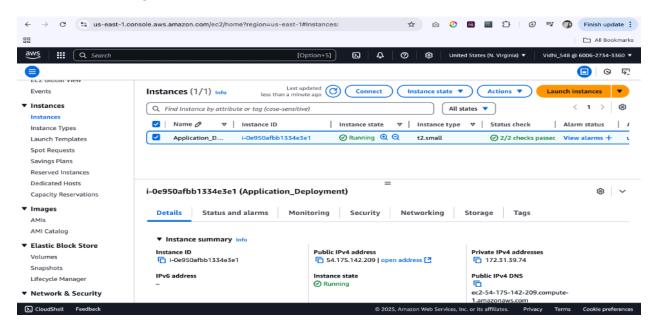
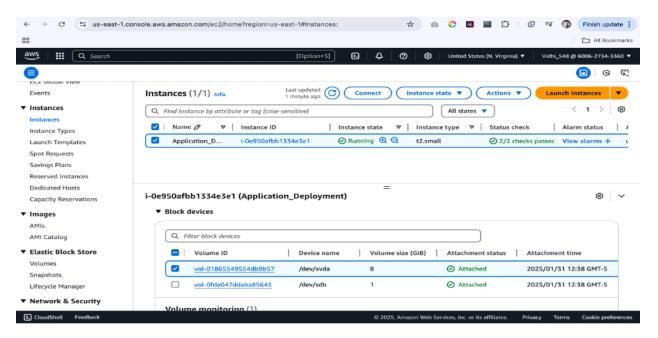
# **Project 1**

1) Screenshot of AWS Console showing the instance running and the volumes you have allocated on EBS:

## Instance is running and up:



#### Volumes attached:



2) Output of Linux command "df" in instance:

```
[ec2-user@ip-172-31-39-74 ~]$
[ec2-user@ip-172-31-39-74 ~]$ df
                         Used Available Use% Mounted on
Filesystem 1K-blocks
                        0
devtmpfs
                993748
                              993748 0% /dev
               1003088
                           0
                               1003088
tmpfs
                                       0% /dev/shm
                        572
                               1002516 1% /run
tmpfs
               1003088
               1003088
                          0
                               1003088 0% /sys/fs/cgroup
tmpfs
/dev/xvda1
              8376300 3299184
                               5077116 40% /
/dev/xvdb
               998060 47596
                               898036 6% /data
                          0
                                200620 0% /run/user/1000
                200620
tmofs
[ec2-user@ip-172-31-39-74 ~]$
[ec2-user@ip-172-31-39-74 ~]$
```

## Output of "fdisk -l" command in instance:

```
[[ec2-user@ip-172-31-39-74 ~]$ sudo fdisk -1
Disk /dev/xvda: 8 GiB, 8589934592 bytes, 16777216 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: gpt
Disk identifier: C19EA533-E536-46F1-B7F1-2B3696B3C827
                                 Sectors Size Type
                            End
Device
               Start
                4096 16777182 16773087
                                             8G Linux filesystem
/dev/xvda1
/dev/xvda128
               2048
                           4095
                                     2048
                                             1M BIOS boot
Partition table entries are not in disk order.
Disk /dev/xvdb: 1 GiB, 1073741824 bytes, 2097152 sectors Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
[[ec2-user@ip-172-31-39-74 ~]$
[ec2-user@ip-172-31-39-74 ~]$
```

3) Output of running docker inspect on the database and application containers.

