Cloud Computing Assignment 2 – Report

**Exercise 1**

*<docker compose up –build>*

Explanation: Builds the containers

Output:  
[+] Running 13/13

✔ rabbitmq 12 layers [⣿⣿⣿⣿⣿⣿⣿⣿⣿⣿⣿⣿] 0B/0B Pulled 29.3s

✔ bfbe77e41a78 Pull complete 21.8s

✔ 3ba28653fb67 Pull complete 25.6s

✔ 04931e0b84f1 Pull complete 0.6s

✔ d89b3cc0afb9 Pull complete 4.8s

✔ bde2259342e5 Pull complete 5.4s

✔ e7e3e7138b62 Pull complete 6.1s

✔ 6d97f8a6fe95 Pull complete 13.0s

✔ 36fbef2a3113 Pull complete 13.5s

✔ 99ac56c14b01 Pull complete 14.2s

✔ 2f11352e8e93 Pull complete 15.0s

✔ 5b66fc64ea3e Pull complete 15.6s

✔ 3c02f0dab224 Pull complete 27.2s

[+] Building 0.5s (9/9) FINISHED docker:desktop-linux

=> [app internal] load build definition from Dockerfile 0.0s

=> => transferring dockerfile: 397B 0.0s

=> [app internal] load .dockerignore 0.0s

=> => transferring context: 2B 0.0s

=> [app internal] load metadata for docker.io/library/python:3.9 0.4s

=> [app 1/4] FROM docker.io/library/python:3.9@sha256:f2f14d6dabcbc113512050906474d44cd 0.0s

=> [app internal] load build context 0.0s

=> => transferring context: 986B 0.0s

=> CACHED [app 2/4] WORKDIR /usr/src/app 0.0s

=> CACHED [app 3/4] COPY . . 0.0s

=> CACHED [app 4/4] RUN pip install pika 0.0s

=> [app] exporting to image 0.0s

=> => exporting layers 0.0s

=> => writing image sha256:872c8661e34a8840489653877af178c6e028df6f935a4558d264b5c2d04a 0.0s

=> => naming to docker.io/library/ex1-app 0.0s

[+] Running 3/2

✔ Network ex1\_default Created 0.0s

✔ Container ex1-rabbitmq-1 Created 0.2s

✔ Container ex1-app-1 Created 0.0s

Attaching to ex1-app-1, ex1-rabbitmq-1

*<docker exec -it ex1-app-1 /bin/bash>*

Explanation: Execs into the app to run the scripts

Output:

root@59cd947e23b2:/usr/src/app#

*<python student.py>*

Explanation: Runs *student* script

Output:

*Assignment of student 1932 sent for correction*

*Assignment of student 1326 sent for correction*

*<python demonstrator\_dm.py>*

Explanation: Runs *demonstrator\_dm* script

Ouput:  
*[\*] Demonstrator is Waiting...*

*Received assignment from student 1932 with status submitted*

*Assignment from student 1932 sent to validation\_queue*

*ctrlC*

Explanation: Interrupts *demonstrator\_dm* script

Output:

*^CInterrupted*

*<python demonstrator\_cc.py>*

Explanation: Runs *demonstrator\_cc* script

Ouput:  
*[\*] Demonstrator is Waiting...*

*Received assignment from student 1326 with status submitted*

*Assignment from student 1326 sent to validation\_queue*

*ctrlC*

Explanation: Interrupts *demonstrator\_cc* script

Output:

*^CInterrupted*

*<python teaching\_assistant.py>*

Explanation: Runs *teaching\_assistant* script

Output:

*[\*] Teaching assistant is Waiting...*

*Received assignment from student 1932 with status corrected*

*Assignment from student 1932 sent to result\_queue*

*Received assignment from student 1326 with status corrected*

*Assignment from student 1326 sent to result\_queue*

*ctrlC*

Explanation: Interrupts *teaching\_assistant* script

Output:

