

Docker-Project

I developed a project on Docker the most Powerful tool in present era.

Today, I will try to answer in detail the basic question which arises in one's mind after going through this Project file in this readme file.

What is Docker?

Docker is a set of platforms as a service (PaaS) products that uses OS-level virtualization to deliver software in packages called containers. Containers are isolated from one another and bundle their own software, libraries and configuration files; they can communicate with each other through well-defined channels. All containers are run by a single operating system kernel and therefore use fewer resources than virtual machines.



What are the Requirements to have a docker setup?

The basic requirement for the setup is Base OS. Generally, docker can be installed on any operating system but I have used Redhat 8 to configure it.

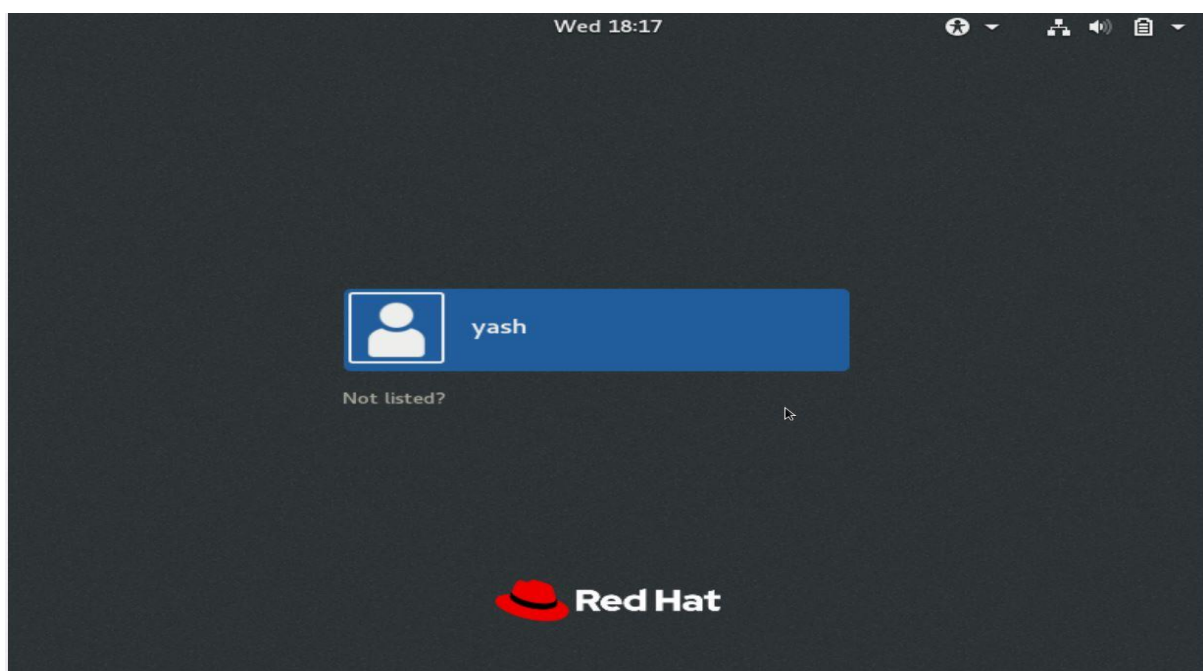
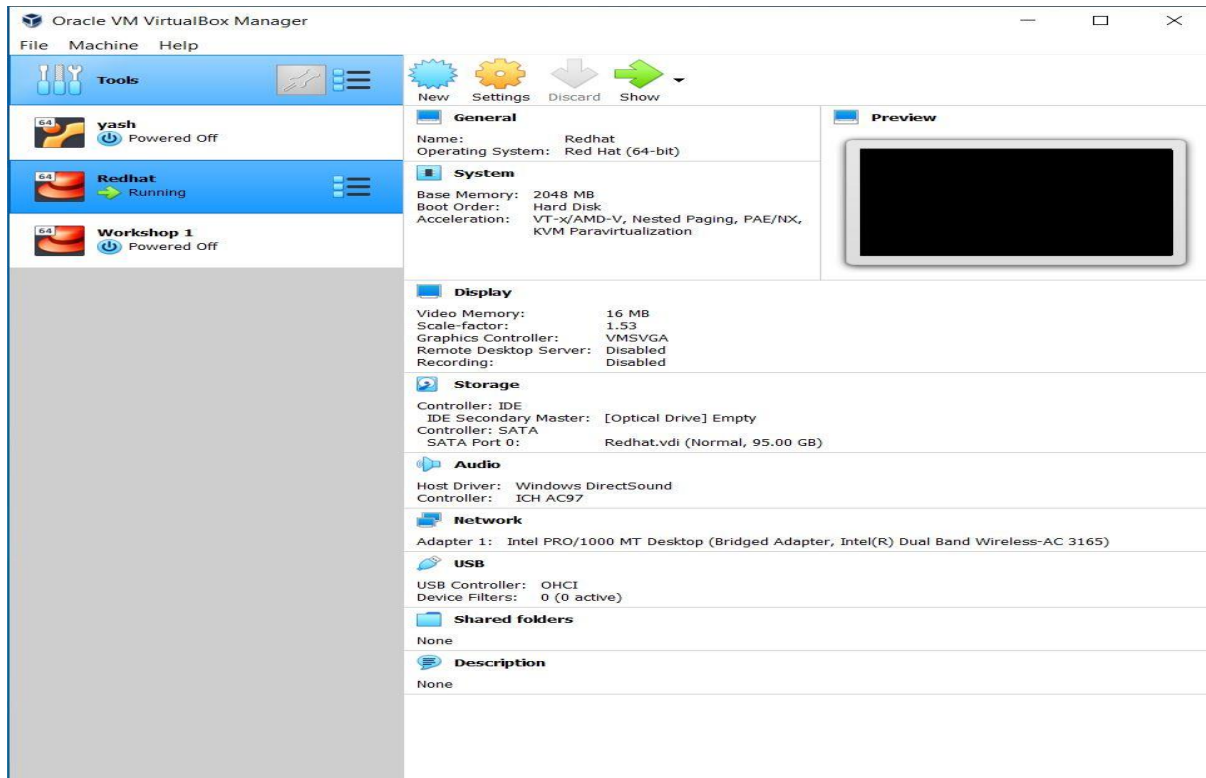
We can use any other Linux OS as well but Redhat is one of the most powerful operating system built with many features in it.