### Output for container "cs548db":

```
[ec2-user@ip-172-31-39-74 ~]$ docker inspect cs548db
               "Id": "afc39c0fe8ec27332716494aa09fd669256776003f8b9e101b7f27766d9d99ab".
               "Created": "2025-01-31T17:50:16.142385747Z",
               "Path": "docker-entrypoint.sh",
               "Args": [
               "postgres"
               "State": {
               "Status": "running"
"Running": true,
               "Paused": false
               "Restarting": false,
"OOMKilled": false,
               "Dead": false,
               "Pid": 3621.
               "ExitCode": 0,
               "StartedAt": "2025-01-31T19:18:28.035479607Z", "FinishedAt": "2025-01-31T19:16:49.960664411Z"
               "Image": "sha256:9a0ce6be5dd4a74a9bc1e4709f8cc8496ce2ee09adcb64c2689a03e78c2e5214"
               "ResolvConfPath": "/var/lib/docker/containers/afc39c0fe8ec27332716494aa09fd669256776003f8b9e101b7f27766d9d99ab/resolv.conf",
"HostnamePath": "/var/lib/docker/containers/afc39c0fe8ec27332716494aa09fd669256776003f8b9e101b7f27766d9d99ab/hostname",
                "HostsPath": "/var/lib/docker/containers/afc39c0fe8ec27332716494aa09fd669256776003f8b9e101b7f27766d9d99ab/hosts"
               "LogPath":
"/var/lib/docker/containers/afc39c0fe8ec27332716494aa09fd669256776003f8b9e101b7f27766d9d99ab/afc39c0fe8ec27332716494aa09fd669256776003f8b9e101b7f27766d9
d99ab-json.log",
               "Name": "/cs548db",
                "RestartCount": 0,
               "Driver": "overlay2"
"Platform": "linux",
               "MountLabel": ""
```

```
"ProcessLabel": "",
"AppArmorProfile": "",
 "ExecIDs": null,
 "HostConfig": {
 "Binds": [
"/data:/var/lib/postgresql/data"
 "ContainerIDFile": "",
 "LogConfig": {
"Type": "json-file",
"Config": {}
},
"NetworkMode": "cs548-network",
 "PortBindings": {
"5432/tcp": [
                        "HostIp": "",
"HostPort": "5432"
 },
"RestartPolicy": {
"Name": "no",
"MaximumRetryCount": 0
 },
"AutoRemove": false,
 "VolumeDriver": "",
"VolumesFrom": null,
 "ConsoleSize": [
31,
115
],
"CapAdd": null,
"CapDrop": null,
"CgroupnsMode": "host",
"Dns": [],
"DnsOptions": [],
 "DnsSearch": [],
"ExtraHosts": null,
"ExtraHosts": null,
"GroupAdd": null,
"IpAMode": "private",
"Cgroup": "",
"Links": null,
"OomScoreAdj": 0,
"PidMode": "",
"Privileged": false,
"PublishAllPorts": false,
"ReadonlyRootfs": false,
"ReadonlyRootfs": false,
 "SecurityOpt": null,
"UTSMode": "",
"UsernsMode": "",
 "ShmSize": 67108864,
"Runtime": "runc",
"Isolation": "",
 "CpuShares": 0,
"Memory": 0,
 "NanoCpus": 0,
 "CgroupParent": "",
 "BlkioWeight": 0,
"BlkioWeightDevice": [],
 "BlkioDeviceWriteBps": [],
"BlkioDeviceWriteBps": [],
"BlkioDeviceReadIOps": [],
"BlkioDeviceWriteIOps": [],
 "CpuPeriod": 0,
"CpuQuota": 0,
