IT - Platform Exams

Presentation only

Virtual Machine and Docker – 50 Points

Task 1: Add Firewall (8 Points)

Using your created network in the homework, do the following:

1- Check and correct all network configurations.
2- In the servers Pool, change the network into DMZ, and add Firewall or Firewalls,
3- The location of firewall(s) depends on your network design,
4- Remove the DHCP sever, and configure the Firewall as DHCP server,
5- Configure the Firewall, to protect the intrusion from outside network.

Note: select the Best already designed network, from one of the Team member, you do not need to redesign the complete new network.

Task 2: Install and Uses Linux Operating system (8 Points)

The task is to install a Linux operating system on windows or MacOS Operating system and do serval tasks:

1- Install Oracle WM and configured correctly, https://www.virtualbox.org/
2- In WM ware create 2 virtual machines:
    a. Ubuntu OS, You are free to select the Ubuntu version.
    b. Debian OS, You are free to select the Debian version.
    c. Run both installed OS's at the same time.
    d. Configure both virtual operating systems networks, and check the link between of the both OS.

3- In the Ubuntu OS:
    a. Creates 2 users, admin user and the normal user.
    b. Change the view of OS into full screen mode.
    c. Install Java VM, using command line.
    d. Create and Run small Java program (of your choice) using command line only,

       Or

    e. Install Python V3, using command line.
    f. Create and Run small Python program using command line only,
4- In the Debian OS:
    a. Configure Sudo User,
    b. Install Synaptic Package Manager using command line,
    c. Uses Synaptic package the installed any photo editor software

Task 3: Install and Uses Docker in Ubuntu operating system (8 points)

Within the Ubuntu installed in the task 2 do the following:

1- Install Docker,
2- Create a Docker account in Docker hub,
3- Pull hello world image and run it,
4- Pull Ubuntu Docker image from Docker hub, and run the image.
5- Check your running containers,
6- Run the batch in the Ubuntu container, and see the bin folder, and create new ***ls*** command.

Task 4: Create a Java Docker or Python container (8 points)

Using the Java program. Or Python that you created in Task 2, create this java /python program, and run it inside the Container.

    a. In the Ubuntu OS, create a new Directory using command line,

b. Create a docker file,
c. Run the docker file to create Java Container,
d. Run the container and see the results,

Task 5: Change the system configuration using Python Docker container (8 points)

Using the following python code:

```python
import os
from flask import Flask, render_template
app = Flask(__name__)

color = os.environ.get('MY_COLOR')

@app.route("/")

def index():
    return render_template("index.html",
                           mytitle="MyPage",
                           mycontent="Welcome to my custom page",
                           mycolor=color)

if __name__ == "__main__":
   app.run(host="0.0.0.0",port="8080")
```

Using the following index.html file:

index.html

```html
<html>
    <head>
        <title>{{ mytitle }}</title>
    </head>
    <body style="background-color:{{ mycolor }};">
        <p>{{ mycontent }}</p>
    </body>
</html>
```

a. In the Ubuntu OS, create a new Directory using command line, called myproject,
b. myproject folder must has the python code, and template directory which has the html index file inside.
c. Create a proper docker file, (Install python and flask, and other commands) more info about flask https://flask.palletsprojects.com/en/2.2.x/
d. Run the docker file to create Python Container,
e. Run the container and see the results, using correct network mapping to run the code.

Submission Requirements

You must submit the following:

- The source code for your implementation, with: .all files and Docker files**,**
- **The report and power point presentation,**
- **The working groups in from 4 to 6 members, single few students will not be considered as groups, and they will not be allowed to present.**
- **The presentation will be at the campus, no online presentation will be possible,**
- The file name of the zip file and report and the source code must be: **GroupsName(Number).zip**, **any other file name will be ignored**.
- The time of presentation is shown in the following Presentation Dates are:

  - **Group (A) in 17 ,24 Jan 2025 at 16:15**. Only 6 students groups please uses this file to add group's members and desired presentation date.https://docs.google.com/spreadsheets/d/1zaFYehdhmqHjXRBw6oH71fJz_du3jnrRBvFKEpfOA_M/edit#gid=0
  - **Group (B) in 23 Jan 2025 at 13:45**. Only 6 students groups please uses this file to add group's members and desired presentation date. https://docs.google.com/spreadsheets/d/1lTkr1PsIwZToHBvnmOcxWzSfVn_-bV86kgK9LoWhEOI/edit#gid=0

- **Group (C) in 23 Jan 2025 at 8:15**. Only 6 students groups please uses this file to add group's members and desired presentation date. https://docs.google.com/spreadsheets/d/1d73uzeIDPHBdezgUPWMgKgYKiAu0-m6d-Sv9PcKidlc/edit#gid=0

- **Do not miss the presnetation**.
- **Please add groups names and presentation dates before 1.12.2024**.

Notes:

- The work in Group Work, so please every team member will do the presentation.
- **Presentation is 15 minutes, and 10 Q/A, in addition to distribution of the marks listed above, 5 points will be for quality of presentation and time management, and 5 points for Q/A.**
- Non-working project will be ignored.
- **The Submission data is stated in MsTeam Clearly please do not miss it, (Late submission will not be considered with any reason)**
  If you miss your presentation then you will fail the course.

Good Luck

Prof. Dr. Rand Kouatly