



PES University, Bangalore

(Established under Karnataka Act No. 16 of 2013)

Department of Computer Science and Engineering

UE21CS351B : Cloud Computing

Assignment – 2

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Section D

PES1UG22CS815

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

```
C:\Windows\System32\cmd.exe

"PES1UG22CS815>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/

"PES1UG22CS815>
```

2a.jpg: Screenshot of python-mongodb application running as a docker-compose application(logs of the application)

```
C:\Windows\System32\cmd.exe - docker-compose up --scale pycode=3
Microsoft Windows [Version 10.0.19045.3390]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Tejas\Desktop\Assignment2_Docker\Task2>docker-compose up --scale pycode=3
[+] Running 4/4
   Container task2-mongodb-1   Created
   Container task2-pycode-1     Created
   Container task2-pycode-3     Created
   Container task2-pycode-2     Created
Attaching to mongodb-1, pycode-1, pycode-2, pycode-3
mongodb-1 | {"$date":"2024-02-05T13:41:25.691400-00"},"s":"I",  "c":"NETWORK",  "id":4915701, "ctx":"main","msg":"Initialized wire specification","attr":{"spec":{"incomingExternalClient":{"minWireVersion":0,"maxWireVersion":21},"incomingInternalClient":{"minWireVersion":0,"maxWireVersion":21},"isInternalClient":true}}}
mongodb-1 | {"$date":"2024-02-05T13:41:25.695400-00"},"s":"I",  "c":"CONTROL",  "id":23285,  "ctx":"main","msg":"Automatically disabling TLS 1.0, to force-enable TLS 1.0 specify --sslDisabledProtocols 'no
mongodb-1 | {"$date":"2024-02-05T13:41:25.701400-00"},"s":"I",  "c":"NETWORK",  "id":4646601, "ctx":"main","msg":"Implicit TCP FastOpen unavailable. If TCP FastOpen is required, set tcpFastOpenServer, tcp
mongodb-1 | {"$date":"2024-02-05T13:41:25.701400-00"},"s":"I",  "c":"REPL",    "id":5123008, "ctx":"main","msg":"Successfully registered PrimaryOnlyService","attr":{"service":"TenantMigrationDonorService
mongodb-1 | {"$date":"2024-02-05T13:41:25.701400-00"},"s":"I",  "c":"REPL",    "id":5123008, "ctx":"main","msg":"Successfully registered PrimaryOnlyService","attr":{"service":"TenantMigrationRecipientServ
mongodb-1 | {"$date":"2024-02-05T13:41:25.701400-00"},"s":"I",  "c":"CONTROL",  "id":5945603, "ctx":"main","msg":"Multi threading initialized"}
mongodb-1 | {"$date":"2024-02-05T13:41:25.701400-00"},"s":"I",  "c":"TENANT_M", "id":7091600, "ctx":"main","msg":"Starting TenantMigrationAccessLockerRegistry"}
mongodb-1 | {"$date":"2024-02-05T13:41:25.703400-00"},"s":"I",  "c":"CONTROL",  "id":4615611, "ctx":"initandlisten","msg":"MongoDB starting","attr":{"pid":1,"port":27017,"dbPath":"/data/db","architecture":
"64-bit","host":"74c90bf64f1f"}
mongodb-1 | {"$date":"2024-02-05T13:41:25.703400-00"},"s":"I",  "c":"CONTROL",  "id":23403,  "ctx":"initandlisten","msg":"Build info","attr":{"buildInfo":{"version":"7.0.5","gitVersion":"7809d7e84e314b49
f202a8a6ed7d6c3d309","openSSLVersion":"OpenSSL 3.0.2 15 Mar 2022","modules":["allocator","tcmalloc","environment","distro","ubuntu204","distarch","x86_64","target_arch","x86_64"]}}}
mongodb-1 | {"$date":"2024-02-05T13:41:25.703400-00"},"s":"I",  "c":"CONTROL",  "id":51705,  "ctx":"initandlisten","msg":"Operating System","attr":{"os":{"name":"Ubuntu","version":"22.04"}}}
