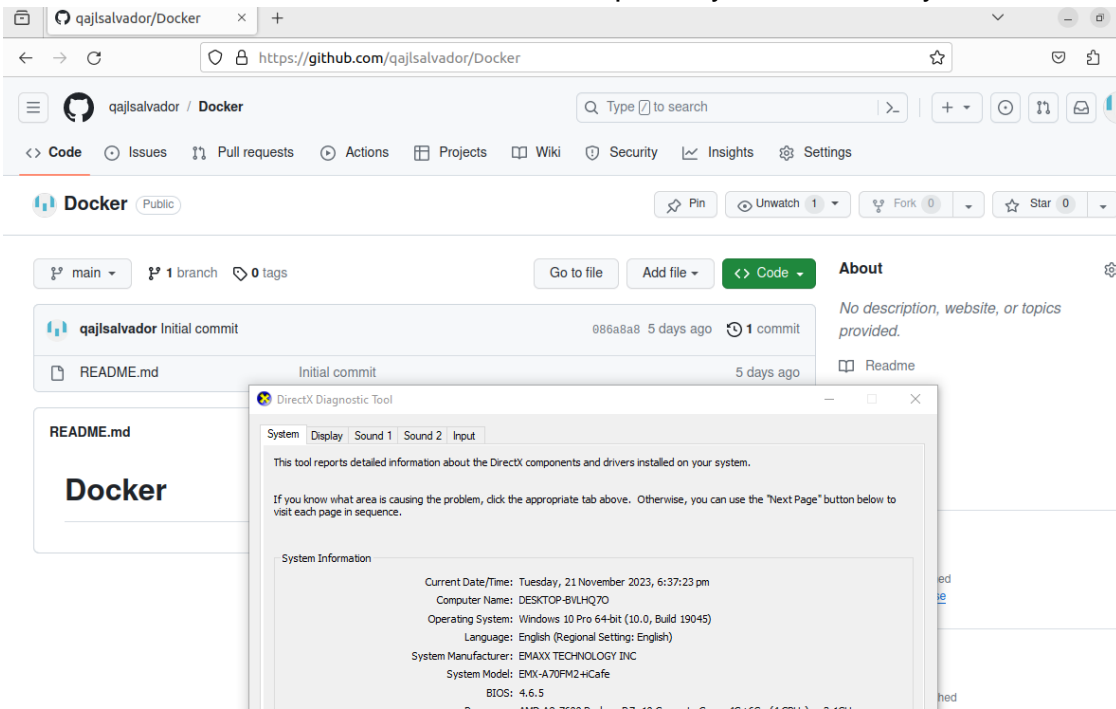
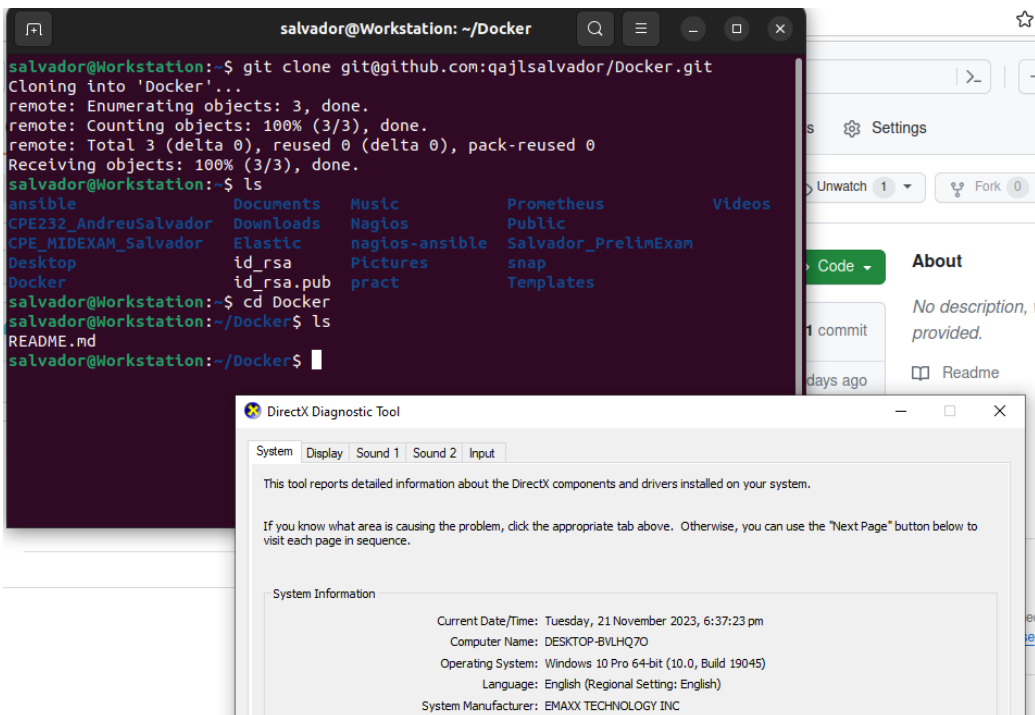