*^CInterrupted*

*<python module\_coordinator.py>*

Explanation: Runs *module\_coordinator* script

Ouput:  
*[\*] Module Coodinator is Waiting...*

*Received assignment from student 1932 with status validated*

*Assignment from student 1932 published to Brightspace*

*Received assignment from student 1326 with status validated*

*Assignment from student 1326 published to Brightspace*

*ctrlC*

Explanation: Interrrupts *module\_coordinator* script

*ctrlC*

Explanation: Interrupts *teaching\_assistant* script

Output:

*^CInterrupted*

**Exercise 2**

*<docker compose up –build>*

Explanation: Builds the containers

[+] Running 13/13

✔ rabbitmq 12 layers [⣿⣿⣿⣿⣿⣿⣿⣿⣿⣿⣿⣿] 0B/0B Pulled 29.4s

✔ bfbe77e41a78 Pull complete 21.1s

✔ 3ba28653fb67 Pull complete 25.2s

✔ 04931e0b84f1 Pull complete 0.5s

✔ d89b3cc0afb9 Pull complete 4.3s

✔ bde2259342e5 Pull complete 4.8s

✔ e7e3e7138b62 Pull complete 5.6s

✔ 6d97f8a6fe95 Pull complete 12.5s

✔ 36fbef2a3113 Pull complete 13.1s

✔ 99ac56c14b01 Pull complete 13.6s

✔ 2f11352e8e93 Pull complete 14.3s

✔ 5b66fc64ea3e Pull complete 15.0s

✔ 3c02f0dab224 Pull complete 19.8s

[+] Building 0.5s (43/43) FINISHED docker:desktop-linux

=> [module\_coordinator internal] load build definition from Dockerfile 0.0s

=> => transferring dockerfile: 308B 0.0s

=> [module\_coordinator internal] load .dockerignore 0.0s

=> => transferring context: 2B 0.0s

=> [teaching\_assistant internal] load metadata for docker.io/library/pyt 0.4s

=> [demonstrator\_cc internal] load build definition from Dockerfile 0.0s

=> => transferring dockerfile: 300B 0.0s

=> [demonstrator\_cc internal] load .dockerignore 0.0s

=> => transferring context: 2B 0.0s

=> [demonstrator\_dm internal] load build definition from Dockerfile 0.0s

=> => transferring dockerfile: 299B 0.0s

=> [demonstrator\_dm internal] load .dockerignore 0.0s

=> => transferring context: 2B 0.0s

=> [teaching\_assistant internal] load .dockerignore 0.0s

=> => transferring context: 2B 0.0s

=> [teaching\_assistant internal] load build definition from Dockerfile 0.0s

=> => transferring dockerfile: 308B 0.0s

=> [student internal] load build definition from Dockerfile 0.0s

=> => transferring dockerfile: 275B 0.0s

=> [student internal] load .dockerignore 0.0s

=> => transferring context: 2B 0.0s

=> [demonstrator\_cc 1/6] FROM docker.io/library/python:3.9-slim@sha256:c 0.0s

=> [demonstrator\_dm internal] load build context 0.0s

=> => transferring context: 1.69kB 0.0s

=> [demonstrator\_cc internal] load build context 0.0s

=> => transferring context: 1.72kB 0.0s

=> [teaching\_assistant internal] load build context 0.0s

=> => transferring context: 1.68kB 0.0s

=> [module\_coordinator internal] load build context 0.0s

=> => transferring context: 1.41kB 0.0s

=> [student internal] load build context 0.0s

=> => transferring context: 2.97kB 0.0s

=> CACHED [student 2/6] WORKDIR /usr/src/app 0.0s

=> CACHED [demonstrator\_dm 3/6] COPY ../requirements.txt /usr/src/app/ 0.0s

=> CACHED [demonstrator\_dm 4/6] RUN pip install --no-cache-dir -r requir 0.0s