How to setup Docker on your Redhat system?

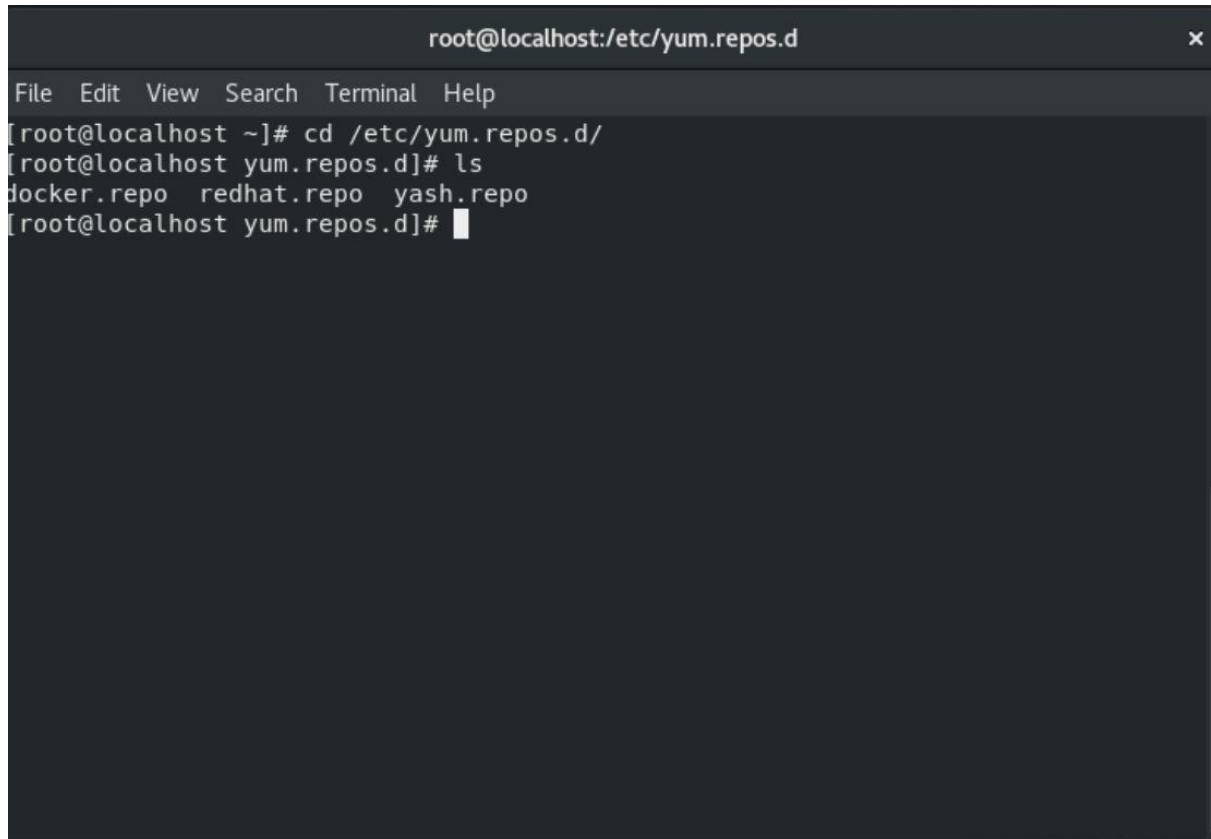
It is very simple and easy to configure Docker on your Base OS.