mongodb-1 | {"$date":"2024-02-05T13:41:25.703400-00"},"s":"I",  "c":"CONTROL",  "id":21955,  "ctx":"initandlisten","msg":"Options set by command line","attr":{"options":{"net":{"bindIp":"","}}}}
mongodb-1 | {"$date":"2024-02-05T13:41:25.703400-00"},"s":"I",  "c":"STORAGE",  "id":22230,  "ctx":"initandlisten","msg":"Storage engine to use detected by data files","attr":{"dbPath":"/data/db","storage
engine":"wiredtiger"}
mongodb-1 | {"$date":"2024-02-05T13:41:25.705400-00"},"s":"I",  "c":"STORAGE",  "id":22297,  "ctx":"initandlisten","msg":"Using the XFS filesystem is strongly recommended with the WiredTiger storage engin
e. See http://docs.mongodb.org/manual/products/filesystem/#tags:[startupWarnings]}
mongodb-1 | {"$date":"2024-02-05T13:41:25.705400-00"},"s":"I",  "c":"STORAGE",  "id":22315,  "ctx":"initandlisten","msg":"Opening WiredTiger","attr":{"config":{"create,cache_size=3437M,session_max=3800,ev
iction(tread,ahead,mini4,threads,max4),config_base=false,statistics(fast),log(enable=true,remove=true,path=journal,compressor=snappy),builtin_extension_config:{zstd(compression_level=6),file_manager(close_id
le,time=60),close_scan_interval=10,close_handle_minimum=2000},statistics_log(wait=0),json_output(error,message),verbose(recovery_progress,checkpoint_progress,compact_progress,1,backup,0,checkpoint:0,compa
ct:0,evict:0,history_store:0,recovery:0,rtx:0,salvage:0,tiered:0,timestamp:0,transaction:0,verify:0,log:0)}}}
mongodb-1 | {"$date":"2024-02-05T13:41:26.917400-00"},"s":"I",  "c":"RECOVERY", "id":23987,  "ctx":"initandlisten","msg":"WiredTiger recovery/progress","attr":{"recoveryTimestamp":{"$timestamp":{"t":"0","i"
0}}}}
mongodb-1 | {"$date":"2024-02-05T13:41:26.931400-00"},"s":"W",  "c":"CONTROL",  "id":22120,  "ctx":"initandlisten","msg":"Access control is not enabled for the database. Read and write access to data and
configuration is unrestricted","tags":["startupWarnings]}
mongodb-1 | {"$date":"2024-02-05T13:41:26.932400-00"},"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]}
mongodb-1 | {"$date":"2024-02-05T13:41:26.932400-00"},"s":"W",  "c":"CONTROL",  "id":5123300, "ctx":"initandlisten","msg":"vm.max_map_count is too low","attr":{"currentValue":262144,"recommendedMinimum":16
77720,"maxCount":8388608,"tag":["startupWarnings]}
mongodb-1 | {"$date":"2024-02-05T13:41:26.937400-00"},"s":"I",  "c":"NETWORK",  "id":4915702, "ctx":"initandlisten","msg":"Updated wire specification","attr":{"oldSpec":{"incomingExternalClient":{"minWireV
ersion":0,"maxWireVersion":21},"incomingInternalClient":{"minWireVersion":0,"maxWireVersion":21},"outgoing":{"minWireVersion":16,"maxWireVersion":21},"isInternalClient":true},"newSpec":{"incomingExternalClient":{"
minWireVersion":0,"maxWireVersion":21},"incomingInternalClient":{"minWireVersion":21,"maxWireVersion":21},"outgoing":{"minWireVersion":21,"maxWireVersion":21},"isInternalClient":true}}}
mongodb-1 | {"$date":"2024-02-05T13:41:26.937400-00"},"s":"I",  "c":"REPL",    "id":5853300, "ctx":"initandlisten","msg":"current featureCompatibilityVersion value","attr":{"featureCompatibilityVersion":"
1.0","context":"startup"}
mongodb-1 | {"$date":"2024-02-05T13:41:26.938400-00"},"s":"I",  "c":"STORAGE",  "id":5071100, "ctx":"initandlisten","msg":"Clearing temp directory"}
mongodb-1 | {"$date":"2024-02-05T13:41:26.943400-00"},"s":"I",  "c":"CONTROL",  "id":6608200, "ctx":"initandlisten","msg":"Initializing cluster server parameters from disk"}