 "CpuRealtimePeriod": 0,
"CpuRealtimeRuntime": 0,
 "CpusetCpus": "",
"CpusetMems": "",
"Devices": [],
 "DeviceCgroupRules": null,
 "DeviceRequests": null,
 "MemoryReservation": 0,
 "MemorySwap": 0,
 "MemorySwappiness": null,
"OomKillDisable": false,
 "PidsLimit": null,
"Ulimits": [
                       "Name": "nofile",
                       "Hard": 65536,
"Soft": 32768
 "CpuCount": 0,
 "CpuPercent": 0,
 "IOMaximumIOps": 0,
"IOMaximumEnds": 0,
"IOMaximumBandwidth": 0,
"MaskedPaths": [
"/proc/asound",
"/proc/acpi",
 "/proc/kcore",
"/proc/keys",
"/proc/keys",

"/proc/latency_stats",

"/proc/timer_list",

"/proc/timer_stats",

"/proc/sched_debug",
 "/proc/scsi",
```

```
"/sys/firmware".
              "/sys/devices/virtual/powercap"
               'ReadonlyPaths": [
              "/proc/bus",
              "/proc/fs",
              "/proc/irq",
              "/proc/sys",
              "/proc/sysrq-trigger'
              "GraphDriver": {
              "Data": {
              "LowerDir":
             pcker/overlay2/ea5da4af97bd8638daalef670b6cla6a000f2aab77dffcd09f168c9a17174408-init/diff:/var/lib/docker/overlay2/2b7d23dddec639121e941a5478
8223cfa8eed28fef788323a1285f5fd5120eb9/diff:/var/lib/docker/overlav2/6d6e692376ccd7552ef426ae095a755ab4b898ffc8ae1dcb61e91969736a3744/diff:/var/lib/dock
er/overlay2/612652a712c6b08b28f1762b1374f5e26e0cd22d2fa707b2b6afa30c84e89f40/diff:/var/lib/docker/overlay2/18f0500fe9c5e4le9b346623f313d5ebb8442b37fe957
75d6ff783a0c104eac3/diff:/var/lib/docker/overlav2/4ad9bbbfa05a965b0cf45303229d81b02a48cb81b3ab2d34cf10c593e289ceaf/diff:/var/lib/docker/overlav2/5e79db5
0cb328ab61a8c5143d61ac8b27ab4fa68e9106795c13199df7998eee0/diff:/war/lib/docker/overlay2/70d95eac9f3dbed3656c0375ec3bc030acfc6f3b1504ace5075b507a99f29bff
/diff:/var/lib/docker/overlay2/0474dea494e995ef53b7b16ddcad658521298957ce16672de0e65368cec7cf30/diff:/var/lib/docker/overlay2/7bd6887286b842c5c45b832118
fa4b2010a31d2062840fc35dad34a3c79a8d05/diff:/var/lib/docker/overlay2/6b2df9c6048a0f26b59afd8c7a6031c651cd7a5ec190ceac9bb2eead47bcfc56/diff:/var/lib/docker/overlay2/cfbffab2727875a95a1c74098354cff727919f64977a83da10492b796ca97dfd/diff:/var/lib/docker/overlay2/edc2a1ecd20e3c1f5fab125226d55e00e943d803d823a
13a855dda<sup>7</sup>5d8a1aedb/diff:/var/lib/docker/overlay2/e2c496838959c6936cb6da145259e043192d9e8aa5e633ce0cd6ae<sup>3</sup>5e44ab1c8/diff:/var/lib/docker/overlay2/530211c
39da7cd35e0c9c895d5db97dee767cec9aa7cf770e63018ec08db586f/diff",
              "MergedDir": "/var/lib/docker/overlay2/ea5da4af97bd8638daa1ef670b6c1a6a000f2aab77dffcd09f168c9a17174408/merged"
"UpperDir": "/var/lib/docker/overlay2/ea5da4af97bd8638daa1ef670b6c1a6a000f2aab77dffcd09f168c9a17174408/diff",