Installation of Redhat in virtual Box:

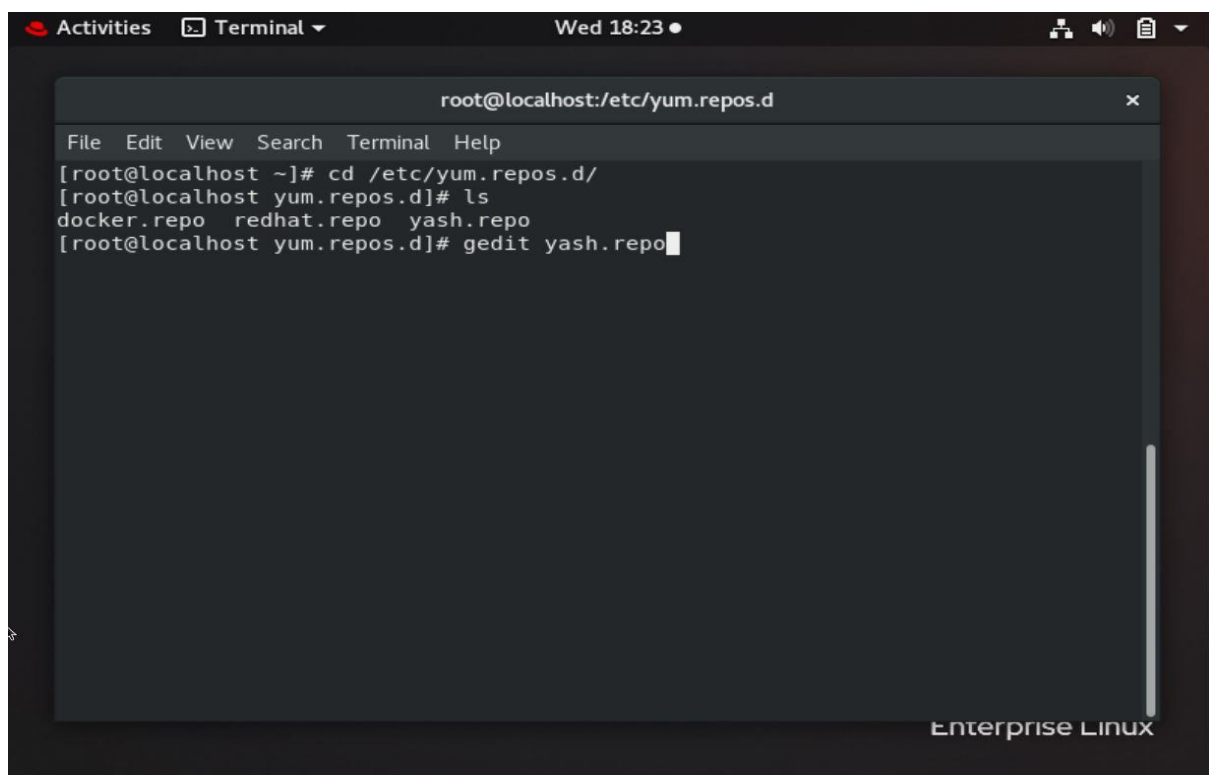


To setup Docker in your PC you need to follow these steps:

