

Project Report

Implemented optional features

- Static analysis step in the pipeline
 - I have implemented the static analysis for service-1, which is written in Java, service-2, which is implemented in DotNet and state-service, which is written in Java and serves for state management and authentication
 - The results from all services are in Gitlab Code Quality format
 - I have used Maven Checkstyle for the static analysis of Java Services and gitlab-code-quality maven plugin to convert the output to Gitlab Code Quality format
 - I have used Roslynator tool for the static analysis of Dotnet Service and codequalitytogitlab tool to convert the output to Gitlab Code Quality format
- Monitoring and logging for troubleshooting
 - I have implemented two request counters - one for requests to API Gateway (:8197) using GET /request and one for requests via REQUEST button through browser view (:8198)
 - I have included system start up time in the logged information (corresponds to nginx startup)
 - Browser request tracker is reset after system changes back to INIT
 - The information is included in the index.html page with REQUEST and STOP buttons
- Deployment to external server
 - The system is deployed on CSC Virtual machine and is accessible on <http://195.148.21.89:8197> and <http://195.148.21.89:8198>
 - The underlying virtual machine is running Ubuntu 20.04
 - Note that after shutting down the system (via browser or API gateway), the system needs to be redeployed to run again

Instructions for examiner to test the system

The system works according to the project description. Username and password is provided in login.txt. The user will be redirected to index.html upon logging and the system state will be updated to RUNNING. If the system switches to PAUSED or INIT state, while the user is logged in and index.html is displayed, an error description is shown to the user after trying to click on either REQUEST or STOP buttons.

GET /state, GET /request, GET /run-log work no matter what the state of the system is (except for SHUTDOWN). When the system is in INIT state or using an invalid state value for PUT /state is going to end in error response.

Additional State service handles state information. The service also handles authentication against .htpasswd file as a replacement to HTTP Basic Authentication from exercise4.

- Hardware: CPU - Intel Core i7-14650HX 2.20 GHz, RAM – 16 GB
- CPU Architecture – x64
- Operating Systems: Ubuntu 22.04 (local VM), Ubuntu 20.04 (CSC VM), Windows 11
- Docker version: 27.3.1 (local VM), 27.2.1 (CSC VM), 27.3.1
- Docker compose version: 2.29.7 (local VM), 2.29.7 (CSC VM), 2.30.3

Description of the CI/CD pipeline

The gitlab runner was set up using Terraform (can be provided upon request) on a CSC VM and handles steps with tag 'project'. The executor type is 'docker' and I bind the docker socket of the underlying VM. The base image of the runner is 'docker:latest'.

I have used 'project' branch based on the 'exercise4' branch for all commits related to the project changes. Monitoring is described in chapter Optional features.

The pipeline includes these steps:

1. Static Analysis
 - Described in chapter optional features
2. Build
 - The CI/CD pipeline uses docker compose as a build tool
 - The Java services are built using maven 3.9.9
 - The DotNet service is built using DotNet SDK 8.0
3. Testing
 - I have used end-to-end tests written in python.
 - Before implementing each feature, I first written the tests for it
 - I have used an environment variable to allow access to GET :8197/request-count/* and POST :8197/state/running → the access to these resources is not allowed in the final deployment
 - The tests are run in the order mentioned bellow
 - Test case no.1 tests response from GET /request
 - Test case no.2 tests GET /state
 - Test case no.3 tests PUT /state after running POST /state/running to switch from INIT to RUNNING and then tests valid and invalid transition and invalid state value
 - Test case no.4 tests GET /run-log which should correspond to state changes from no.3
 - Test case no.5 tests GET /request-count and PUT /request-count

- Test case no.6 tests shutdown using PUT /state and docker ps to check whether all containers are shutdown
- If the tests failed, the containers are shutdown during after_script

4. Deployment

- The system is deployed on the same VM as the gitlab-runner is running using docker compose, with bound socket of the underlying VM

Reflections

I gained a better understanding of the relationship between gitlab-runner and the CI/CD pipeline, as before I only used shared runners and didn't need to set up my own. I also got an understanding of Nginx and its limitations.

