

Cloud Computing Lab Experiment 2

Name: Safiya Nawar

SRN: PES2UG20CS455

1a.jpg: Screenshot of running docker hello-world:

```
C:\Users\Safiya Nawar>docker run hello-world

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
1. The Docker client contacted the Docker daemon.
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
   (amd64)
3. The Docker daemon created a new container from that image which runs the
   executable that produces the output you are currently reading.
4. The Docker daemon streamed that output to the Docker client, which sent it
   to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
$ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/

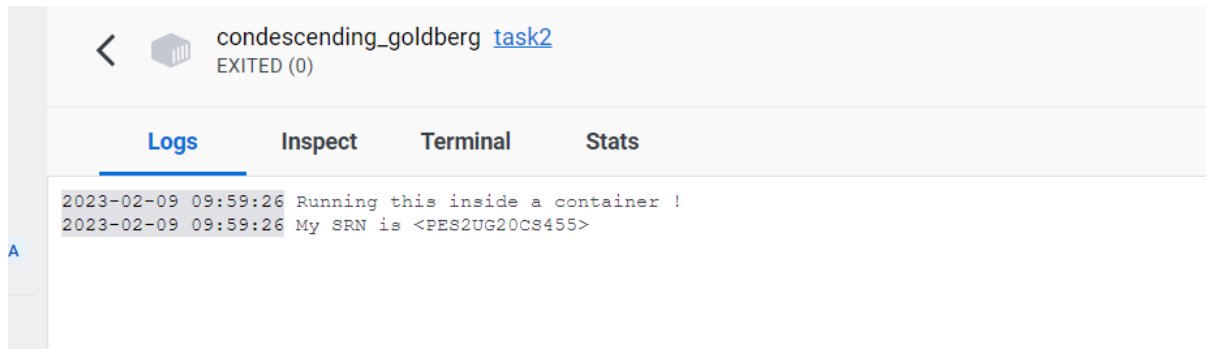
For more examples and ideas, visit:
https://docs.docker.com/get-started/
```

2a.jpg: Screenshot of C Program successfully run inside the container :

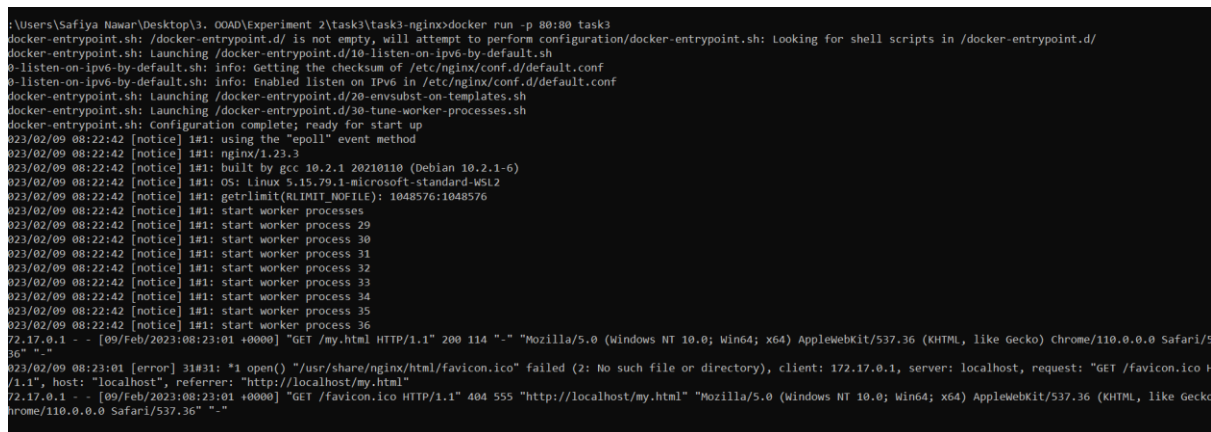
```
C:\Users\Safiya Nawar\Desktop\3. OOAD\Experiment 2\task2>docker run task2
Running this inside a container !
My SRN is <PES2UG20CS455>

C:\Users\Safiya Nawar\Desktop\3. OOAD\Experiment 2\task2>
```