- Firstly, you need to configure Yum in your Redhat system by creating a DVD Repo in it.



```
root@localhost:/etc/yum.repos.d
File Edit View Search Terminal Help
[root@localhost ~]# cd /etc/yum.repos.d/
[root@localhost yum.repos.d]# ls
docker.repo  redhat.repo  yash.repo
[root@localhost yum.repos.d]#
```



```
Activities Terminal Wed 18:23
root@localhost:/etc/yum.repos.d
File Edit View Search Terminal Help
[root@localhost ~]# cd /etc/yum.repos.d/
[root@localhost yum.repos.d]# ls
docker.repo  redhat.repo  yash.repo
[root@localhost yum.repos.d]# gedit yash.repo
Enterprise Linux
```

The screenshot shows a text editor window with the title bar 'Activities Text Editor Wed 18:24'. The window title is 'yash.repo' and the file path is '/etc/yum.repos.d'. The content of the file is as follows:

```
[dvd1]
baseurl=file:///run/media/root/RHEL-8-0-0-BaseOS-x86_64/AppStream
gpgcheck=0
[dvd2]
baseurl=file:///run/media/root/RHEL-8-0-0-BaseOS-x86_64/BaseOS
gpgcheck=0
```

- You need to create Docker repo file inside yum to install docker.

The screenshot shows a text editor window with the title bar 'Activities Text Editor Wed 18:25'. The window title is 'docker.repo' and the file path is '/etc/yum.repos.d'. The content of the file is as follows:

```
[docker]
baseurl=https://download.docker.com/linux/centos/7/x86_64/stable/
gpgcheck=0
```

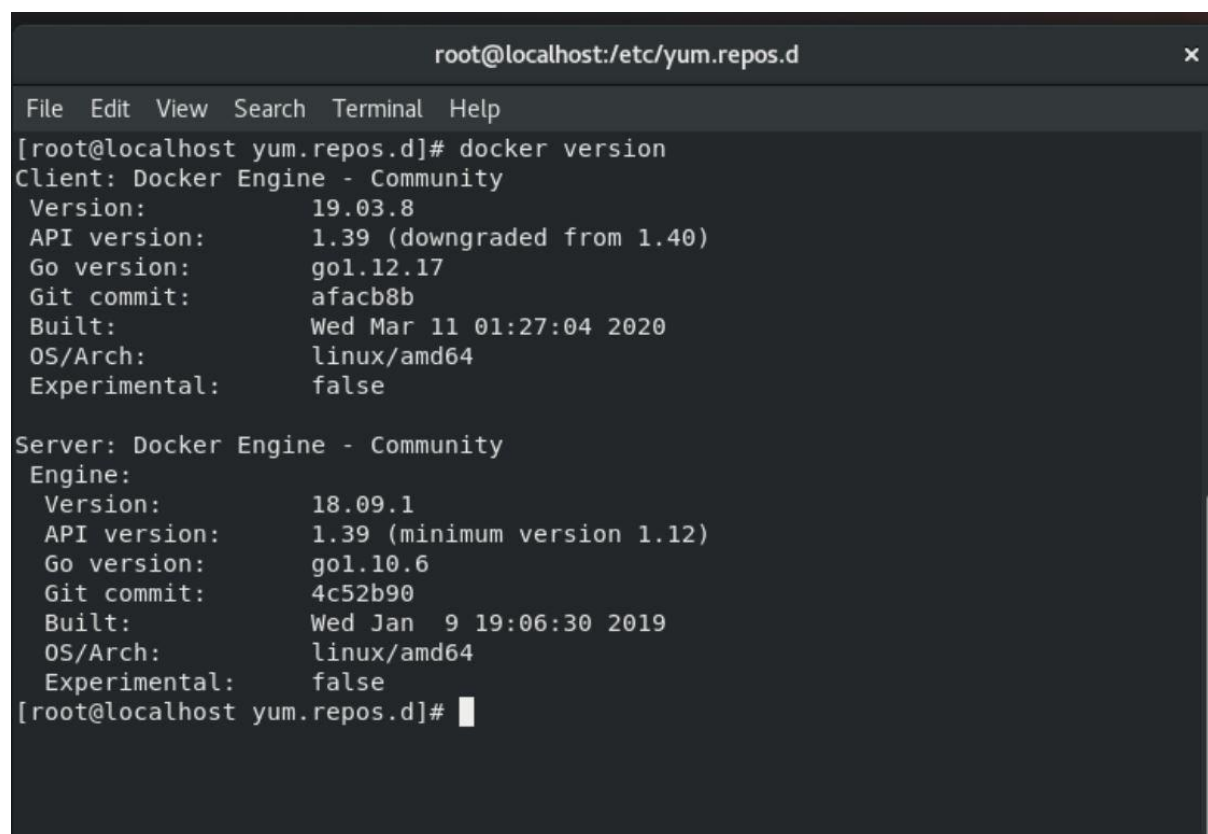
The status bar at the bottom indicates 'Plain Text', 'Tab Width: 8', 'Ln 2, Col 66', and 'INS'.