=> CACHED [demonstrator\_dm 5/6] COPY ../rabbitmq\_setup.py /usr/src/app/ 0.0s

=> CACHED [demonstrator\_dm 6/6] COPY ./demonstrator\_dm/demonstrator\_dm.p 0.0s

=> CACHED [module\_coordinator 3/6] COPY ../requirements.txt /usr/src/app 0.0s

=> CACHED [module\_coordinator 4/6] RUN pip install --no-cache-dir -r req 0.0s

=> CACHED [module\_coordinator 5/6] COPY ../rabbitmq\_setup.py /usr/src/ap 0.0s

=> CACHED [module\_coordinator 6/6] COPY ./module\_coordinator/module\_coor 0.0s

=> CACHED [teaching\_assistant 3/6] COPY ../requirements.txt /usr/src/app 0.0s

=> CACHED [teaching\_assistant 4/6] RUN pip install --no-cache-dir -r req 0.0s

=> CACHED [teaching\_assistant 5/6] COPY ../rabbitmq\_setup.py /usr/src/ap 0.0s

=> CACHED [teaching\_assistant 6/6] COPY ./teaching\_assistant/teaching\_as 0.0s

=> [demonstrator\_dm] exporting to image 0.0s

=> => exporting layers 0.0s

=> => writing image sha256:582db7544c191fab1819559505148f2101b5f0eb112dd 0.0s

=> => naming to docker.io/library/ex2-demonstrator\_dm 0.0s

=> [module\_coordinator] exporting to image 0.0s

=> => exporting layers 0.0s

=> => writing image sha256:4c0d124d49a5650990d07becd5e200ab88b335bb75e42 0.0s

=> => naming to docker.io/library/ex2-module\_coordinator 0.0s

=> CACHED [demonstrator\_cc 3/6] COPY ../requirements.txt /usr/src/app/ 0.0s

=> CACHED [demonstrator\_cc 4/6] RUN pip install --no-cache-dir -r requir 0.0s

=> CACHED [demonstrator\_cc 5/6] COPY ../rabbitmq\_setup.py /usr/src/app/ 0.0s

=> CACHED [demonstrator\_cc 6/6] COPY ./demonstrator\_cc/demonstrator\_cc.p 0.0s

=> CACHED [student 3/6] COPY ../requirements.txt /usr/src/app/ 0.0s

=> CACHED [student 4/6] RUN pip install --no-cache-dir -r requirements.t 0.0s

=> CACHED [student 5/6] COPY ../rabbitmq\_setup.py /usr/src/app/ 0.0s

=> CACHED [student 6/6] COPY ./student/student.py . 0.0s

=> [demonstrator\_cc] exporting to image 0.0s

=> => exporting layers 0.0s

=> => writing image sha256:59e96e6c822b5fe3fb4cc58f122273eae666c6ad08612 0.0s

=> => naming to docker.io/library/ex2-demonstrator\_cc 0.0s

=> [student] exporting to image 0.0s

=> => exporting layers 0.0s

=> => writing image sha256:46cdaa1901db754cbdf9295ba4f17a4f2470e62c9f4e2 0.0s

=> => naming to docker.io/library/ex2-student 0.0s

=> [teaching\_assistant] exporting to image 0.0s

=> => exporting layers 0.0s

=> => writing image sha256:a78a26f489807a5ccb3860e224781ed8cb42911381400 0.0s

=> => naming to docker.io/library/ex2-teaching\_assistant 0.0s

[+] Running 7/2

✔ Network ex2\_default Created 0.0s

✔ Container ex2-rabbitmq-1 Creat... 0.1s

✔ Container ex2-module\_coordinator-1 Created 0.0s

✔ Container ex2-demonstrator\_cc-1 Created 0.0s

✔ Container ex2-teaching\_assistant-1 Created 0.0s

✔ Container ex2-demonstrator\_dm-1 Created 0.0s

✔ Container ex2-student-1 Create... 0.0s

Attaching to ex2-demonstrator\_cc-1, ex2-demonstrator\_dm-1, ex2-module\_coordinator-1, ex2-rabbitmq-1, ex2-student-1, ex2-teaching\_assistant-1

ex2-student-1 | Waiting for RabbitMQ to start up...