              "WorkDir": "/var/lib/docker/overlay2/ea5da4af97bd8638daalef670b6c1a6a000f2aab77dffcd09f168c9a17174408/work"
              "Name": "overlav2"
              "Mounts": [
              "Type": "bind",
              "Source": "/data",
              "Destination": "/var/lib/postgresgl/data".
              "RW": true,
              "Propagation": "rprivate"
              ],
"Config": {
"Hostname": "afc39c0fe8ec",
"Domainname": "",
              "User": "",
              "AttachStdin": false,
              "AttachStdout": false,
"AttachStderr": false,
              "ExposedPorts": {
              "5432/tcp": {}
              "Tty": false,
"OpenStdin": false,
              "StdinOnce": false,
              "Env": [
              "POSTGRES PASSWORD=ASSIGNMENT1"
              "PGDATA=/var/lib/postgresql/data/pgdata",
              "PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/lib/postgresql/17/bin",
              "GOSU VERSION=1.17".
              "LANG=en_US.utf8",
              "PG MAJOR=17"
              "PG_VERSION=17.2-1.pgdg120+1"
              "Cmd": [
              "postgres"
              "Image": "postgres",
              "/var/lib/postgresql/data": {}
              "WorkingDir": "",
              "Entrypoint": [
"docker-entrypoint.sh"
             ],
"OnBuild": null,
              "Labels": {},
"StopSignal": "SIGINT"
              "Bridge": "",
              "SandboxID": "83b3c39ed876127333fcee9578fec77795c0273246f4120aa33f90138616ea47",
"SandboxKey": "/var/run/docker/netns/83b3c39ed876",
              "Ports": {
              "5432/tcp": [
                            "HostIp": "0.0.0.0",
                            "HostPort": "5432"
                            },
                            "HostIp": "::"
                            "HostPort": "5432"
              "HairpinMode": false.
              "LinkLocalIPv6Address": "",
              "LinkLocalIPv6PrefixLen": 0,
              "SecondaryIPAddresses": null
              "SecondaryIPv6Addresses": null,
              "EndpointID": ""
```

```
"GlobalTP46Adress": "",
    "GlobalTP46Adress": "",
    "IPHddress": "",
    "IPFefixLen": 0,
    "IPHddress": "",
    "MacAddress": "",
    "Networks": {
    "cs548-network": {
        "af-39c0fe8ec"
        ],
        "MacAddress": "02:42:ac:12:00:03",
        "MacAddress": "02:42:ac:12:00:03",
        "MacAddress": "02:42:ac:12:00:03",
        "MacAddress": "02:42:ac:12:00:03",
        "MacAddress": "02:42:ac:12:00:03",
        "MacAddress": "02:42:ac:12:00:03",
        "MacAddress": "02:442:ac:12:00:03",
        "MacAddress": "02:42:ac:12:00:03",
        "MacAddresss": "02:42:ac:12:00:03",
        "MacAddress": "02:42:ac:12:00:03",
        "MacAddresss": "02:42:ac:12:00:03",
        "MacAddre
```

