiVersion":"networking.istio.io/v1alpha3","kind":"VirtualService","metadata":{"annotations":{},"name":"ratings","namespace":"default"},"spec":{"hos
ts":["ratings"],"http":[{"fault":{"delay":{"fixedDelay":"7s","percentage":{"value":100}}},"match":[{"headers":{"end-user":{"exact":"jason"}}}],"route":[{"de
stination":{"host":"ratings","subset":"v1"}}]},{"route":[{"destination":{"host":"ratings","subset":"v1"}}]}]}}
  creationTimestamp: "2024-04-24T09:52:04Z"
  generation: 2
  name: ratings
  namespace: default
  resourceVersion: "7459"
  uid: 714e9f25-42e7-4c17-b07a-50d60f848868
spec:
  hosts:
  - ratings
  http:
  - fault:
      delay:
        fixedDelay: 7s
        percentage:
          value: 100
    match:
    - headers:
        end-user:
          exact: jason
    route:
    - destination:
        host: ratings
        subset: v1
  - route:
    - destination:
        host: ratings
```

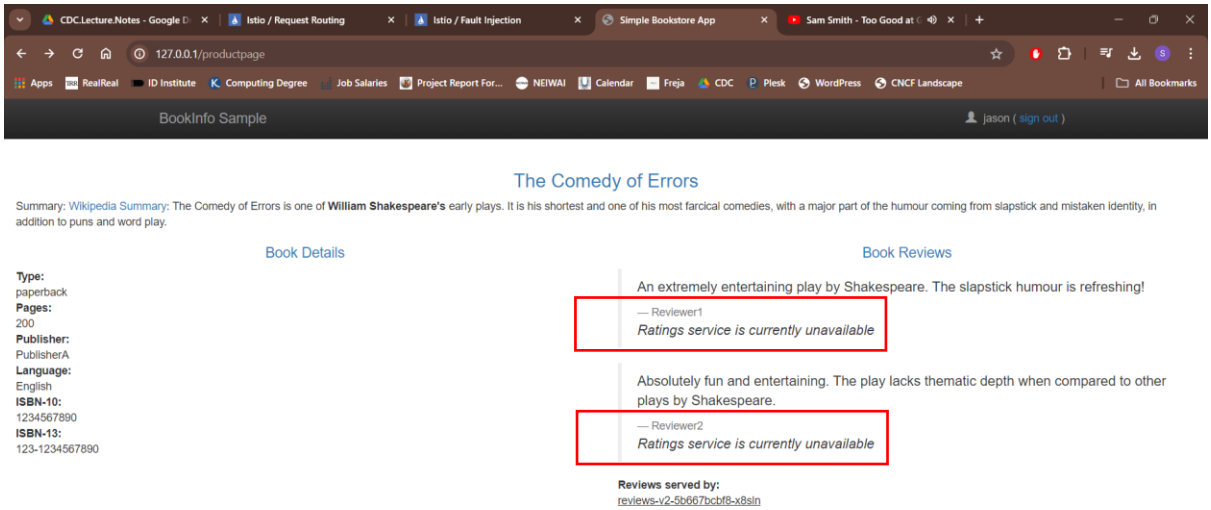
Testing the delay configuration

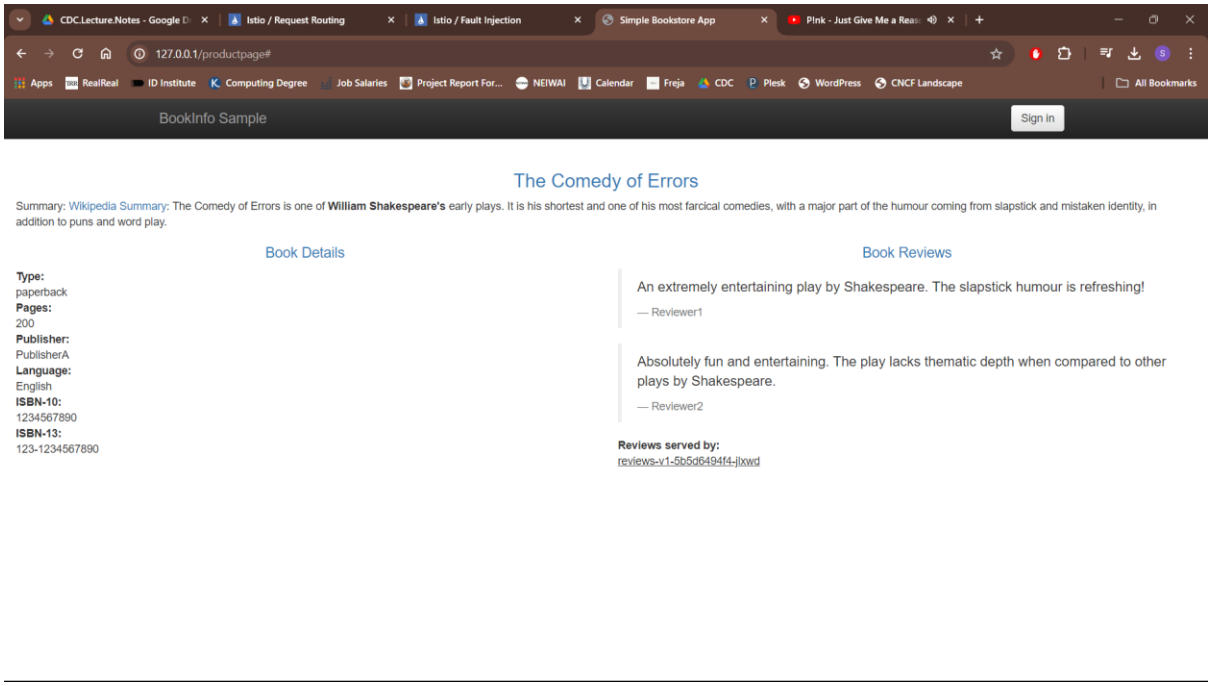


Injecting an HTTP abort fault



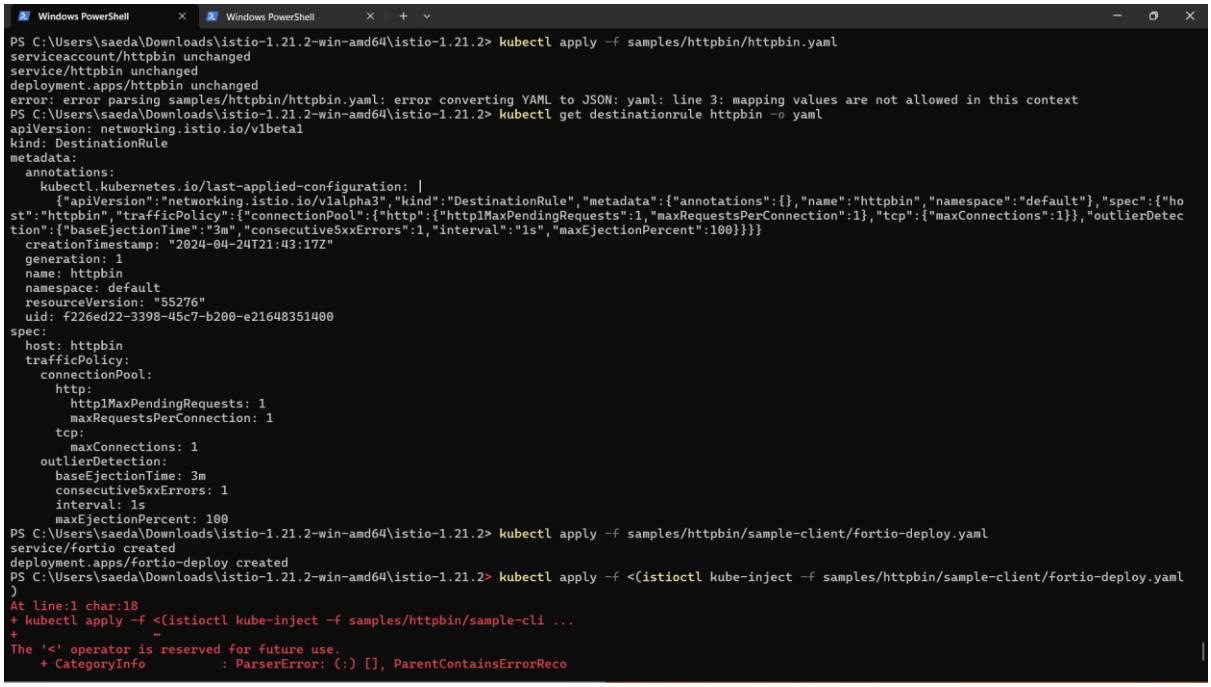
Testing the abort configuration



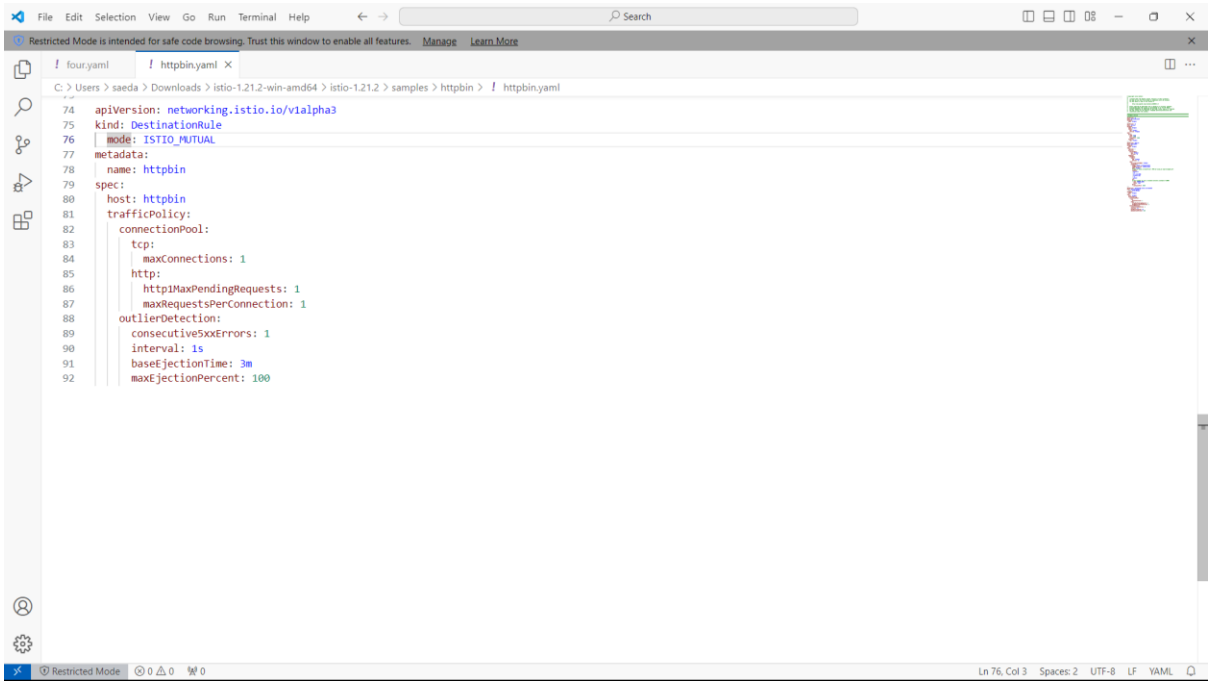

CDC.Lecture.Notes - Google D
Istio / Request Routing
Istio / Fault Injection
Simple Bookstore App
Pink - Just Give Me a Reas
127.0.0.1/productpage#
Apps
RealReal
ID Institute
Computing Degree
Job Salaries
Project Report For...
NEIWAI
Calendar
Freja
CDC
Plesk
WordPress
CNCF Landscape
All Bookmarks
BookInfo Sample
Sign in
The Comedy of Errors
Summary: Wikipedia Summary: The Comedy of Errors is one of William Shakespeare's early plays. It is his shortest and one of his most farcical comedies, with a major part of the humour coming from slapstick and mistaken identity, in addition to puns and word play.
Book Details
Type:
paperback
Pages:
200
Publisher:
PublisherA
Language:
English
ISBN-10:
1234567890
ISBN-13:
123-1234567890
Book Reviews
An extremely entertaining play by Shakespeare. The slapstick humour is refreshing!
— Reviewer1
Absolutely fun and entertaining. The play lacks thematic depth when compared to other plays by Shakespeare.