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<b>Course/Section: CPE31S5</b>	<b>Date Submitted: 23/11/2023</b>
<b>Instructor: Engr. Roman Richard</b>	<b>Semester and SY: 1<sup>st</sup> 2023-2024</b>
<b>Activity 11: Containerization</b>	
<b>1. Objectives</b>	
Create a Dockerfile and form a workflow using Ansible as Infrastructure as Code (IaC) to enable Continuous Delivery process	
<b>2. Discussion</b>	
<p>Docker is an open platform for developing, shipping, and running applications. Docker enables you to separate your applications from your infrastructure so you can deliver software quickly. With Docker, you can manage your infrastructure in the same ways you manage your applications. By taking advantage of Docker's methodologies for shipping, testing, and deploying code quickly, you can significantly reduce the delay between writing code and running it in production.</p> <p>Source: <a href="https://docs.docker.com/get-started/overview/">https://docs.docker.com/get-started/overview/</a></p> <p>You may also check the difference between containers and virtual machines. Click the link given below.</p> <p>Source: <a href="https://docs.microsoft.com/en-us/virtualization/windowscontainers/about/containers-vs-vm">https://docs.microsoft.com/en-us/virtualization/windowscontainers/about/containers-vs-vm</a></p>	
<b>3. Tasks</b>	
<ol style="list-style-type: none"> <li>1. Create a new repository for this activity.</li> <li>2. Install Docker and enable the docker socket.</li> <li>3. Add to Docker group to your current user.</li> <li>4. Create a Dockerfile to install web and DB server.</li> <li>5. Install and build the Dockerfile using Ansible.</li> <li>6. Add, commit and push it to your repository.</li> </ol>	
<ol style="list-style-type: none"> <li>1. <b>Output</b> (screenshots and explanations)</li> </ol>	

## 1. Create a new repository for this activity.



## Creating the repository in github



## Cloning the repository in the workstation to connect it to github repository

## 2. Install Docker and enable the docker socket.

The screenshot shows a terminal window with the following commands and output:

```
salvador@Workstation: ~/Docker
salvador@Workstation:~/Docker$ sudo systemctl enable docker
salvador@Workstation:~/Docker$ sudo systemctl status docker
● docker.service - Docker Application Container Engine
   Loaded: loaded (/lib/systemd/system/docker.service; enabled; vendor preset: enabled)
   Active: active (running) since Tue 2023-11-21 19:03:58 +08; 47s ago
   TriggeredBy: ● docker.socket
     Docs: https://docs.docker.com
    Main PID: 31702 (dockerd)
      Tasks: 7
     Memory: 26.8M
        CPU: 436ms
    CGroup: /system.slice/docker.service
           └─31702 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/cont>

Nov 21 19:03:54 Workstation systemd[1]: Starting Docker Application Container Engine:
Nov 21 19:03:54 Workstation dockerd[31702]: time="2023-11-21T19:03:54.544566869Z"
Nov 21 19:03:54 Workstation dockerd[31702]: time="2023-11-21T19:03:54.546944214Z"
Nov 21 19:03:55 Workstation dockerd[31702]: time="2023-11-21T19:03:55.756594333Z"
Nov 21 19:03:57 Workstation dockerd[31702]: time="2023-11-21T19:03:57.298210535Z"
Nov 21 19:03:58 Workstation dockerd[31702]: time="2023-11-21T19:03:58.391022883Z"
Nov 21 19:03:58 Workstation do
Nov 21 19:03:58 Workstation do
Nov 21 19:03:58 Workstation sy
lines 1-21/21 (END)
```