# Output for container "chat":

```
[ec2-user@ip-172-31-39-74 ~]$ docker inspect chat
                "Id": "91fc803039ae4683b6b37e557236418639501693ad115b1309aae3e0243e9550",
                "Created": "2025-01-31T18:01:50.133342172Z",
"Path": "/bin/sh",
"Args": [
                "entrypoint.sh",
"--contextroot",
                "--deploy",
                "/opt/payara/deployments/chat-webapp.war"
               "State": {
"Status": "running",
"Running": true,
"Paused": false,
                "Restarting": false,
"OOMKilled": false,
                "Dead": false,
"Pid": 3612,
                "ExitCode": 0,
"Exror": "",
"StartedAt": "2025-01-31T19:18:27.970570948z",
"FinishedAt": "2025-01-31T19:16:50.55609393z"
                },
"Image": "sha256:64e2ff76315a04f45c9c35c62f024e2dbdd187c186d008506b11267993f8670f",
                "ResolvConfPath": "/var/lib/docker/containers/91fc803039ae4683b6b37e557236418639501693ad115b1309aae3e0243e9550/resolv.conf", "HostnamePath": "/var/lib/docker/containers/91fc803039ae4683b6b37e557236418639501693ad115b1309aae3e0243e9550/hostname",
                "HostsPath": "/var/lib/docker/containers/91fc803039ae4683b6b37e557236418639501693ad115b1309aae3e0243e9550/hosts".
"LogPath":
"/var/lib/docker/containers/91fc803039ae4683b6b37e557236418639501693ad115b1309aae3e0243
e9550-json.log",
"Name": "/chat",
                "RestartCount": 0,
                "Driver": "overlay2",
                "Platform": "linux",
"MountLabel": "",
"ProcessLabel": "",
                 "AppArmorProfile": "",
                "ExecIDs": null,
                "HostConfig": {
                "Binds": null,
                "ContainerIDFile": "",
                "LogConfig": {
"Type": "json-file",
"Config": {}
                "NetworkMode": "cs548-network",
                "PortBindings": {
                "8080/tcp": [
                                "HostIp": "",
"HostPort": "8080"
               ],
"8181/tcp": [
                                "HostIp": "",
```

```
"HostPort": "8181'
                 "RestartPolicy": {
                 "Name": "no",
"MaximumRetryCount": 0
                 },
"AutoRemove": false,
                 "VolumeDriver": "",
"VolumesFrom": null,
"ConsoleSize": [
                 115
                 "CapAdd": null,
"CapDrop": null,
"CgroupnsMode": "host",
"Dns": [],
"DnsOptions": [],
                 "DnsSearch": [],
"ExtraHosts": null,
                 "GroupAdd": null,
"IpcMode": "private",
"Cgroup": "",
"Links": null,
                 "OomScoreAdj": 0,
"PidMode": "",
"Privileged": false,
"PublishAllPorts": false,
"ReadonlyRootfs": false,
                 "SecurityOpt": null,
"UTSMode": "",
"UsernsMode": "",
                 "ShmSize": 67108864,
"Runtime": "runc",
"Isolation": "",
                 "CpuShares": 0,
                 "Memory": 0,
                 "NanoCpus": 0,
"CgroupParent": "",
                 "BlkioWeight": 0,
"BlkioWeightDevice": [],
                 "BlkioDeviceReadBps": [],
"BlkioDeviceWriteBps": [],
                 "BlkioDeviceReadIOps": [],
"BlkioDeviceWriteIOps": [],
                 "CpuPeriod": 0,
                 "CpuQuota": 0,
                 "CpuRealtimePeriod": 0,
"CpuRealtimeRuntime": 0,
                 "CpusetCpus": "",
"CpusetMems": "",
"Devices": [],
                 "DeviceCgroupRules": null,
                 "DeviceRequests": null,
"MemoryReservation": 0,
                 "MemorySwap": 0,
                 "MemorySwappiness": null,
"OomKillDisable": false,
                 "PidsLimit": null,
"Ulimits": [
                                 "Name": "nofile",
"Hard": 65536,
"Soft": 32768
                 "CpuCount": 0,
                 "CpuPercent": 0,
                 "IOMaximumIOps": 0,
                 "IOMaximumBandwidth": 0,
"MaskedPaths": [
                 "/proc/asound",
                 "/proc/acpi",
"/proc/kcore",
                 "/proc/keys",
                 "/proc/latency_stats",
                 "/proc/timer_list",
                 "/proc/timer_stats",
"/proc/sched_debug",
                 "/proc/scsi",
"/sys/firmware",
                 "/sys/devices/virtual/powercap"
                 "ReadonlyPaths": [
                 "/proc/bus",
                 "/proc/fs",
                 "/proc/irq",
                 "/proc/sys",