The most challenging part for me was the understanding and implementation of system state and the login page, since at first, I wanted to do both solely through Nginx, which ended up being too complex. I wanted to implement a custom login page through nginx while using the basic authentication I already set up during exercise4, but this ended in a dead end. The creation of a separate state service to handle authentication and the state management proved a good step to solve my issues. Though the introduction of a stateful service is not the best practice.

Things that could have been done better:

1. Deployment

- It is better practice to deploy the system on a separate VM to the one the gitlab-runner is set up on
- This could have been achieved by using a registry to publish the docker images or packaging the built images and using ssh to copy the files to the separate VM and start it up

2. Monitoring

- I could have used Prometheus with Grafana to provide thorough monitoring of the requests
- Otherwise, I could have made a proper tracker of requests made and have a separate html page to display this information

3. Testing

- I'm using a constant IP address for the end-to-end tests, which is not an ideal solution

Estimated amount of effort - 35h

FAILED TESTS

```
1 Running with gitlab-runner 17.6.0 (374d34fd)
2   on gitlab-runner t3_QXHq_C, system ID: s_a64a876c7230
3 Preparing the "docker" executor 00:04
4 Using Docker executor with image docker:latest ...
5 Pulling docker image docker:latest ...
6 Using docker image sha256:37123e40ec5295ac68158ace2d5c302a8a5d33f6e40b9a3397be063f941d3705 for docker:latest with digest docker@sha256:2711aa74a49d0f58233c41b6f3513e7aaa4b54f2aab0858cb3430f032bc169be ...
7 Preparing environment 00:01
8 Running on runner-t3qxhq-project-37-concurrent-0 via gitlab-runner...
9 Getting source from Git repository 00:01
10 Fetching changes with git depth set to 20...
11 Reinitialized existing Git repository in /builds/david.laurovic/comp.se.140-exercise/.git/
12 Checking out 7596a4d7 as detached HEAD (ref is project)...
13 Removing system-info-service-2-dotnet/src/SystemInfoService2DotNet/gl-code-quality-report.json
14 Removing system-info-service-2-dotnet/src/SystemInfoService2DotNet/roslynator.xml
15 Skipping Git submodules setup
16 Downloading artifacts 00:02
17 Downloading artifacts for build (4061)...
18 Downloading artifacts from coordinator... ok          host=compse140.devops-gitlab.rd.tuni.fi id=4061 responseStatus=200 OK token=glcblt-64
19 WARNING: Part of .git directory is on the list of files to extract
20 WARNING: This may introduce unexpected problems
21 Executing "step_script" stage of the job script 00:34
22 Using docker image sha256:37123e40ec5295ac68158ace2d5c302a8a5d33f6e40b9a3397be063f941d3705 for docker:latest with digest docker@sha256:2711aa74a49d0f58233c41b6f3513e7aaa4b54f2aab0858cb3430f032bc169be ...
23 $ apk add --no-cache python3 py3-pip
24 fetch https://dl-cdn.alpinelinux.org/alpine/v3.20/main/x86_64/APKINDEX.tar.gz
25 fetch https://dl-cdn.alpinelinux.org/alpine/v3.20/community/x86_64/APKINDEX.tar.gz
26 (1/21) Installing libbz2 (1.0.8-r6)
27 (2/21) Installing libffi (3.4.6-r0)
28 (3/21) Installing gdbm (1.23-r1)
29 (4/21) Installing libgcc (13.2.1_git20240309-r0)
30 (5/21) Installing libstdc++ (13.2.1_git20240309-r0)
31 (6/21) Installing mpdecimal (4.0.0-r0)
32 (7/21) Installing libpanelw (6.4_p20240420-r2)
33 (8/21) Installing readline (8.2.10-r0)
34 (9/21) Installing sqlite-libs (3.45.3-r1)
35 (10/21) Installing python3 (3.12.8-r1)
36 (11/21) Installing python3-pycache-pyc0 (3.12.8-r1)
37 (12/21) Installing pyc (3.12.8-r1)
38 (13/21) Installing py3-setuptools-pyc (70.3.0-r0)
39 (14/21) Installing py3-pip-pyc (24.0-r2)
40 (15/21) Installing py3-parsing (3.1.2-r1)
41 (16/21) Installing py3-parsing-pyc (3.1.2-r1)