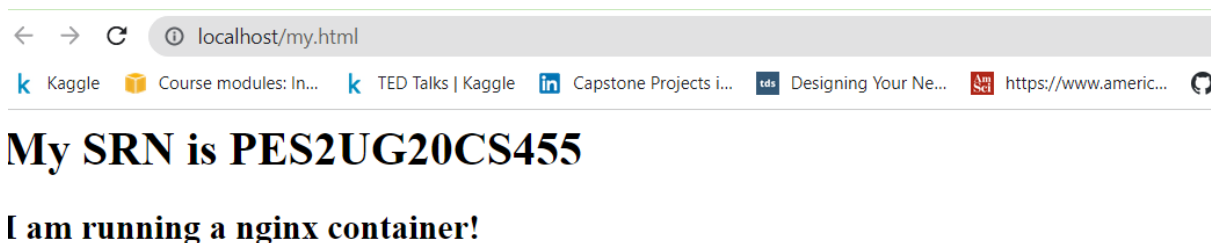
2b.jpg: Screenshot of the image pushed to Dockerhub:



3a.jpg: Screenshot of docker container running nginx :



3b.jpg: Sample.html showing the web page on the browser:



3c.jpg: Screenshot of python application successfully writing and reading from the MongoDB database :

```

e 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them

\Users\Safiya Nawar\Desktop\3. 00AD\Experiment 2\task3>docker run task3
Inserted into the MongoDB database!
Fetched from MongoDB: {'_id': ObjectId('63e4b9a07e46fe0196abdaed'), 'Name': 'Safiya Nawar', 'SRN': 'PES2UG20CS455'}

\Users\Safiya Nawar\Desktop\3. 00AD\Experiment 2\task3>_
```

3d.jpg: Screenshot showing mongodb being run within the network(docker command has to be clearly highlighted) :

```

C:\Users\Safiya Nawar\Desktop\3. 00AD\Experiment 2\task3>docker run -dp 27017:27017 --network=my-bridge-network --name=mongodb mongo:latest
29b808e987844460a97806aee6736102f13a117d79663ed81e8031c3fc6a2beb

C:\Users\Safiya Nawar\Desktop\3. 00AD\Experiment 2\task3>docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                               NAMES
29b808e98784   mongo:latest   "docker-entrypoint.s..." 14 seconds ago Up 12 seconds 0.0.0.0:27017->27017/tcp            mongodb
01a7d5840a22   ubuntu         "bash"                   6 hours ago   Up 6 hours                               nice_mcnulty
e5bc892381e8   ubuntu         "bash"                   6 hours ago   Up 6 hours                               practical_thompson

C:\Users\Safiya Nawar\Desktop\3. 00AD\Experiment 2\task3>
```

3e.jpg: Screenshot showing python file being run within the network and successfully writing and reading from MongoDB(docker command has to be clearly highlighted)

```

C:\Users\Safiya Nawar\Desktop\3. 00AD\Experiment 2\task3>run --network=my-bridge-network task3
'run' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\Safiya Nawar\Desktop\3. 00AD\Experiment 2\task3>docker run --network=my-bridge-network task3
Inserted into the MongoDB database!
Fetched from MongoDB: {'_id': ObjectId('63e4bbacf8dd9a677634c3dc'), 'Name': 'Safiya Nawar', 'SRN': 'PES2UG20CS455'}

C:\Users\Safiya Nawar\Desktop\3. 00AD\Experiment 2\task3>_
```