The background shows a web browser with a GitHub repository page and a DirectX Diagnostic Tool window. The DirectX Diagnostic Tool window displays the following system information:

System	Display	Sound 1	Sound 2	Input
This tool reports detailed information about the DirectX components and drivers installed on your system.				
If you know what area is causing the problem, click the appropriate tab above. Otherwise, you can use the "Next Page" button below to visit each page in sequence.				
System Information				
Current Date/Time: Tuesday, 21 November 2023, 6:37:23 pm				
Computer Name: DESKTOP-BVLHQ70				
Operating System: Windows 10 Pro 64-bit (10.0, Build 19045)				
Language: English (Regional Setting: English)				
System Manufacturer: EMAXX TECHNOLOGY INC				
System Model: EMX-A70FM2-HCafe				
BIOS: 4.6.5				
Processor: AMD A8-7600 Radeon R7: 10 Compute Cores 4C+6G (4 CPUs), ~3.1GHz				

## Installing docker in the workstation

### 3. Add to Docker group to your current user.

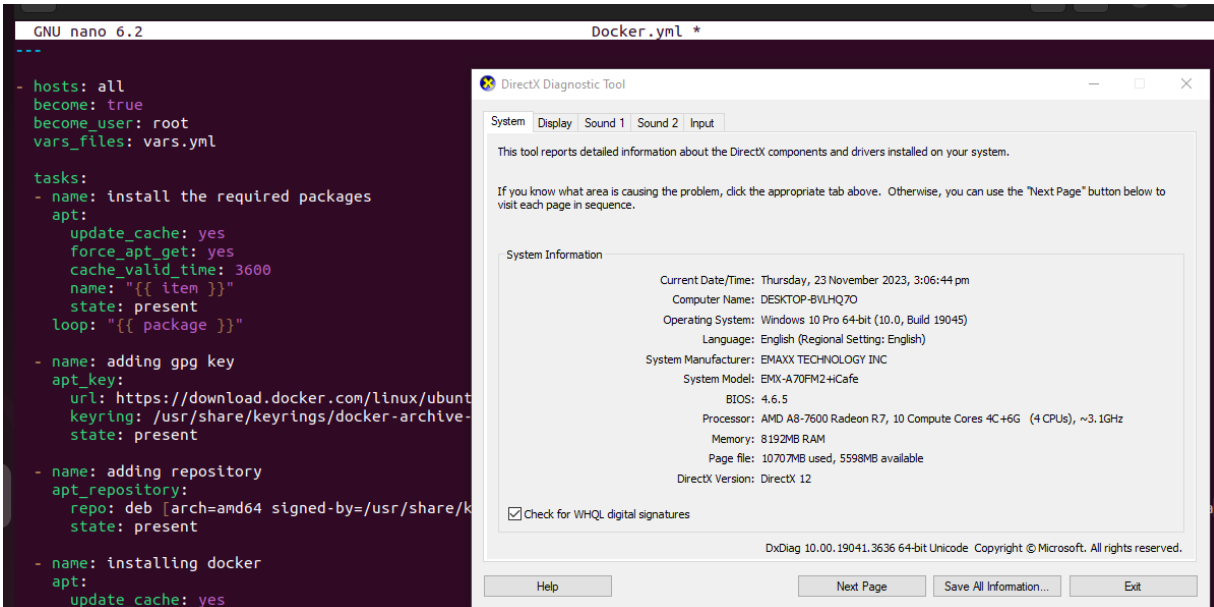
The screenshot shows a terminal window with the following commands and output:

```
salvador@Workstation:~/Docker$ sudo groupadd docker
groupadd: group 'docker' already exists
salvador@Workstation:~/Docker$ sudo usermod -aG docker salvador
salvador@Workstation:~/Docker$ sudo systemctl restart docker
```