42 (17/21) Installing py3-packaging-pyc (24.0-r1)
43 (18/21) Installing python3-pyc (3.12.8-r1)
44 (19/21) Installing py3-packaging (24.0-r1)
45 (20/21) Installing py3-setuptools (70.3.0-r0)
46 (21/21) Installing py3-pip (24.0-r2)
47 Executing busybox-1.36.1-r29.trigger
48 OK: 109 MiB in 94 packages
49 $ pip3 install -r tests/requirements.txt --break-system-packages
50 Collecting pytest (from -r tests/requirements.txt (line 1))
51   Downloading pytest-8.3.4-py3-none-any.whl.metadata (7.5 kB)
52 Collecting requests (from -r tests/requirements.txt (line 2))
53   Downloading requests-2.32.3-py3-none-any.whl.metadata (4.6 kB)
54 Collecting pytest-ordering (from -r tests/requirements.txt (line 3))
55   Downloading pytest_ordering-0.6-py3-none-any.whl.metadata (1.1 kB)
56 Collecting iniconfig (from pytest->-r tests/requirements.txt (line 1))
57   Downloading iniconfig-2.0.0-py3-none-any.whl.metadata (2.6 kB)
58 Requirement already satisfied: packaging in /usr/lib/python3.12/site-packages (from pytest->-r tests/requirements.txt (line 1)) (24.0)
59 Collecting pluggy<2,>=1.5 (from pytest->-r tests/requirements.txt (line 1))
60   Downloading pluggy-1.5.0-py3-none-any.whl.metadata (4.8 kB)
61 Collecting charset-normalizer<4,>=2 (from requests->-r tests/requirements.txt (line 2))
62   Downloading charset_normalizer-3.4.0-cp312-cp312-musllinux_1_2_x86_64.whl.metadata (34 kB)
63 Collecting idna<4,>=2.5 (from requests->-r tests/requirements.txt (line 2))
64   Downloading idna-3.10-py3-none-any.whl.metadata (10 kB)
65 Collecting urllib3<3,>=1.21.1 (from requests->-r tests/requirements.txt (line 2))
66   Downloading urllib3-2.2.3-py3-none-any.whl.metadata (6.5 kB)
67 Collecting certifi>=2017.4.17 (from requests->-r tests/requirements.txt (line 2))
68   Downloading certifi-2024.8.30-py3-none-any.whl.metadata (2.2 kB)
69 Downloading pytest-8.3.4-py3-none-any.whl (343 kB)
```

```
70 _____ 343.1/343.1 kB 4.8 MB/s eta 0:00:00
71 Downloading requests-2.32.3-py3-none-any.whl (64 kB)
72 _____ 64.9/64.9 kB 590.9 kB/s eta 0:00:00
73 Downloading pytest_ordering-0.6-py3-none-any.whl (4.6 kB)
74 Downloading certifi-2024.8.30-py3-none-any.whl (167 kB)
75 _____ 167.3/167.3 kB 11.5 MB/s eta 0:00:00
76 Downloading charset_normalizer-3.4.0-cp312-cp312-musllinux_1_2_x86_64.whl (144 kB)
77 _____ 144.8/144.8 kB 11.6 MB/s eta 0:00:00
78 Downloading idna-3.10-py3-none-any.whl (70 kB)
79 _____ 70.4/70.4 kB 5.0 MB/s eta 0:00:00
80 Downloading pluggy-1.5.0-py3-none-any.whl (20 kB)
81 Downloading urllib3-2.2.3-py3-none-any.whl (126 kB)
82 _____ 126.3/126.3 kB 9.4 MB/s eta 0:00:00
83 Downloading iniconfig-2.0.0-py3-none-any.whl (5.9 kB)
84 Installing collected packages: urllib3, pluggy, iniconfig, idna, charset-normalizer, certifi, requests, pytest, pytes
t-ordering
85 Successfully installed certifi-2024.8.30 charset-normalizer-3.4.0 idna-3.10 iniconfig-2.0.0 pluggy-1.5.0 pytest-8.3.4
pytest-ordering-0.6 requests-2.32.3 urllib3-2.2.3
86 WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system pa
ckage manager. It is recommended to use a virtual environment instead: https://pip.pypa.io/warnings/venv
87 $ export TEST_ENV="true"
88 $ $DOCKER_COMPOSE_COMMAND up -d
89 Container compse140-exercise-state-service-1 Recreate
90 Container compse140-exercise-service-2-1 Running
91 Container compse140-exercise-service-1-1 Running
92 Container compse140-exercise-service-1-2 Running
93 Container compse140-exercise-service-1-3 Running
94 Container compse140-exercise-nginx-1 Recreate
95 Container compse140-exercise-state-service-1 Recreated
96 Container compse140-exercise-nginx-1 Recreated
97 Container compse140-exercise-state-service-1 Starting
98 Container compse140-exercise-nginx-1 Starting
99 Container compse140-exercise-state-service-1 Started
100 Container compse140-exercise-nginx-1 Started
101 $ sleep 20