```

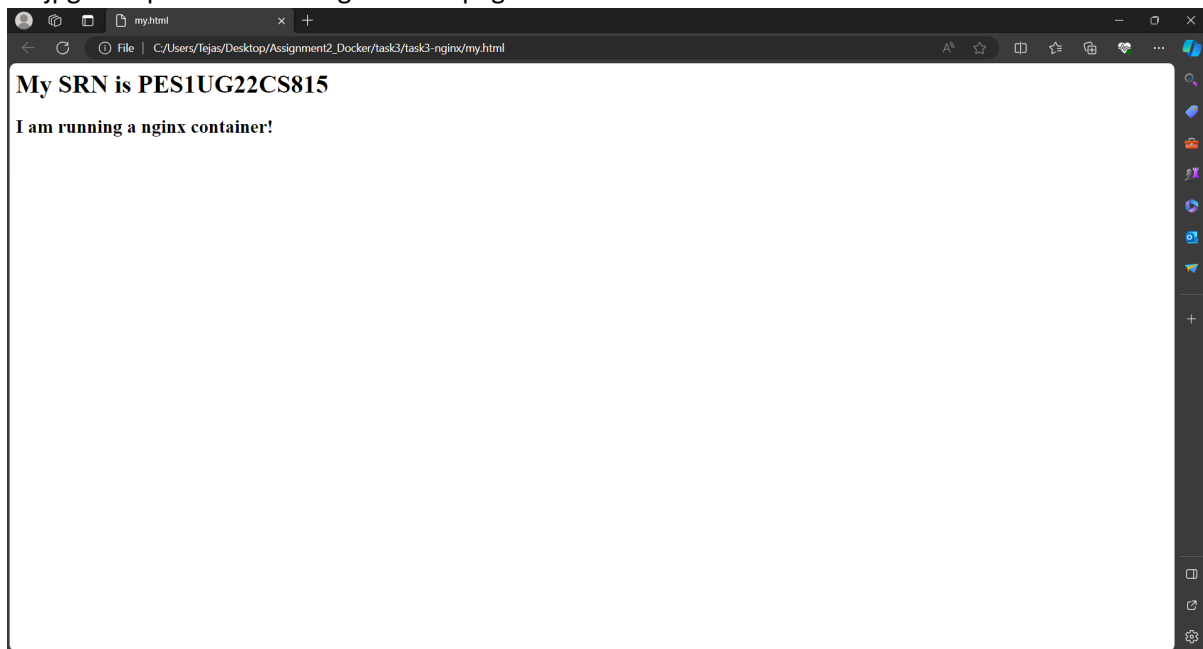
MANASI TAWADE
(PES1UG22CS815)