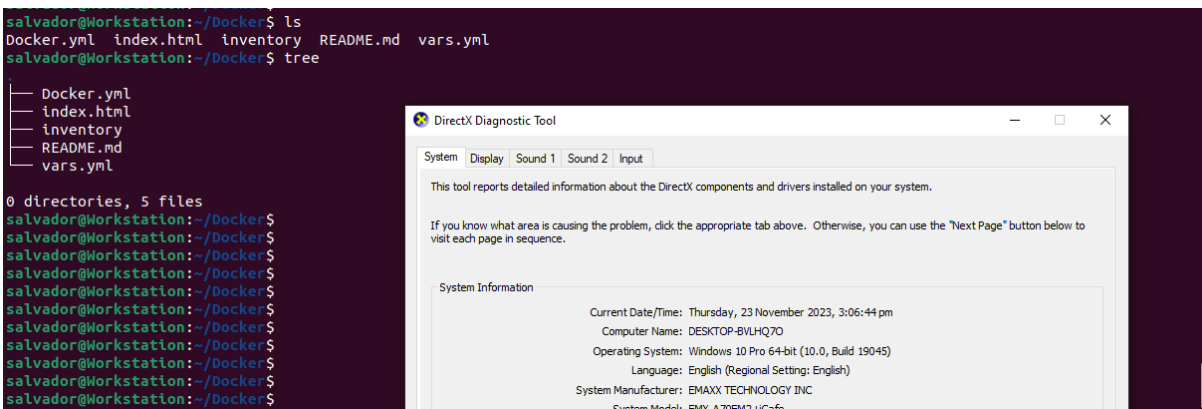
The background shows a web browser with a GitHub repository page and a DirectX Diagnostic Tool window. The DirectX Diagnostic Tool window displays the following system information:

System	Display	Sound 1	Sound 2	Input
This tool reports detailed information about the DirectX components and drivers installed on your system.				
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BIOS: 4.6.5				
Processor: AMD A8-7600 Radeon R7: 10 Compute Cores 4C+6G (4 CPUs), ~3.1GHz				

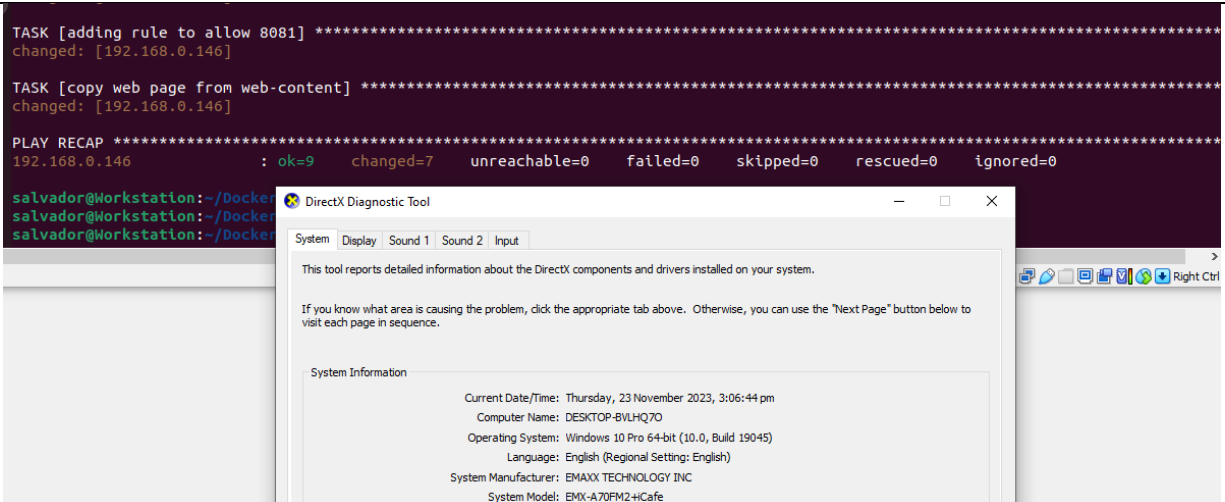
#### 4. Create a Dockerfile to install web and DB server