102 $ export BASE_HOST="195.148.21.89"
103 $ pytest tests/e2e_tests.py
104 ===== test session starts =====
105 platform linux -- Python 3.12.8, pytest-8.3.4, pluggy-1.5.0
106 rootdir: /builds/david.laurovic/comp.se.140-exercise
107 plugins: ordering-0.6
108 collected 6 items
109 tests/e2e_tests.py ..FF.F [100%]
110 ===== FAILURES =====
111 ----- test_put_state -----
112 @pytest.mark.run(order=2)
113 def test_put_state():
114     response = requests.put(f"{API_GATEWAY_URL}/state", data="RUNNING")
115 > assert response.status_code == 409, f"Unexpected status code: {response.status_code}"
116 E     AssertionError: Unexpected status code: 415
117 E     assert 415 == 409
118 E     + where 415 = <Response [415]>.status_code
119 tests/e2e_tests.py:40: AssertionError
120 ----- test_get_log -----
121 @pytest.mark.run(order=3)
122 def test_get_log():
123     response = requests.get(f"{API_GATEWAY_URL}/run-log")
124     assert response.status_code == 200, f"Unexpected status code: {response.status_code}"
125     assert 'text/plain' in response.headers['Content-Type'], "Expected Content-Type is text/plain"
126
127     response_data = response.text
128 > assert "INIT->RUNNING" in response_data
129 E     AssertionError: assert 'INIT->RUNNING' in ''
130 tests/e2e_tests.py:72: AssertionError
131 ----- test_shutdown_service -----
132 @pytest.mark.run(order=5)
133 def test_shutdown_service():
134     response = requests.put(f"{API_GATEWAY_URL}/state", data="SHUTDOWN")
135 > assert response.status_code == 204, f"Unexpected status code: {response.status_code}"
136 E     AssertionError: Unexpected status code: 415
137 E     assert 415 == 204
138 E     + where 415 = <Response [415]>.status_code
139 tests/e2e_tests.py:106: AssertionError
140 ===== short test summary info =====
141 FAILED tests/e2e_tests.py::test_put_state - AssertionError: Unexpected status code: 415
142 assert 415 == 409
143 + where 415 = <Response [415]>.status_code
```

```
144 FAILED tests/e2e_tests.py::test_get_log - AssertionError: assert 'INIT->RUNNING' in ''
145 FAILED tests/e2e_tests.py::test_shutdown_service - AssertionError: Unexpected status code: 415
146 assert 415 == 204
147 + where 415 = <Response [415]>.status_code
148 ===== 3 failed, 3 passed in 2.06s =====
149 Running after_script
150 Running after script...
151 $ $DOCKER_COMPOSE_COMMAND down
152 Container compse140-exercise-nginx-1 Stopping
153 Container compse140-exercise-state-service-1 Stopping
154 Container compse140-exercise-nginx-1 Stopped
155 Container compse140-exercise-nginx-1 Removing
156 Container compse140-exercise-state-service-1 Stopped
157 Container compse140-exercise-state-service-1 Removing
158 Container compse140-exercise-nginx-1 Removed
159 Container compse140-exercise-service-1-3 Stopping
160 Container compse140-exercise-service-2-1 Stopping
161 Container compse140-exercise-service-1-1 Stopping
162 Container compse140-exercise-service-1-2 Stopping
163 Container compse140-exercise-state-service-1 Removed
164 Container compse140-exercise-service-2-1 Stopped
165 Container compse140-exercise-service-2-1 Removing
166 Container compse140-exercise-service-1-1 Stopped
167 Container compse140-exercise-service-1-1 Removing
168 Container compse140-exercise-service-1-3 Stopped
169 Container compse140-exercise-service-1-3 Removing
170 Container compse140-exercise-service-1-2 Stopped
171 Container compse140-exercise-service-1-2 Removing
172 Container compse140-exercise-service-1-1 Removed
173 Container compse140-exercise-service-2-1 Removed
174 Container compse140-exercise-service-1-3 Removed
175 Container compse140-exercise-service-1-2 Removed
176 Network compse140-exercise_exercise Removing
177 Network compse140-exercise_exercise Removed
178 Cleaning up project directory and file based variables
179 ERROR: Job failed: exit code 1
```