[illegible]

```
C:\Windows\System32\cmd.exe - docker run -p 90:90 task3

C:\Users\Tejas\Desktop\Assignment2_Docker\task3\task3-nginx>docker run -p 90:90 task3
/docker-entrypoint.sh: /docker-entrypoint.d/ is not empty, will attempt to perform configuration
/docker-entrypoint.sh: Looking for shell scripts in /docker-entrypoint.d/
/docker-entrypoint.sh: Launching /docker-entrypoint.d/10-listen-on-ipv6-by-default.sh
10-listen-on-ipv6-by-default.sh: info: Getting the checksum of /etc/nginx/conf.d/default.conf
10-listen-on-ipv6-by-default.sh: info: Enabled listen on IPv6 in /etc/nginx/conf.d/default.conf
/docker-entrypoint.sh: Sourcing /docker-entrypoint.d/15-local-resolvers.envsh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/20-envsubst-on-templates.sh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/30-tune-worker-processes.sh
/docker-entrypoint.sh: Configuration complete; ready for start up
2024/02/05 14:27:16 [notice] 1#1: using the "epoll" event method
2024/02/05 14:27:16 [notice] 1#1: nginx/1.25.3
2024/02/05 14:27:16 [notice] 1#1: built by gcc 12.2.0 (Debian 12.2.0-14)
2024/02/05 14:27:16 [notice] 1#1: OS: Linux 5.15.133.1-microsoft-standard-WSL2
2024/02/05 14:27:16 [notice] 1#1: getrlimit(RLIMIT_NOFILE): 1048576:1048576
2024/02/05 14:27:16 [notice] 1#1: start worker processes
2024/02/05 14:27:16 [notice] 1#1: start worker process 29
2024/02/05 14:27:16 [notice] 1#1: start worker process 30
2024/02/05 14:27:16 [notice] 1#1: start worker process 31
2024/02/05 14:27:16 [notice] 1#1: start worker process 32
2024/02/05 14:27:16 [notice] 1#1: start worker process 33
2024/02/05 14:27:16 [notice] 1#1: start worker process 34
2024/02/05 14:27:16 [notice] 1#1: start worker process 35
2024/02/05 14:27:16 [notice] 1#1: start worker process 36
```

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

```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19045.3930]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Tejas\Desktop\Assignment2_Docker\task3\task3-pymongo>docker run -dp 27017:27017 mongo
7eb754ad3faa8545c58e12224aa26d18505c890a24d842137d9e8c8ec949264
docker: Error response from daemon: driver failed programming external connectivity on endpoint sleepy_faraday (3471aad1e01c290f5434866bb731799285748747cad275868e501bc6f2066ca4): Bind for 0.0.0.0:27017 failed: port is already allocated.

C:\Users\Tejas\Desktop\Assignment2_Docker\task3\task3-pymongo>docker run -dp 27018:27018 mongo
7d77359545decc1ad97cfa499327d500dbf9a7157ea7d00c06a5584bb3672470

C:\Users\Tejas\Desktop\Assignment2_Docker\task3\task3-pymongo>docker ps -a
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                               NAMES
7d77359545de   mongo         "docker-entrypoint.s..." About a minute ago Up About a minute    27017/tcp, 0.0.0.0:27018->27018/tcp    pensive_galois
7eb754ad3faa   mongo         "docker-entrypoint.s..." About a minute ago Created                               sleepy_faraday
b59bf153e772   mongo         "docker-entrypoint.s..." About a minute ago Created                               adoring_nobel
a09ed1a1aee8   mongo         "docker-entrypoint.s..." 2 minutes ago   Up 2 minutes      0.0.0.0:27017->27017/tcp              eloquent_albattani
3826ee139274   task3         "/docker-entrypoint.s..." 6 minutes ago   Exited (0) 3 minutes ago                                agitated_mcnulty
7a5b3187035e   task3         "/docker-entrypoint.s..." 6 minutes ago   Created                                recurring_elion
754005f13841   task3         "/docker-entrypoint.s..." 6 minutes ago   Created                                gracious_cray
1d8338b0446d   task2-pycode  "python sample.py"      8 minutes ago   Exited (0) 8 minutes ago                                task2-pycode-2
f348043c4854   task2-pycode  "python sample.py"      8 minutes ago   Exited (0) 8 minutes ago                                task2-pycode-3
170c22cf7842   task2-pycode  "python sample.py"      8 minutes ago   Exited (0) 8 minutes ago                                task2-pycode-1
d4bbe9203f7a   mongo         "docker-entrypoint.s..." 8 minutes ago   Exited (0) 3 minutes ago                                task2-mongodb-1
c4e705dfd2cf   hello-world   "/hello"                 9 minutes ago   Exited (0) 9 minutes ago                                ecstatic_elbakyan
```

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

```
C:\Windows\System32\cmd.exe
C:\Users\Tejas\Desktop\Assignment2_Docker\task3\task3-pymongo>docker run task3
Inserted into the MongoDB database!
Fetched from MongoDB: {'_id': ObjectId('65c0f3ada409faf41f76b0f8'), 'Name': '<Your Name>', 'SRN': '<YOUR_SRN>'}

C:\Users\Tejas\Desktop\Assignment2_Docker\task3\task3-pymongo>
```

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:\Windows\System32\cmd.exe
(c) Microsoft Corporation. All rights reserved.