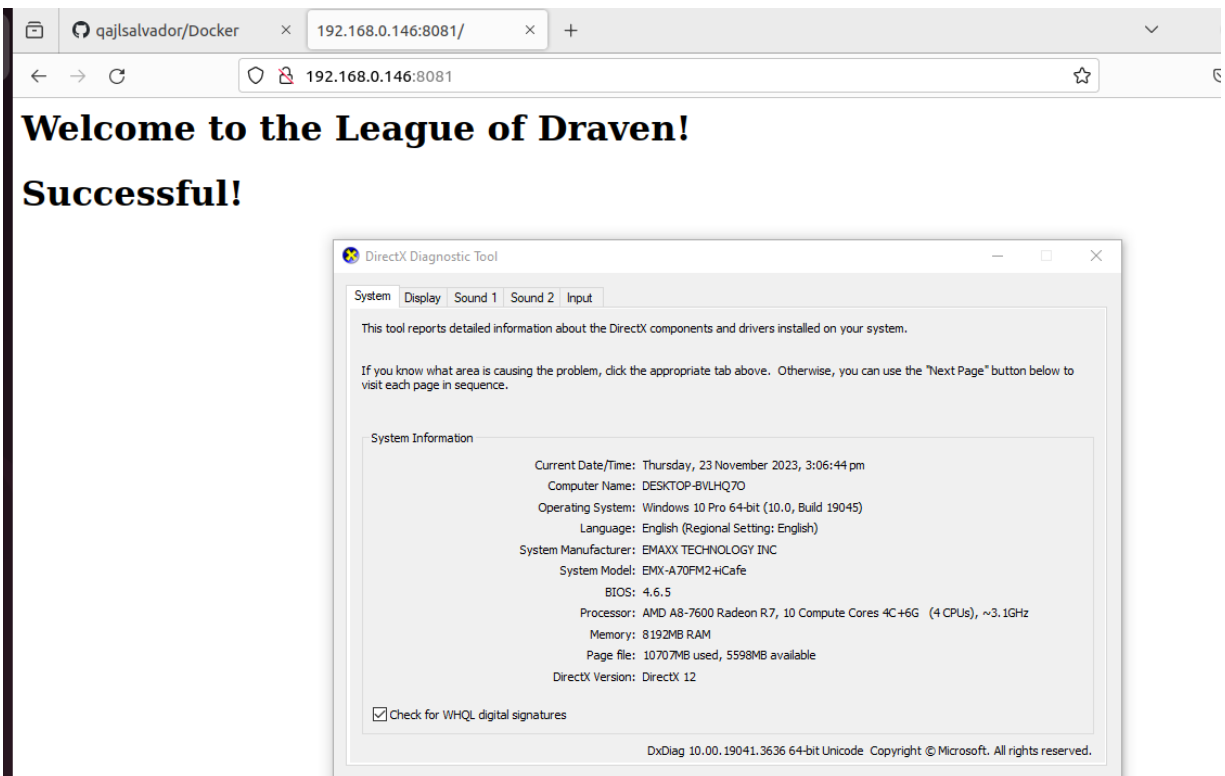
the code for creating the Dockerfile in installing the web server



Some pre requisites are needed to be installed in the vars.yml file in order to install the dockerfile successfully.



Running the code resulting in a successful run, ok indicates that the process are good and changes are made.