Run the Following command in your terminal to install docker: -



A terminal window titled "root@localhost:/etc/yum.repos.d" with a menu bar (File, Edit, View, Search, Terminal, Help). The command `yum install docker-ce --nobest` has been entered. At the bottom of the window, a status bar shows the file `docker-ce-17.12.0.ce-1.el7.centos.x86_64.rpm` and the timestamp `2019-10-18 21:`.

```
root@localhost:/etc/yum.repos.d
File Edit View Search Terminal Help
[root@localhost yum.repos.d]# yum install docker-ce --nobest
docker-ce-17.12.0.ce-1.el7.centos.x86_64.rpm 2019-10-18 21:
```



A terminal window titled "root@localhost:/etc/yum.repos.d" with a menu bar (File, Edit, View, Search, Terminal, Help). The command `docker version` has been entered, and its output is displayed. The status bar at the bottom shows the timestamp `2019-10-18 21:`.

```
root@localhost:/etc/yum.repos.d
File Edit View Search Terminal Help
[root@localhost yum.repos.d]# docker version
Client: Docker Engine - Community
Version:           19.03.8
API version:       1.39 (downgraded from 1.40)
Go version:        go1.12.17
Git commit:        afacb8b
Built:             Wed Mar 11 01:27:04 2020
OS/Arch:           linux/amd64
Experimental:      false

Server: Docker Engine - Community
Engine:
Version:           18.09.1
API version:       1.39 (minimum version 1.12)
Go version:        go1.10.6
Git commit:        4c52b90
Built:             Wed Jan  9 19:06:30 2019
OS/Arch:           linux/amd64
Experimental:      false
[root@localhost yum.repos.d]#
2019-10-18 21:
```

These are the various commands to start, stop or see the status of the docker.

```
root@localhost:/etc/yum.repos.d
File Edit View Search Terminal Help
[root@localhost yum.repos.d]# systemctl start docker
C
[root@localhost yum.repos.d]# systemctl stop docker
C
[root@localhost yum.repos.d]# systemctl status docker
[root@localhost yum.repos.d]#
```