00:03

00:00

PASSED TESTS

```
1 Running with gitlab-runner 17.6.0 (374d34fd)
2   on gitlab-runner t3_QXHq_C, system ID: s_a64a876c7230
3 Preparing the "docker" executor 00:03
4 Using Docker executor with image docker:latest ...
5 Pulling docker image docker:latest ...
6 Using docker image sha256:37123e40ec5295ac68158ace2d5c302a8a5d33f6e40b9a3397be063f941d3705 for docker:latest with dig
  est docker@sha256:2711aa74a49d0f58233c41b6f3513e7aaa4b54f2aab0858cb3430f032bc169be ...
7 Preparing environment 00:01
8 Running on runner-t3qxhq-project-37-concurrent-0 via gitlab-runner...
9 Getting source from Git repository 00:01
10 Fetching changes with git depth set to 20...
11 Reinitialized existing Git repository in /builds/david.laurovic/comp.se.140-exercise/.git/
12 Checking out 829e61e0 as detached HEAD (ref is project)...
13 Removing system-info-service-2-dotnet/src/SystemInfoService2DotNet/gl-code-quality-report.json
14 Removing system-info-service-2-dotnet/src/SystemInfoService2DotNet/roslynator.xml
15 Skipping Git submodules setup
16 Downloading artifacts 00:01
17 Downloading artifacts for build (4067)...
18 Downloading artifacts from coordinator... ok          host=compse140.devops-gitlab.rd.tuni.fi id=4067 responseStatus=20
   0 OK token=glcblt-64
19 WARNING: Part of .git directory is on the list of files to extract
20 WARNING: This may introduce unexpected problems
21 Executing "step_script" stage of the job script 00:42
22 Using docker image sha256:37123e40ec5295ac68158ace2d5c302a8a5d33f6e40b9a3397be063f941d3705 for docker:latest with dig
  est docker@sha256:2711aa74a49d0f58233c41b6f3513e7aaa4b54f2aab0858cb3430f032bc169be ...
23 $ apk add --no-cache python3 py3-pip
24 fetch https://dl-cdn.alpinelinux.org/alpine/v3.20/main/x86_64/APKINDEX.tar.gz
25 fetch https://dl-cdn.alpinelinux.org/alpine/v3.20/community/x86_64/APKINDEX.tar.gz
26 (1/21) Installing libbz2 (1.0.8-r6)
27 (2/21) Installing libffi (3.4.6-r0)
28 (3/21) Installing gdbm (1.23-r1)
29 (4/21) Installing libgcc (13.2.1_git20240309-r0)
30 (5/21) Installing libstdc++ (13.2.1_git20240309-r0)
31 (6/21) Installing mpdecimal (4.0.0-r0)
32 (7/21) Installing libpanelw (6.4_p20240420-r2)
33 (8/21) Installing readline (8.2.10-r0)
34 (9/21) Installing sqlite-libs (3.45.3-r1)
35 (10/21) Installing python3 (3.12.8-r1)
36 (11/21) Installing python3-pycache-pyc0 (3.12.8-r1)
37 (12/21) Installing pyc (3.12.8-r1)
38 (13/21) Installing py3-setuptools-pyc (70.3.0-r0)
39 (14/21) Installing py3-pip-pyc (24.0-r2)
40 (15/21) Installing py3-parsing (3.1.2-r1)
41 (16/21) Installing py3-parsing-pyc (3.1.2-r1)
42 (17/21) Installing py3-packaging-pyc (24.0-r1)
43 (18/21) Installing python3-pyc (3.12.8-r1)
44 (19/21) Installing py3-packaging (24.0-r1)
45 (20/21) Installing py3-setuptools (70.3.0-r0)
46 (21/21) Installing py3-pip (24.0-r2)
47 Executing busybox-1.36.1-r29.trigger
48 OK: 109 MiB in 94 packages
49 $ pip3 install -r tests/requirements.txt --break-system-packages
50 Collecting pytest (from -r tests/requirements.txt (line 1))