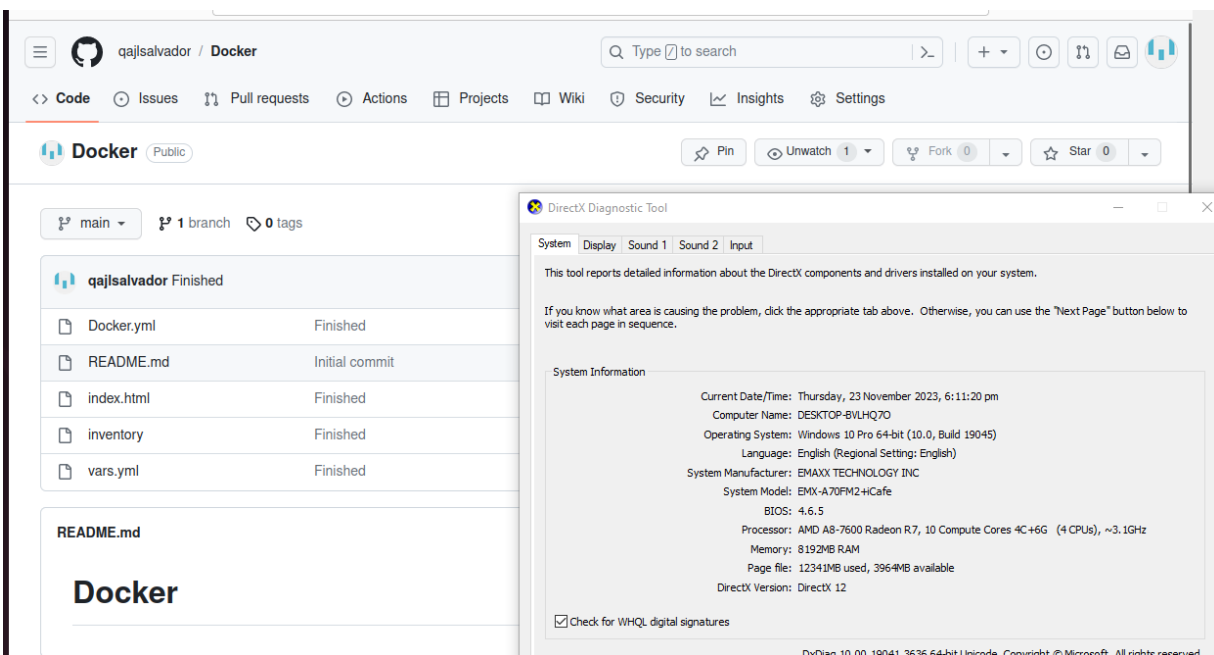
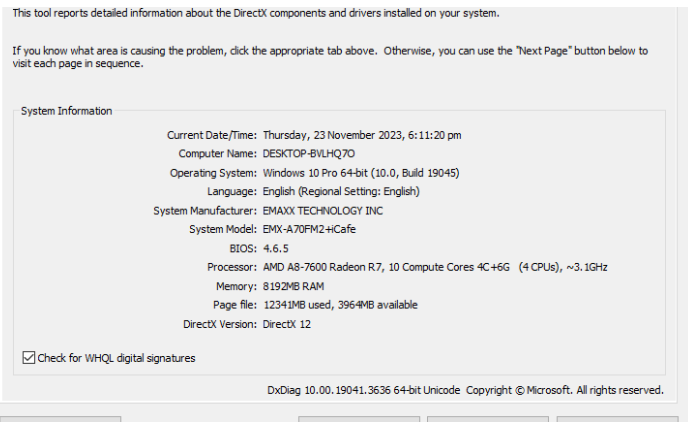
Testing the web server if its successfully been created using an html file.

```

salvador@Workstation:~/Docker$ ls
Docker.yml index.html inventory README.md vars.yml
salvador@Workstation:~/Docker$ git add *
salvador@Workstation:~/Docker$ git commit -m "Finished"
[main e776332] Finished
 4 files changed, 76 insertions(+)
 create mode 100644 Docker.yml
 create mode 100644 index.html
 create mode 100644 inventory
 create mode 100644 vars.yml
salvador@Workstation:~/Docker$ git push origin main
Enumerating objects: 7, done.
Counting objects: 100% (7/7), done.
Compressing objects: 100% (5/5), done.
Writing objects: 100% (6/6), 1.09 KiB | 1.09 MiB/s, done.
Total 0 (delta 0), reused 0 (delta 0), pack-reused 0
To github.com:qajlsalvador/Docker.git
 086a8a8..e776332 main -> main
salvador@Workstation:~/Docker$ git status
On branch main
Your branch is up to date with 'origin/main'.

nothing to commit, working tree clean
salvador@Workstation:~/Docker$

```



Adding the directories and files inside the github repository

Github link: <https://github.com/qajlsalvador/Docker.git>

**Reflections:**

Answer the following:

1. What are the benefits of implementing containerizations?

Implementing containerization saves more space and storage for other Application therefore it is more convenient when working on a smaller project that only uses the necessary needs In order to operate. Portability is also a big advantage of creating containers.

**Conclusions:**

Throughout analyzing the given instructions in the activity and following them to install the required application or servers within the workstation virtual machine, it was demonstrated successfully with proof in the end that the server existed after the creation using the ansible playbook. Installing Docker and creating container within the directories inside the server was implemented using tasks in the playbook, creating the yml files and installing required packages before continuing with flow. Using html to make the server accessible in the end, it was shown how the container was made and implemented through following the instruction and keeping the objectives in mind.