➤ To see the docker images installed within docker: -

```
root@localhost:/etc/yum.repos.d
File Edit View Search Terminal Help
[root@localhost yum.repos.d]# docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED
mysql	5.7	f965319e89de	35 hours ago
448MB			
phpweb	v1	7b4eb6e34167	41 hours ago
366MB			
<none>	<none>	21f30440a2e4	41 hours ago
366MB			
mycentos	V1	18a169a0f7dc	2 days ago
316MB			
joomla	latest	52681e307145	5 days ago
458MB			
splunk/splunk	7.3	4cdb2dbf6594	4 weeks ago
1.35GB			
centos	latest	470671670cac	3 months ago
237MB			
ubuntu	14.04	6e4f1fe62ff1	4 months ago
197MB			
centos	7	5e35e350aded	5 months ago
203MB			
wordpress	5.1.1-php7.3-apache	a69f6702fdda	11 months ago
422MB			

- To see the Container running inside the Docker: -

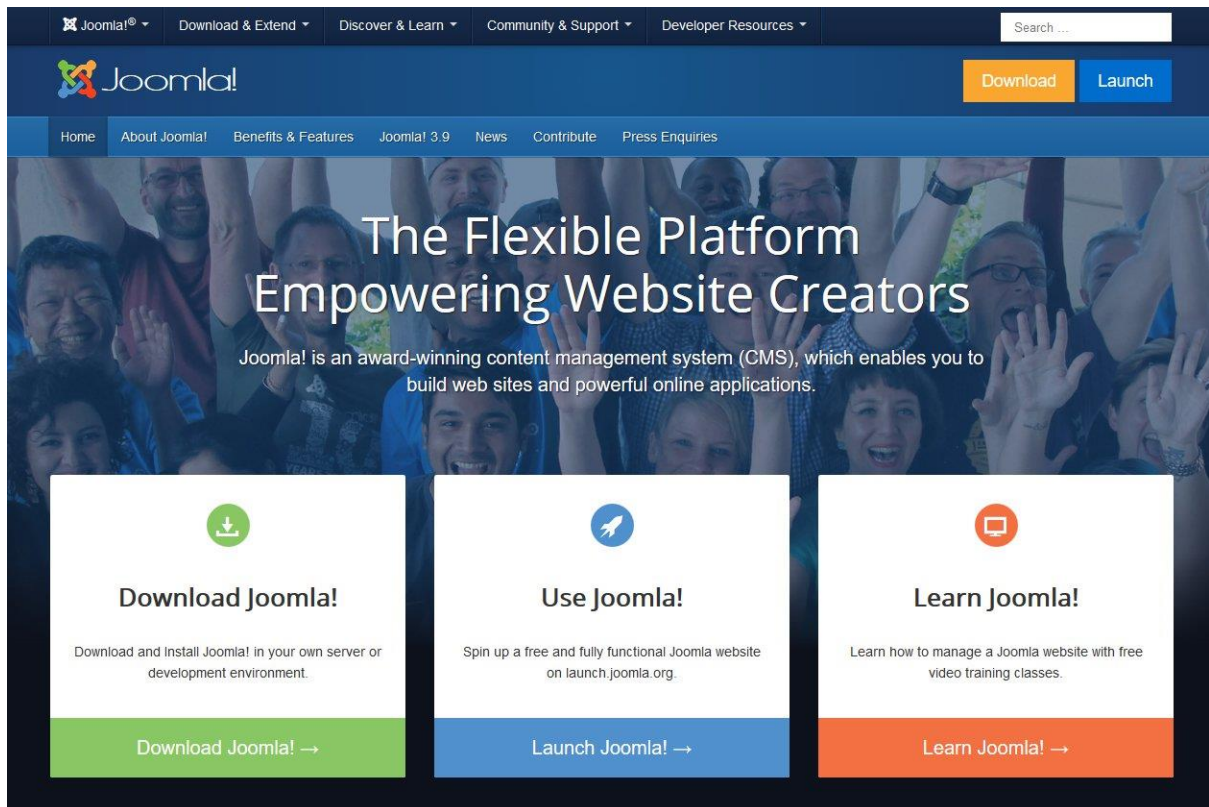
```
root@localhost:/etc/yum.repos.d
File Edit View Search Terminal Help
[root@localhost yum.repos.d]# docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED
STATUS             PORTS              NAMES
[root@localhost yum.repos.d]#
```

Project Structure: -

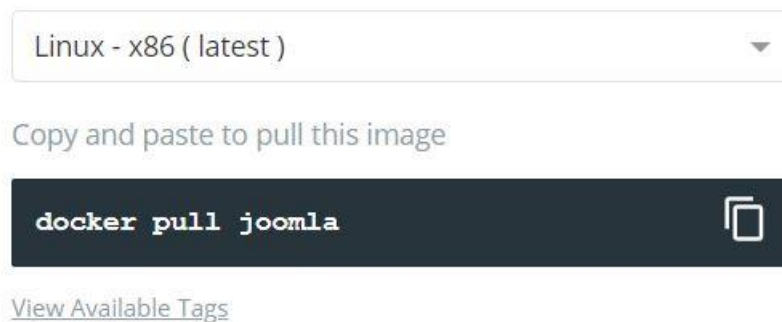
This Project is built on MYSQL image for database and Joomla image for Web Application.

What is MySQL?

- MySQL is a database.
- The data in MySQL is stored in database objects called tables.
- A table is a collections of related data entries and it consists of columns and rows.
- Databases are useful when storing information categorically. A company may have a database with the following tables: "Employees", "Products", "Customers" and "Orders".



- We can Pull images for both of them inside docker: -



Copy and paste to pull this image



[View Available Tags](#)

- We need to configure Compose for docker: -

Overview of Docker Compose

Estimated reading time: 5 minutes

Looking for Compose file reference? [Find the latest version here.](#)

Compose is a tool for defining and running multi-container Docker applications. With Compose, you use a YAML file to configure your application's services. Then, with a single command, you create and start all the services from your configuration. To learn more about all the features of Compose, see [the list of features](#).

Compose works in all environments: production, staging, development, testing, as well as CI workflows. You can learn more about each case in [Common Use Cases](#).

Using Compose is basically a three-step process:

1. Define your app's environment with a `Dockerfile` so it can be reproduced anywhere.
2. Define the services that make up your app in `docker-compose.yml` so they can be run together in an isolated environment.
3. Run `docker-compose up` and Compose starts and runs your entire app.

- Just Create yml file using docker compose for creating two containers linked with each other using ports and have some volumes as well created on docker

