TSR / NIST - 3rd Lab Project

This exam consists of 10 multiple choice questions. In every case only one answer is correct. You should answer in a separate sheet. If correctly answered, they contribute 1 point to the exam grade. If incorrectly answered, the contribution is negative: -0.333. So, think carefully your answers.

1. The last task proposed in the first part of this lab project consists in running this command in a basic version of the "cbw" application:

```
docker-compose up --scale cli=8 --scale wor=3
```

What is the result of that command?

a	Some errors arise and no container is started, since the Docker images to be used in that command are "client" and "worker", instead of "cli" and "wor".
b	Some containers are started but clients are unable to interact with workers, since no broker has been started.
c	A broker manages the interactions among eight clients and three workers.
d	A broker, a client and a worker are started. Depending on the host workload, the Docker daemon may start up to 7 additional clients and up to 2 additional workers.

2. In the second part of this lab project a "logger" component was added to the "cbw" application. Its inclusion demanded this new block in the "docker-compose.yml" file:

```
log:
  image: logger
  build: ./logger/
  volumes:
    - /tmp/logger.log:/tmp/myfile.log
```

Which is the correct final content in the broker-related part of that "docker-compose.yml" file?

a	None, because there is no broker-related section in that file.

b	`bro:`
	`  image: broker`
	`  build: ./broker/`

c	`bro:`
	`  image: broker`
	`  build: ./broker/`
	`  links:`
	`  - wor`

d	`bro:`
	`  image: broker`
	`  build: ./broker/`
	`  links:`
	`  - log`
	`  environment:`
	`  - LOGGER_URL=tcp://log:8066`

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3. Considering the "logger" block from the "docker-compose.yml" file shown in the previous question, why is the "volumes" section needed there?

a	Because the "/tmp/myfile.log" file in the container of that component is mapped to the "/tmp/logger.log" file in the host.
b	Because the "docker-compose.yml" file is now placed in the "/tmp" folder and its name may be "logger.log" or "myfile.log".
c	Because that component accesses the CD-ROM while it is running, and the contents of the CD to be read are taken from a file called "/tmp/logger.log" or "/tmp/myfile.log".
d	Because the "logger" Dockerfile is now placed in the "/tmp" folder and its name may be "logger.log" or "myfile.log".

4. Which of the following statements about the "logger" component to be deployed in the second part of the lab project IS FALSE?

a	It receives the trace messages generated by the other components.
b	It handles its communication with other components using a PULL ØMQ socket.
c	It handles its communication with other components using a file placed in a volume.
d	It handles its communication with the user using a file placed in a volume.

5. In that second part of the lab project, let us assume that we have started 2 clients of type B, 1 worker of type B, 1 broker but 2 loggers instead of a single one. In that case, which of the following statements correctly describes the behaviour of that deployment?

a	The second logger is unable to start, since it cannot bind its ØMQ socket (the corresponding port number is already busy). An error is reported by docker-compose.
b	Clients, broker and worker connect to the first logger and nothing strange happens in that execution. The second logger is ignored.
c	Each logger creates a different log file. Some components connect with the first logger and some others with the second one. Messages may be found in both files.
d	The worker is unable to manage so many clients and it crashes once started. No worker-related message may be found in the log.

6. In that second part of the lab project, let us assume that we have started 2 clients of type B, 2 workers of type B, 1 logger but 2 brokers instead of a single one. In that case, which of the following statements correctly describes the behaviour of that deployment?

a	The 2nd broker is unable to start. It cannot bind its ØMQ sockets (the corresponding port numbers are already busy). An error is reported by docker-compose.
b	The logger is unable to manage so many components and it crashes once started. No trace-related message may be found in the log.
c	Some clients and workers connect with the first broker and some others with the second one. The workload is shared by both brokers.
d	Clients and workers connect to the first broker and nothing strange happens in that execution. The second broker is ignored.

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7. In the third part of this lab project, its first task demands that clients do not run in the same host where broker and workers run. In that scenario, which is the FALSE statement?

a	No client-related section exists in the docker-compose.yml file.
b	A "ports:" statement must be in the broker section of the docker-compose.yml file to assign a host port number to the frontend port of the broker container.
c	Clients may be started from the command-line interface in another computer, passing them an appropriate broker URL.
d	The broker-related URL to be used by clients uses as its IP address that of the broker container.

8. In the third part of this lab project, a "worcli" component is presented and used. The goal of that component is to show...:

a	...that the same component may appear in two different docker-compose.yml files and that both files may be used for scaling it while it is running.
b	...that a component cannot behave simultaneously as a client for a service and a worker for another.
c	...the difficulties that arise when a scalable component behaves as a client for a service and a worker for another.
d	...that a given component may scale while it behaves as a worker for a service but not when it behaves as a client for another service.

9. The 2nd lab project presented the heart-beating approach for managing worker failures. Let us assume that we can chain services: A's workers are clients of service B. Which of these aspects could be critical in order to set the failure detection interval managed by A's broker?

a	The longest service time in service B, since it conditions the resulting service time in its callers.
b	The amount of job classes.
c	Dockerfile for A's broker.
d	The amount of workers in each service, since they condition the response time of each forwarded request.

10. Considering the chained service from the previous question, where broker and worker components cannot be executed at desktop nodes, its worcli component may be executed:

a	In any node (desktop, host for A deployment, host for B deployment).
b	In the host for A deployment.
c	In the host for B deployment.
d	In the desktop.