4a.jpg: Screenshot of python-mongodb application running as a docker-compose application(logs of the application)

```

C:\Users\Safiya Namar\Desktop\3. OOAD\Experiment 2\task4>docker-compose up
+ Building 0.3s (9/9) FINISHED
=> [internal] load build definition from Dockerfile
=> => transferring dockerfile: 150B
=> [internal] load dockerignore
=> => transferring context: 2B
=> [internal] load metadata for docker.io/library/python:latest
=> [1/4] FROM docker.io/library/python
=> [internal] load build context
=> => transferring context: 448B
=> CACHED [2/4] RUN apt-get update
=> CACHED [3/4] RUN pip install pymongo
=> CACHED [4/4] COPY sample.py sample.py
=> exporting to image
=> => exporting layers
=> => writing image sha256:2901c34c5b96952f11c088faa25a8d518776993c1a5cd683010e8432f743
=> => naming to docker.io/library/task4-pycode
+ Network task4_default Created
+ Container task4-mongodb-1 Created
+ Container task4-pycode-1 Created
Attaching to task4-mongodb-1, task4-pycode-1
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:35:20.599+00:00"},"s":"I", "c":"NETWORK", "id":4915701, "ctx":"main",msg:"Initialized wire specification",attr":{"spec":{"incomingExternalClient":{"minWireVer
ion":"0","maxWireVersion":17},"incomingInternalClient":{"minWireVersion":"0","maxWireVersion":17},"outgoing":{"minWireVersion":"6","maxWireVersion":17},"isInternalClient":true}}}task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:35:20.605+00:00"},"s":"I", "c":"CONTROL", "id":23285, "ctx":"main",msg:"Automatically disabling TLS 1.0, to force-enable TLS 1.0 specify --sslDisabledProtocols 'none'"
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:35:20.609+00:00"},"s":"I", "c":"NETWORK", "id":4648601, "ctx":"main",msg:"Implicit TCP FastOpen unavailable. If TCP FastOpen is required, set tcpFastOpenServer
tcpFastOpenClient, and tcpFastOpenQueueSize."}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:35:20.628+00:00"},"s":"I", "c":"REPL", "id":5123008, "ctx":"main",msg:"Successfully registered PrimaryOnlyService",attr":{"service":"TenantMigrationDonorS
vice","namespace":"config.tenantMigrationDonors"}}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:35:20.628+00:00"},"s":"I", "c":"REPL", "id":5123008, "ctx":"main",msg:"Successfully registered PrimaryOnlyService",attr":{"service":"TenantMigrationRecipie
tService","namespace":"config.tenantMigrationRecipients"}}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:35:20.628+00:00"},"s":"I", "c":"REPL", "id":5123008, "ctx":"main",msg:"Successfully registered PrimaryOnlyService",attr":{"service":"ShardSplitDonorService
","namespace":"config.tenantSplitDonors"}}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:35:20.632+00:00"},"s":"I", "c":"CONTROL", "id":5945603, "ctx":"main",msg:"Multi threading initialized"}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:35:20.634+00:00"},"s":"I", "c":"CONTROL", "id":4615611, "ctx":"initandlisten",msg:"MongoDB starting",attr":{"pid":1,"port":27017,"dbPath":"/data/db","architec
ture":"64-bit","host":"4b2722a4eac4"}}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:35:20.635+00:00"},"s":"I", "c":"CONTROL", "id":23403, "ctx":"initandlisten",msg:"Build Info",attr":{"buildInfo":{"version":"6.0.4","gitVersion":"44ff59461c
53638a71e70f385a50ebd2f547","opensslVersion":"OpenSSL 3.0.2 15 Mar 2022","modules":[],"allocator":"tcmalloc","environment":{"distmod":"ubuntu2004","distarch":"x86_64","target_arch":"x86_64"}}}}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:35:20.635+00:00"},"s":"I", "c":"CONTROL", "id":51765, "ctx":"initandlisten",msg:"Operating System",attr":{"os":{"name":"Ubuntu","version":"22.04"}}}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:35:20.635+00:00"},"s":"I", "c":"CONTROL", "id":21951, "ctx":"initandlisten",msg:"Options set by command line",attr":{"options":{"net":{"bindIp":"*"}}}}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:35:20.642+00:00"},"s":"I", "c":"STORAGE", "id":22297, "ctx":"initandlisten",msg:"Using the XFS filesystem is strongly recommended with the WiredTiger storage
engine. See http://doc.mongodb.org/core/prodnates-filesystem",tags":["startupWarnings"]}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:35:20.642+00:00"},"s":"I", "c":"STORAGE", "id":22215, "ctx":"initandlisten",msg:"Opening WiredTiger",attr":{"config":{"create,cache_size=1381M,session_max=32
768,eviction{(threads_min=4,threads_max=4),config_base=false,statistics{(fast)log(enabled=true,recover_path_jrnl,compressor=snappy),builtin_extension_config{(zstd{(compression_level=6}),file_manager{(cl
ose_idle_time=600,close_scan_interval=10,close_handle_minimum=2000),statistics_log{(wait=0),json_output{(error,message),verbose{(recovery_progress:1,checkpoint_progress:1,compact_progress:1,backup:0,checkpoint:0
compact:0,evict:0,historical_store:0,recovery:0,fts:0,salvage:0,tiered:0,timestamp:0,transaction:0,verify:0,log:0)}}}}}}}}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:35:21.530+00:00"},"s":"I", "c":"STORAGE", "id":4795906, "ctx":"initandlisten",msg:"WiredTiger opened",attr":{"durationMillis":885}}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:35:21.530+00:00"},"s":"I", "c":"RECOVERY", "id":23907, "ctx":"initandlisten",msg:"WiredTiger recoveryTimestamp",attr":{"recoveryTimestamp":{"$timestamp":{"t