51   Downloading pytest-8.3.4-py3-none-any.whl.metadata (7.5 kB)
52 Collecting requests (from -r tests/requirements.txt (line 2))
53   Downloading requests-2.32.3-py3-none-any.whl.metadata (4.6 kB)
54 Collecting pytest-ordering (from -r tests/requirements.txt (line 3))
55   Downloading pytest_ordering-0.6-py3-none-any.whl.metadata (1.1 kB)
56 Collecting iniconfig (from pytest->-r tests/requirements.txt (line 1))
57   Downloading iniconfig-2.0.0-py3-none-any.whl.metadata (2.6 kB)
58 Requirement already satisfied: packaging in /usr/lib/python3.12/site-packages (from pytest->-r tests/requirements.txt
  (line 1)) (24.0)
59 Collecting pluggy<2,>=1.5 (from pytest->-r tests/requirements.txt (line 1))
60   Downloading pluggy-1.5.0-py3-none-any.whl.metadata (4.8 kB)
61 Collecting charset-normalizer<4,>=2 (from requests->-r tests/requirements.txt (line 2))
62   Downloading charset_normalizer-3.4.0-cp312-cp312-musllinux_1_2_x86_64.whl.metadata (34 kB)
63 Collecting idna<4,>=2.5 (from requests->-r tests/requirements.txt (line 2))
64   Downloading idna-3.10-py3-none-any.whl.metadata (10 kB)
65 Collecting urllib3<3,>=1.21.1 (from requests->-r tests/requirements.txt (line 2))
66   Downloading urllib3-2.2.3-py3-none-any.whl.metadata (6.5 kB)
67 Collecting certifi>=2017.4.17 (from requests->-r tests/requirements.txt (line 2))
68   Downloading certifi-2024.8.30-py3-none-any.whl.metadata (2.2 kB)
69 Downloading pytest-8.3.4-py3-none-any.whl (343 kB)
```

```

70      343.1/343.1 kB 10.1 MB/s eta 0:00:00
71 Downloading requests-2.32.3-py3-none-any.whl (64 kB)
72      64.9/64.9 kB 4.9 MB/s eta 0:00:00
73 Downloading pytest_ordering-0.6-py3-none-any.whl (4.6 kB)
74 Downloading certifi-2024.8.30-py3-none-any.whl (167 kB)
75      167.3/167.3 kB 11.1 MB/s eta 0:00:00
76 Downloading charset_normalizer-3.4.0-cp312-cp312-musllinux_1_2_x86_64.whl (144 kB)
77      144.8/144.8 kB 10.3 MB/s eta 0:00:00
78 Downloading idna-3.10-py3-none-any.whl (70 kB)
79      70.4/70.4 kB 5.6 MB/s eta 0:00:00
80 Downloading pluggy-1.5.0-py3-none-any.whl (20 kB)
81 Downloading urllib3-2.2.3-py3-none-any.whl (126 kB)
82      126.3/126.3 kB 2.8 MB/s eta 0:00:00
83 Downloading iniconfig-2.0.0-py3-none-any.whl (5.9 kB)
84 Installing collected packages: urllib3, pluggy, iniconfig, idna, charset-normalizer, certifi, requests, pytest, pytes
t-ordering
85 Successfully installed certifi-2024.8.30 charset-normalizer-3.4.0 idna-3.10 iniconfig-2.0.0 pluggy-1.5.0 pytest-8.3.4
pytest-ordering-0.6 requests-2.32.3 urllib3-2.2.3
86 WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system pa
ckage manager. It is recommended to use a virtual environment instead: https://pip.pypa.io/warnings/venv
87 $ export TEST_ENV="true"
88 $ $DOCKER_COMPOSE_COMMAND up -d
89 Network compse140-exercise_exercise Creating
90 Network compse140-exercise_exercise Created
91 Container compse140-exercise-state-service-1 Creating
92 Container compse140-exercise-service-2-1 Creating
93 Container compse140-exercise-service-1-3 Creating
94 Container compse140-exercise-service-1-1 Creating