C:\Users\Tejas\Desktop\Assignment2_Docker\task3\task3-nginx>docker build -t task3
ERROR: "docker buildx build" requires exactly 1 argument.
See 'docker buildx build --help'.

Usage:  docker buildx build [OPTIONS] PATH | URL | -

Start a build

C:\Users\Tejas\Desktop\Assignment2_Docker\task3\task3-nginx>docker build -t task3 .
[+] Building 0.4s (7/7) FINISHED
=> [internal] load build definition from Dockerfile                                docker:default
=> => transferring dockerfile: 83B                                                0.0s
=> [internal] load metadata for docker.io/library/nginx:latest                  0.0s
=> [internal] load .dockerignore                                                  0.0s
=> => transferring context: 2B                                                    0.0s
=> [internal] load build context                                                 0.1s
=> => transferring context: 148B                                                  0.0s
=> [1/2] FROM docker.io/library/nginx:latest                                    0.2s
=> [2/2] COPY my.html /usr/share/nginx/html                                     0.0s
=> exporting to image                                                            0.0s
=> => exporting layers                                                            0.0s
=> => writing image sha256:ebe3f0520ae43f35306673b660f0a7e7b8a0ec5293a361e98842201f4813a968 0.0s
=> => naming to docker.io/library/task3                                         0.0s

What's Next?
  View a summary of image vulnerabilities and recommendations → docker scout quickview

C:\Users\Tejas\Desktop\Assignment2_Docker\task3\task3-nginx>
```

4a.jpg: Screenshot of C Program successfully run inside the container.

```
C:\Windows\System32\cmd.exe

C:\Users\Tejas\Desktop\Assignment2_Docker\task4>docker run task4
Running this inside a container !
My SRN is PES1UG22CS815

C:\Users\Tejas\Desktop\Assignment2_Docker\task4>
```

4b.jpg: Screenshot of the image pushed to Dockerhub.

The image shows a Windows command prompt window and a Docker Hub web page. The command prompt shows the execution of Docker commands to tag and push a Docker image. The Docker Hub page shows the repository details for 'pes1ug22cs815/task4'.

```
C:\Windows\System32\cmd.exe

C:\Users\Tejas\Desktop\Assignment2_Docker\task4>docker tag task4 pes1ug22cs815/task4:1.0

C:\Users\Tejas\Desktop\Assignment2_Docker\task4>docker push pes1ug22cs815/task4:1.0
The push refers to repository [docker.io/pes1ug22cs815/task4]
be98356c9cdb: Pushed
bdf46e8269c9: Pushed
5f3ef9eb02ee: Pushed
770a7408f11b: Pushed
548a79621a42: Pushed
1.0: digest: sha256:ca4e89ad907f399d3795c559ad5ce172bf07fb9d43b792c81d499b6c9e24d52c size:
1368

C:\Users\Tejas\Desktop\Assignment2_Docker\task4>
```

The Docker Hub page shows the repository 'pes1ug22cs815/task4' with a description, Docker commands, and a table of tags.

pes1ug22cs815/task4

Description
This repository does not have a description [✎](#)
Last pushed: 2 minutes ago

Docker commands
To push a new tag to this repository:
`docker push pes1ug22cs815/task4:tagname`

Tags
This repository contains 1 tag(s).

Tag	OS	Type	Pulled	Pushed
1.0	linux	Image	---	2 minutes ago

[See all](#)

Automated Builds
Manually pushing images to Hub? Connect your account to GitHub or Bitbucket to automatically build and tag new images whenever your code is updated, so you can focus your time on creating.
Available with Pro, Team and Business subscriptions. [Read more about automated builds](#).
[Upgrade](#)