```

4b.jpg: Screenshot of 3 python application writes and reads from MongoDB after scaling the python application:

```

Command Prompt - docker-compose up --scale pycode=3
[opening engine's wiredtiger]
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:36:34.094+00:00"},"s":"I", "c":"STORAGE", "id":22297, "ctx":"initandlisten",msg:"Using the XFS filesystem is strongly recommended with the WiredTiger storage
engine. See http://doc.mongodb.org/core/prodnates-filesystem",tags":["startupWarnings"]}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:36:34.095+00:00"},"s":"I", "c":"STORAGE", "id":22215, "ctx":"initandlisten",msg:"Opening WiredTiger",attr":{"config":{"create,cache_size=1381M,session_max=32
768,eviction{(threads_min=4,threads_max=4),config_base=false,statistics{(fast)log(enabled=true,recover_path_jrnl,compressor=snappy),builtin_extension_config{(zstd{(compression_level=6}),file_manager{(cl
ose_idle_time=600,close_scan_interval=10,close_handle_minimum=2000),statistics_log{(wait=0),json_output{(error,message),verbose{(recovery_progress:1,checkpoint_progress:1,compact_progress:1,backup:0,checkpoint:0
compact:0,evict:0,historical_store:0,recovery:0,fts:0,salvage:0,tiered:0,timestamp:0,transaction:0,verify:0,log:0)}}}}}}}}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:36:36.266+00:00"},"s":"I", "c":"STORAGE", "id":4795906, "ctx":"initandlisten",msg:"WiredTiger opened",attr":{"durationMillis":2171}}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:36:36.266+00:00"},"s":"I", "c":"RECOVERY", "id":23907, "ctx":"initandlisten",msg:"WiredTiger recoveryTimestamp",attr":{"recoveryTimestamp":{"$timestamp":{"t
0","t":0}}}}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:36:36.285+00:00"},"s":"W", "c":"CONTROL", "id":22120, "ctx":"initandlisten",msg:"Access control is not enabled for the database. Read and write access to dat
a and configuration is unrestricted",tags":["startupWarnings"]}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:36:36.285+00:00"},"s":"W", "c":"CONTROL", "id":22178, "ctx":"initandlisten",msg:"/sys/kernel/mm/transparent_hugepage/enabled is 'always'. We suggest setting
it to 'never'",tags":["startupWarnings"]}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:36:36.286+00:00"},"s":"W", "c":"CONTROL", "id":5123300, "ctx":"initandlisten",msg:"vm.max_map_count is too low",attr":{"currentValue":65530,"recommendedMinimu
m":1677720,"maxConnns":8388608},tags":["startupWarnings"]}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:36:36.293+00:00"},"s":"I", "c":"NETWORK", "id":4915702, "ctx":"initandlisten",msg:"Updated wire specification",attr":{"oldSpec":{"incomingExternalClient":{"mi
nWireVersion":"0","maxWireVersion":17},"incomingInternalClient":{"minWireVersion":"0","maxWireVersion":17},"outgoing":{"minWireVersion":"6","maxWireVersion":17},"isInternalClient":true},"newSpec":{"incomingExternalCli
ent":{"minWireVersion":"0","maxWireVersion":17},"incomingInternalClient":{"minWireVersion":"0","maxWireVersion":17},"outgoing":{"minWireVersion":"6","maxWireVersion":17},"isInternalClient":true}}}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:36:36.293+00:00"},"s":"I", "c":"REPL", "id":5053300, "ctx":"initandlisten",msg:"Current featureCompatibilityVersion value",attr":{"featureCompatibilityVers
ion":"6.0","context":"startup"}}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:36:36.294+00:00"},"s":"I", "c":"STORAGE", "id":5071100, "ctx":"initandlisten",msg:"Clearing temp directory"}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:36:36.304+00:00"},"s":"I", "c":"CONTROL", "id":20536, "ctx":"initandlisten",msg:"Flow Control is enabled on this deployment"}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:36:36.315+00:00"},"s":"I", "c":"FTDC", "id":20625, "ctx":"initandlisten",msg:"Initializing full-time diagnostic data capture",attr":{"dataDirectory":"/da