                 "/proc/sysrq-trigger"
                 },
"GraphDriver": {
                 "Data": {
                 "LowerDir"
"/war/lib/docker/overlay2/407a627425b8ade5418f351475f7e85190129d0195a5e6c4d86688d139c08936-init/diff:/war/lib/docker/overlay2/1fjsdpmn1hmlk51w13iur3371/
```

```
r/overlay2/460d645bfbb9e07374071e83d7212e0b489a2222d009abf97a75dc85146a5578/diff:/var/lib/docker/overlay2/a4f31cb9e3f3d25e865614c9fbf202b01be9700d44ff66
.09d56542395ed8073f/diff:/var/lib/docker/overlay2/617cbcccb803aae860468e716a22bacfe43b06bccaa0b3ed2c15c3dea3830e1a/diff",
                 "MergedDir": "/var/lib/docker/overlay2/407a627425b8ade5418f351475f7e85190129d0195a5e6c4d86688d139c08936/merged",
"UpperDir": "/var/lib/docker/overlay2/407a627425b8ade5418f351475f7e85190129d0195a5e6c4d86688d139c08936/diff",
"WorkDir": "/var/lib/docker/overlay2/407a627425b8ade5418f351475f7e85190129d0195a5e6c4d86688d139c08936/work"
                 },
"Name": "overlay2"
                 },
"Mounts": [],
                 "Config": {
"Hostname": "91fc803039ae",
"Domainname": "",
                 "User": "payara",
"AttachStdin": false,
"AttachStdout": false,
                 "AttachStderr": false,
                  "ExposedPorts": {
                  "6900/tcp": {},
                 "8080/tcp": {},
"8181/tcp": {}
                 "Tty": false,
"OpenStdin": false,
"StdinOnce": false,
                 "Env": [
"DATABASE=cs548",
                 "DATABASE_HOST=cs548db",
"DATABASE_USERNAME=cs548user",
                 "DATABASE PASSWORD=cs548",
                  "PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin",
                 "LANG=en US.UTF-8".
                  "LANGUAGE=en_US:en'
                 "LC_ALL=en_US.UTF-8",
                 "TZ=Etc/UTC",
"JAVA HOME=/usr/lib/jvm/zulu21",
                  "PAYARA_HOME=/opt/payara",
                  "HOME DIR=/opt/payara",
                 "PAYARA_DIR=/opt/payara",
"SCRIPT_DIR=/opt/payara",
                 "DEPLOY DIR=/opt/payara/deployments",
"JVM_ARGS=-Djdk.util.zip.disableZip64ExtraFieldValidation=true",
                 "MEM_MAX_RAM_PERCENTAGE=70.0",
"MEM_XSS=512k"
                  "Cmd": [
                 "--contextroot",
                 "--deploy",
                 "/opt/payara/deployments/chat-webapp.war"
                  "Image": "cs548/chat",
                 "Volumes": null,
"WorkingDir": "/opt/payara",
                 "Entrypoint": [
"/bin/sh",
                  "entrypoint.sh"
                  "OnBuild": null,
                  "NetworkSettings": {
                 "Bridge": "",
"SandboxID": "8221d3d4fe833c67ccad567e92b77f5400a9bbc1ea32b790df5ce36e29a7fda4",
"SandboxKey": "/var/run/docker/netns/8221d3d4fe83",
                 "Ports": {
"6900/tcp": null,
                 "8080/tcp": [
                                   "HostIp": "0.0.0.0",
"HostPort": "8080"
                                   "HostIp": "::",
"HostPort": "8080"
                 ],
"8181/tcp": [
                                   "HostIp": "0.0.0.0",
                                   "HostPort": "8181"
                                   ١.
                                   "HostIp": "::",
"HostPort": "8181"
                 "HairpinMode": false,
"LinkLocalIPv6Address": "",
                 "LinkLocalIPv6PrefixLen": 0.
                  "SecondaryIPAddresses": null
                 "SecondaryIPv6Addresses": null,
                 "EndpointID": "",
"Gateway": "",
                 "GlobalIPv6Address": "",
"GlobalIPv6PrefixLen": 0,
                 "IPAddress": ""
                 "IPPrefixLen": 0,
                  "IPv6Gateway": ""
```

4) Video demonstration of local browser window showing the "chatwebapp" application deploying and running in your instance. Grader must be able to replicate the successful deployment of the app.

## Google Drive Link: UI

5) Video showing the log for the application container, from successful deployment through logging of background operations while interacting with the web application. This does not count if you have not demonstrated the application working.

Google Drive Link: Full Video

Full Demo of App Deployment where I restarted EC2 Instance which shows automatic restart of all services - <u>Full Video</u>

One Drive Link: Full Video