— Reviewer2
Reviews served by:
reviews-v1-5b5d6494f4-jlxwd

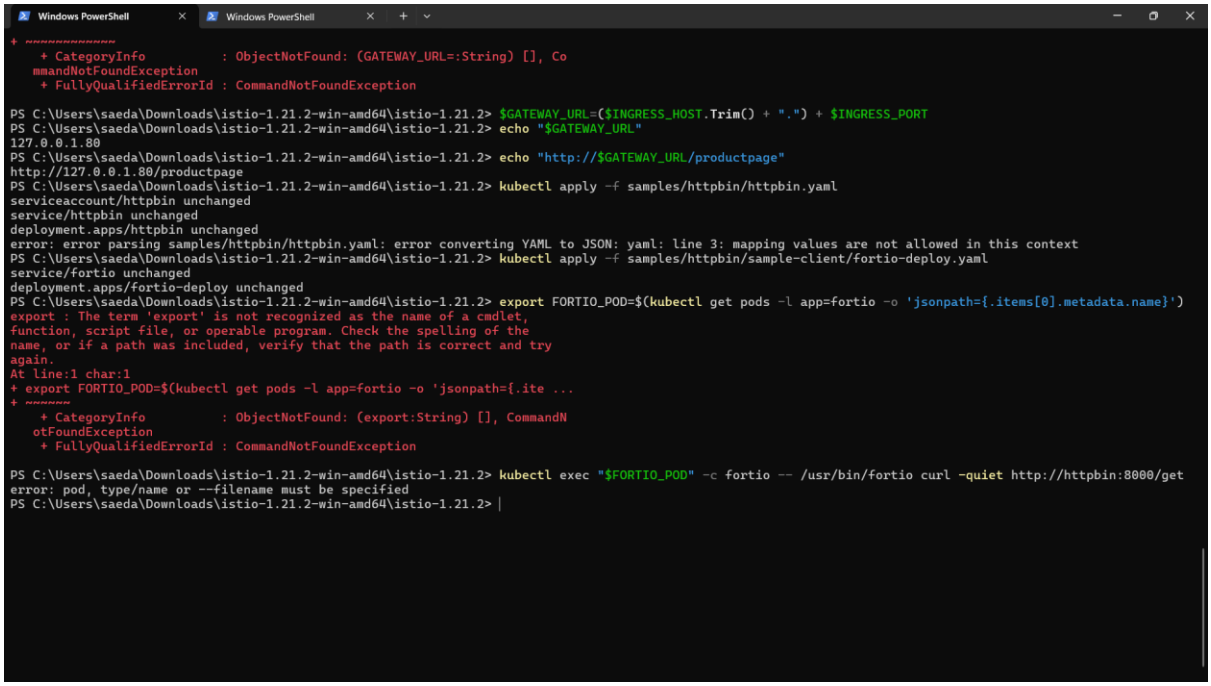
Circuit Breaking

Configuring the circuit breaker



```
PS C:\Users\saeda\Downloads\istio-1.21.2-win-amd64\istio-1.21.2> kubectl apply -f samples/httpbin/httpbin.yaml
serviceaccount/httpbin unchanged
service/httpbin unchanged
deployment.apps/httpbin unchanged
error: error parsing samples/httpbin/httpbin.yaml: error converting YAML to JSON: yaml: line 3: mapping values are not allowed in this context
PS C:\Users\saeda\Downloads\istio-1.21.2-win-amd64\istio-1.21.2> kubectl get destinationrule httpbin -o yaml
apiVersion: networking.istio.io/v1beta1
kind: DestinationRule
metadata:
  annotations:
    kubectl.kubernetes.io/last-applied-configuration: |
      {"apiVersion":"networking.istio.io/v1alpha3","kind":"DestinationRule","metadata":{"annotations":{},"name":"httpbin","namespace":"default"},"spec":{"ho
st":"httpbin","trafficPolicy":{"connectionPool":{"http":{"http1MaxPendingRequests":1,"maxRequestsPerConnection":1},"tcp":{"maxConnections":1}},"outlierDetec
tion":{"baseEjectionTime":"3m","consecutive5xxErrors":1,"interval":"1s","maxEjectionPercent":100}}}
  creationTimestamp: "2024-04-24T21:43:17Z"
  generation: 1
  name: httpbin
  namespace: default
  resourceVersion: "55276"
  uid: f226ed22-3398-45c7-b200-e21648351400
spec:
  host: httpbin
  trafficPolicy:
    connectionPool:
      http:
        http1MaxPendingRequests: 1
        maxRequestsPerConnection: 1
      tcp:
        maxConnections: 1
    outlierDetection:
      baseEjectionTime: 3m
      consecutive5xxErrors: 1
      interval: 1s
      maxEjectionPercent: 100
PS C:\Users\saeda\Downloads\istio-1.21.2-win-amd64\istio-1.21.2> kubectl apply -f samples/httpbin/sample-client/fortio-deploy.yaml
service/fortio created
deployment.apps/fortio-deploy created
PS C:\Users\saeda\Downloads\istio-1.21.2-win-amd64\istio-1.21.2> kubectl apply -f <(istioctl kube-inject -f samples/httpbin/sample-client/fortio-deploy.yaml
)
At line:1 char:18
+ kubectl apply -f <(istioctl kube-inject -f samples/httpbin/sample-cli ...
+                  ~
The '<' operator is reserved for future use.
    + CategoryInfo          : ParserError: (:) [], ParentContainsErrorReco
```



```
apiVersion: networking.istio.io/v1alpha3
kind: DestinationRule
mode: ISTIO_MUTUAL
metadata:
  name: httpbin
spec:
  host: httpbin
  trafficPolicy:
    connectionPool:
      tcp:
        maxConnections: 1
      http:
        http1MaxPendingRequests: 1
        maxRequestsPerConnection: 1
    outlierDetection:
      consecutive5xxErrors: 1
      interval: 1s
      baseEjectionTime: 3m
      maxEjectionPercent: 100
```

Adding a client