ex2-rabbitmq-1 | 2023-11-28 22:25:05.399456+00:00 [notice] <0.44.0> Application syslog exited with reason: stopped

ex2-rabbitmq-1 | 2023-11-28 22:25:05.405367+00:00 [notice] <0.230.0> Logging: switching to configured handler(s); following messages may not be visible in this log output

ex2-rabbitmq-1 |

ex2-rabbitmq-1 | ## ## RabbitMQ 3.12.9

ex2-rabbitmq-1 | ## ##

ex2-rabbitmq-1 | ########## Copyright (c) 2007-2023 VMware, Inc. or its affiliates.

ex2-rabbitmq-1 | ###### ##

ex2-rabbitmq-1 | ########## Licensed under the MPL 2.0. Website: https://rabbitmq.com

ex2-rabbitmq-1 |

ex2-rabbitmq-1 | Erlang: 25.3.2.7 [jit]

ex2-rabbitmq-1 | TLS Library: OpenSSL - OpenSSL 3.1.4 24 Oct 2023

ex2-rabbitmq-1 | Release series support status: supported

ex2-rabbitmq-1 |

ex2-rabbitmq-1 | Doc guides: https://rabbitmq.com/documentation.html

ex2-rabbitmq-1 | Support: https://rabbitmq.com/contact.html

ex2-rabbitmq-1 | Tutorials: https://rabbitmq.com/getstarted.html

ex2-rabbitmq-1 | Monitoring: https://rabbitmq.com/monitoring.html

ex2-rabbitmq-1 |

ex2-rabbitmq-1 | Logs: <stdout>

ex2-rabbitmq-1 |

ex2-rabbitmq-1 | Config file(s): /etc/rabbitmq/rabbitmq.conf

ex2-rabbitmq-1 | /etc/rabbitmq/conf.d/10-defaults.conf

ex2-rabbitmq-1 |

ex2-rabbitmq-1 | Starting broker... completed with 4 plugins.

*<docker attach ex2-student-1>*

Explanation: Attaches the terminal to the container

Output:

docker attach ex2-student-1

Press Enter to start...

*<Enter>*

Explanation: Starts the process of entering assignments

Output:

Welcome to the Assignment Submission System!

Please enter the assignment details

**Notes**

* After attaching to the container you can add as many assignments as you like. At the end of each assignment you are asked if you would like to publish them.
* You also need to press enter to begin the process of entering assignments.
* If you enter yes (or y), all of the assignments will be published to the exchange and you will then be asked if you would like to exit the program. If you do not exit, the program will restart and you need to press enter again.
* If you enter no (or n), you will be asked to enter the details of the next assignment.

Output from my video

**Terminal Output:**

Press Enter to start...

Welcome to the Assignment Submission System!

Please enter the assignment details

Enter student ID: 1234

Enter the module: data\_mining

Enter the content of the answer: hi

Do you want to publish all assignments? (Y/N): n

Please enter the assignment details

Enter student ID: 3456

Enter the module: data\_mining

Enter the content of the answer: hello

Do you want to publish all assignments? (Y/N): n

Please enter the assignment details

Enter student ID: 5789

Enter the module: cloud\_computing

Enter the content of the answer: 3452

Do you want to publish all assignments? (Y/N): y

Assignment from student 1234 for data\_mining sent for correction

Assignment from student 3456 for data\_mining sent for correction

Assignment from student 5789 for cloud\_computing sent for correction

Start signal sent to demonstrators

Do you wish to exit the program? (Y/N): n

Welcome to the Assignment Submission System!