ta/diagnostic.data"}}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:36:36.328+00:00"},"s":"I", "c":"REPL", "id":6015317, "ctx":"initandlisten",msg:"Setting new configuration state",attr":{"newState":"ConfigReplicationDisabl
ed","oldState":"ConfigPreStart"}}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:36:36.332+00:00"},"s":"I", "c":"STORAGE", "id":22262, "ctx":"initandlisten",msg:"Timestamp monitor starting"}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:36:36.347+00:00"},"s":"I", "c":"NETWORK", "id":22015, "ctx":"listener",msg:"Listening on",attr":{"address":"/tmp/mongodb-27017.sock"}}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:36:36.348+00:00"},"s":"I", "c":"NETWORK", "id":22015, "ctx":"listener",msg:"Listening on",attr":{"address":"0.0.0.0"}}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:36:36.348+00:00"},"s":"I", "c":"NETWORK", "id":22016, "ctx":"listener",msg:"Waiting for connections",attr":{"port":27017,"ssl":"off"}}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:36:36.348+00:00"},"s":"I", "c":"NETWORK", "id":22943, "ctx":"listener",msg:"Connection accepted",attr":{"remote":"172.19.0.3:51856","uid":"962bd073-0136-4e
6c-b0bc-66a4bea1609","connectionId":1,"connectionCount":1}}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:36:36.364+00:00"},"s":"I", "c":"NETWORK", "id":51800, "ctx":"conn1",msg:"client metadata",attr":{"remote":"172.19.0.3:51856","client":"conn1","doc":{"driver
":{"name":"PyMongo","version":"4.3.3"},"os":{"type":"Linux","name":"Linux","architecture":"x86_64","version":"5.15.79.1-microsoft-standard-WSL2"},"platform":"Cpython 3.11.1.final.0"}}}}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:36:36.364+00:00"},"s":"I", "c":"NETWORK", "id":22943, "ctx":"listener",msg:"Connection accepted",attr":{"remote":"172.19.0.3:51868","uid":"be291155-c4d2-48
da-aac9-305fca9552b","connectionId":2,"connectionCount":2}}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:36:36.364+00:00"},"s":"I", "c":"NETWORK", "id":22943, "ctx":"listener",msg:"Connection accepted",attr":{"remote":"172.19.0.3:51870","uid":"08ce24f2-a0f6-4e
6c-b0bc-66a4bea1609","connectionId":3,"connectionCount":3}}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:36:36.364+00:00"},"s":"I", "c":"NETWORK", "id":51800, "ctx":"conn2",msg:"client metadata",attr":{"remote":"172.19.0.3:51868","client":"conn2","doc":{"driver
":{"name":"PyMongo","version":"4.3.3"},"os":{"type":"Linux","name":"Linux","architecture":"x86_64","version":"5.15.79.1-microsoft-standard-WSL2"},"platform":"Cpython 3.11.1.final.0"}}}}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:36:36.364+00:00"},"s":"I", "c":"NETWORK", "id":51800, "ctx":"conn3",msg:"client metadata",attr":{"remote":"172.19.0.3:51870","client":"conn3","doc":{"driver
":{"name":"PyMongo","version":"4.3.3"},"os":{"type":"Linux","name":"Linux","architecture":"x86_64","version":"5.15.79.1-microsoft-standard-WSL2"},"platform":"Cpython 3.11.1.final.0"}}}}
task4-pycode-1 | Inserted into the MongoDB database
task4-pycode-1 | Fetched from MongoDB: {'_id': ObjectId('63e4be84159e9c73aa73a1c'), 'Name': 'Safiya Namar', 'SRN': 'PES2UG20CS455'}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:36:36.755+00:00"},"s":"I", "c":"NETWORK", "id":22943, "ctx":"listener",msg:"Connection accepted",attr":{"remote":"172.19.0.4:58288","uid":"df6d65b2-8dbb-4e
6c-90d9-a417257b095a","connectionId":4,"connectionCount":4}}
task4-mongodb-1 | {"t":{"$date":"2023-02-09T09:36:36.756+00:00"},"s":"I", "c":"NETWORK", "id":51800, "ctx":"conn4",msg:"client metadata",attr":{"remote":"172.19.0.4:58288","client":"conn4","doc":{"driver
":{"name":"PyMongo","version":"4.3.3"},"os":{"type":"Linux","name":"Linux","architecture":"x86_64","version":"5.15.79.1-microsoft-standard-WSL2"},"platform":"Cpython 3.11.1.final.0"}}}}

```