95 Container compse140-exercise-service-1-2 Creating
96 Container compse140-exercise-service-1-2 Created
97 Container compse140-exercise-service-2-1 Created
98 Container compse140-exercise-service-1-1 Created
99 Container compse140-exercise-service-1-3 Created
100 Container compse140-exercise-nginx-1 Creating
101 Container compse140-exercise-state-service-1 Created
102 Container compse140-exercise-nginx-1 Created
103 Container compse140-exercise-state-service-1 Starting
104 Container compse140-exercise-service-1-3 Starting
105 Container compse140-exercise-service-2-1 Starting
106 Container compse140-exercise-service-1-3 Started
107 Container compse140-exercise-service-1-2 Starting
108 Container compse140-exercise-service-2-1 Started
109 Container compse140-exercise-state-service-1 Started
110 Container compse140-exercise-service-1-2 Started
111 Container compse140-exercise-service-1-1 Starting
112 Container compse140-exercise-service-1-1 Started
113 Container compse140-exercise-nginx-1 Starting
114 Container compse140-exercise-nginx-1 Started
115 $ sleep 20
116 $ export BASE_HOST="195.148.21.89"
117 $ pytest tests/e2e_tests.py
118 ===== test session starts =====
119 platform linux -- Python 3.12.8, pytest-8.3.4, pluggy-1.5.0
120 rootdir: /builds/david.laurovic/comp.se.140-exercise
121 plugins: ordering-0.6
122 collected 6 items
123 tests/e2e_tests.py ..... [100%]
124 ===== 6 passed in 8.18s =====
125 Running after_script
126 Running after script...
127 $ $DOCKER_COMPOSE_COMMAND down
128 Container compse140-exercise-state-service-1 Stopping
129 Container compse140-exercise-nginx-1 Stopping
130 Container compse140-exercise-state-service-1 Stopped
131 Container compse140-exercise-state-service-1 Removing
132 Container compse140-exercise-nginx-1 Stopped
133 Container compse140-exercise-nginx-1 Removing
134 Container compse140-exercise-state-service-1 Removed
135 Container compse140-exercise-nginx-1 Removed
136 Container compse140-exercise-service-1-1 Stopping
137 Container compse140-exercise-service-1-3 Stopping
138 Container compse140-exercise-service-1-2 Stopping
139 Container compse140-exercise-service-2-1 Stopping
140 Container compse140-exercise-service-1-2 Stopped
141 Container compse140-exercise-service-1-2 Removing
142 Container compse140-exercise-service-1-3 Stopped
143 Container compse140-exercise-service-1-3 Removing

```


<u>144</u>	Container compse140-exercise-service-1-1	Stopped	
<u>145</u>	Container compse140-exercise-service-1-1	Removing	
<u>146</u>	Container compse140-exercise-service-2-1	Stopped	
<u>147</u>	Container compse140-exercise-service-2-1	Removing	
<u>148</u>	Container compse140-exercise-service-1-2	Removed	
<u>149</u>	Container compse140-exercise-service-1-3	Removed	
<u>150</u>	Container compse140-exercise-service-1-1	Removed	
<u>151</u>	Container compse140-exercise-service-2-1	Removed	
<u>152</u>	Network compse140-exercise_exercise	Removing	
<u>153</u>	Network compse140-exercise_exercise	Removed	
<u>154</u>	Cleaning up project directory and file based variables		00:00
<u>155</u>	Job succeeded		