Please enter the assignment details

Enter student ID: 2348

Enter the module: cloud\_computing

Enter the content of the answer: hii

Do you want to publish all assignments? (Y/N): n

Please enter the assignment details

Enter student ID: 9203

Enter the module: cloud\_computing

Enter the content of the answer: hellooo

Do you want to publish all assignments? (Y/N): y

Assignment from student 2348 for cloud\_computing sent for correction

Assignment from student 9203 for cloud\_computing sent for correction

Start signal sent to demonstrators

Do you wish to exit the program? (Y/N): y

Exiting the program.

**Docker logs:**

ex2-student-1 | Press Enter to start...

ex2-student-1 |

ex2-student-1 | Welcome to the Assignment Submission System!

ex2-student-1 |

ex2-student-1 | Please enter the assignment details

ex2-student-1 | Enter student ID: 1234

ex2-student-1 | Enter the module: data\_mining

ex2-student-1 | Enter the content of the answer: hi

ex2-student-1 | Do you want to publish all assignments? (Y/N): n

ex2-student-1 |

ex2-student-1 |

ex2-student-1 |

ex2-student-1 | Please enter the assignment details

ex2-student-1 | Enter student ID: 3456

ex2-student-1 | Enter the module: data\_mining

ex2-student-1 | Enter the content of the answer: hello

ex2-student-1 | Do you want to publish all assignments? (Y/N): n

ex2-student-1 |

ex2-student-1 |

ex2-student-1 |

ex2-student-1 | Please enter the assignment details

ex2-student-1 | Enter student ID: 5789

ex2-student-1 | Enter the module: cloud\_computing

ex2-student-1 | Enter the content of the answer: 3452

ex2-student-1 | Do you want to publish all assignments? (Y/N): y

ex2-student-1 |

ex2-student-1 |

ex2-student-1 | Assignment from student 1234 for data\_mining sent for correction

ex2-student-1 | Assignment from student 3456 for data\_mining sent for correction

ex2-student-1 | Assignment from student 5789 for cloud\_computing sent for correction

ex2-student-1 | Start signal sent to demonstrators

ex2-student-1 |

ex2-demonstrator\_dm-1 | Received start signal. Beginning to process assignments.

ex2-demonstrator\_cc-1 | Received start signal. Beginning to process assignments.

ex2-demonstrator\_cc-1 | [\*] Cloud Computing Demonstrator is Waiting...

ex2-demonstrator\_cc-1 | Received assignment from student 5789 with status submitted

ex2-demonstrator\_cc-1 | Correcting assignment from student 5789 and sending back to exchange

ex2-demonstrator\_cc-1 | Assignment from student 5789 sent to validation\_queue

ex2-demonstrator\_dm-1 | [\*] Data Mining Demonstrator is Waiting...

ex2-demonstrator\_dm-1 | Received assignment from student 1234 with status submitted

ex2-demonstrator\_dm-1 | Correcting assignment from student 1234 and sending back to exchange

ex2-demonstrator\_dm-1 | Assignment from student 1234 sent to validation\_queue

ex2-demonstrator\_dm-1 | Received assignment from student 3456 with status submitted

ex2-demonstrator\_dm-1 | Correcting assignment from student 3456 and sending back to exchange

ex2-demonstrator\_dm-1 | Assignment from student 3456 sent to validation\_queue

ex2-teaching\_assistant-1 | Received start signal. Beginning to process assignments.

ex2-teaching\_assistant-1 | [\*] Teaching assistant is Waiting...

ex2-teaching\_assistant-1 | Received assignment from student 5789 with status corrected

ex2-teaching\_assistant-1 | Validating assignment from student 5789 and sending back to exchange

ex2-teaching\_assistant-1 | Assignment from student 5789 sent to result\_queue

ex2-teaching\_assistant-1 | Received assignment from student 1234 with status corrected

ex2-teaching\_assistant-1 | Validating assignment from student 1234 and sending back to exchange

ex2-teaching\_assistant-1 | Assignment from student 1234 sent to result\_queue

ex2-teaching\_assistant-1 | Received assignment from student 3456 with status corrected

ex2-teaching\_assistant-1 | Validating assignment from student 3456 and sending back to exchange

ex2-teaching\_assistant-1 | Assignment from student 3456 sent to result\_queue

ex2-module\_coordinator-1 | Received start signal. Beginning to process assignments.

ex2-module\_coordinator-1 | [\*] Module Coordinator is Waiting...

ex2-module\_coordinator-1 | Received assignment from student 5789 with status validated

ex2-module\_coordinator-1 | Publishing assignment from student 5789 to Brightspace

ex2-module\_coordinator-1 | Assignment from student 5789 published to Brightspace

ex2-module\_coordinator-1 | Received assignment from student 1234 with status validated

ex2-module\_coordinator-1 | Publishing assignment from student 1234 to Brightspace

ex2-module\_coordinator-1 | Assignment from student 1234 published to Brightspace

ex2-module\_coordinator-1 | Received assignment from student 3456 with status validated

ex2-module\_coordinator-1 | Publishing assignment from student 3456 to Brightspace

ex2-module\_coordinator-1 | Assignment from student 3456 published to Brightspace

ex2-student-1 | Do you wish to exit the program? (Y/N): n

ex2-student-1 |

ex2-student-1 | Welcome to the Assignment Submission System!

ex2-student-1 |

ex2-student-1 | Please enter the assignment details

ex2-student-1 | Enter student ID: 2348

ex2-student-1 | Enter the module: cloud\_computing

ex2-student-1 | Enter the content of the answer: hii

ex2-student-1 | Do you want to publish all assignments? (Y/N): n

ex2-student-1 |

ex2-student-1 |

ex2-student-1 |

ex2-student-1 | Please enter the assignment details

ex2-student-1 | Enter student ID: 9203

ex2-student-1 | Enter the module: cloud\_computing

ex2-student-1 | Enter the content of the answer: hellooo

ex2-student-1 | Do you want to publish all assignments? (Y/N): y

ex2-student-1 |

ex2-student-1 |

ex2-student-1 | Assignment from student 2348 for cloud\_computing sent for correction

ex2-student-1 | Assignment from student 9203 for cloud\_computing sent for correction

ex2-demonstrator\_cc-1 | Received assignment from student 2348 with status submitted

ex2-demonstrator\_cc-1 | Correcting assignment from student 2348 and sending back to exchange

ex2-demonstrator\_cc-1 | Assignment from student 2348 sent to validation\_queue

ex2-demonstrator\_cc-1 | Received assignment from student 9203 with status submitted

ex2-demonstrator\_cc-1 | Correcting assignment from student 9203 and sending back to exchange

ex2-demonstrator\_cc-1 | Assignment from student 9203 sent to validation\_queue

ex2-teaching\_assistant-1 | Received assignment from student 2348 with status corrected

ex2-teaching\_assistant-1 | Validating assignment from student 2348 and sending back to exchange

ex2-teaching\_assistant-1 | Assignment from student 2348 sent to result\_queue

ex2-teaching\_assistant-1 | Received assignment from student 9203 with status corrected

ex2-teaching\_assistant-1 | Validating assignment from student 9203 and sending back to exchange

ex2-teaching\_assistant-1 | Assignment from student 9203 sent to result\_queue

ex2-module\_coordinator-1 | Received assignment from student 2348 with status validated

ex2-module\_coordinator-1 | Publishing assignment from student 2348 to Brightspace

ex2-module\_coordinator-1 | Assignment from student 2348 published to Brightspace

ex2-module\_coordinator-1 | Received assignment from student 9203 with status validated

ex2-module\_coordinator-1 | Publishing assignment from student 9203 to Brightspace

ex2-module\_coordinator-1 | Assignment from student 9203 published to Brightspace

ex2-student-1 | Start signal sent to demonstrators

ex2-student-1 |

ex2-student-1 | Do you wish to exit the program? (Y/N): y

ex2-student-1 | Exiting the program.

ex2-student-1 exited with code 0