```
root@localhost:/mycompose
File Edit View Search Terminal Help
version: '3'

services:
  dbyash:
    image: mysql:5.7
    volumes:
      - mysql_storage_new:/var/lib/mysql
    restart: always
    environment:
      MYSQL_ROOT_PASSWORD: rootpass
      MYSQL_USER: yash
      MYSQL_PASSWORD: redhat
      MYSQL_DATABASE: mydb

  osyash:
    image: joomla:latest
    restart: always
    depends_on:
      - dbyash
    ports:
      - 80:80
    environment:
      JOOMLA_DB_HOST: dbyash
      JOOMLA_DB_USER: yash
      JOOMLA_DB_PASSWORD: redhat
      JOOMLA_DB_NAME: mydb
    volumes:
```

18,8 Top

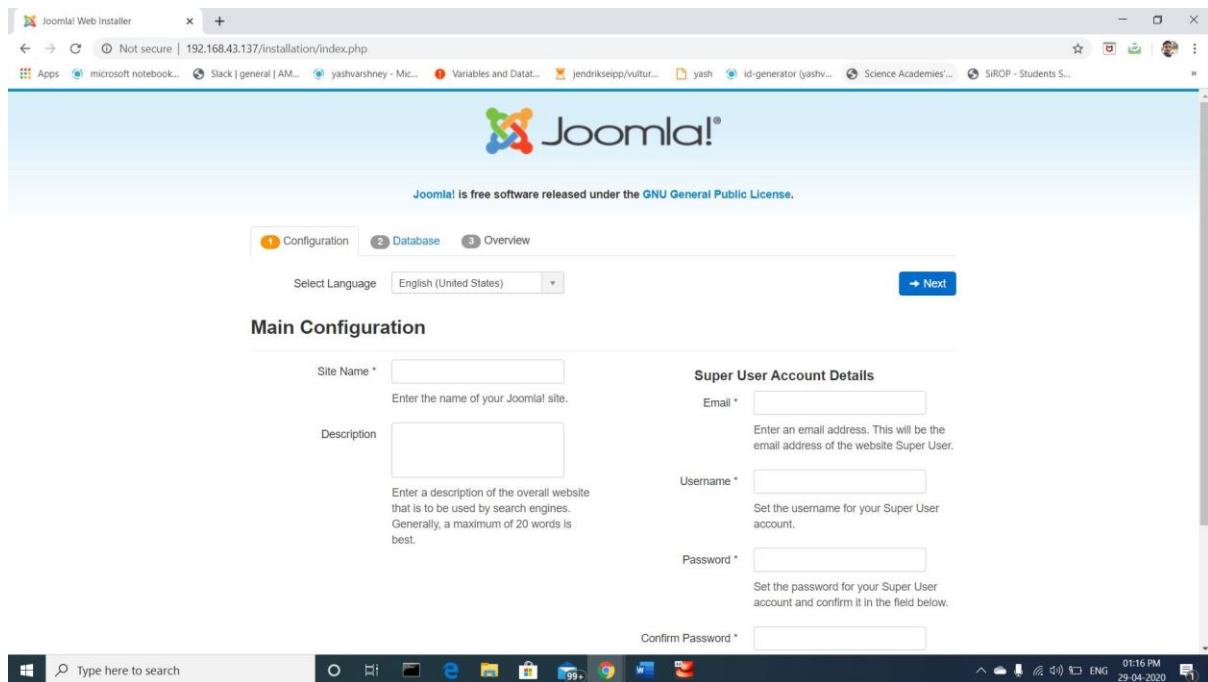
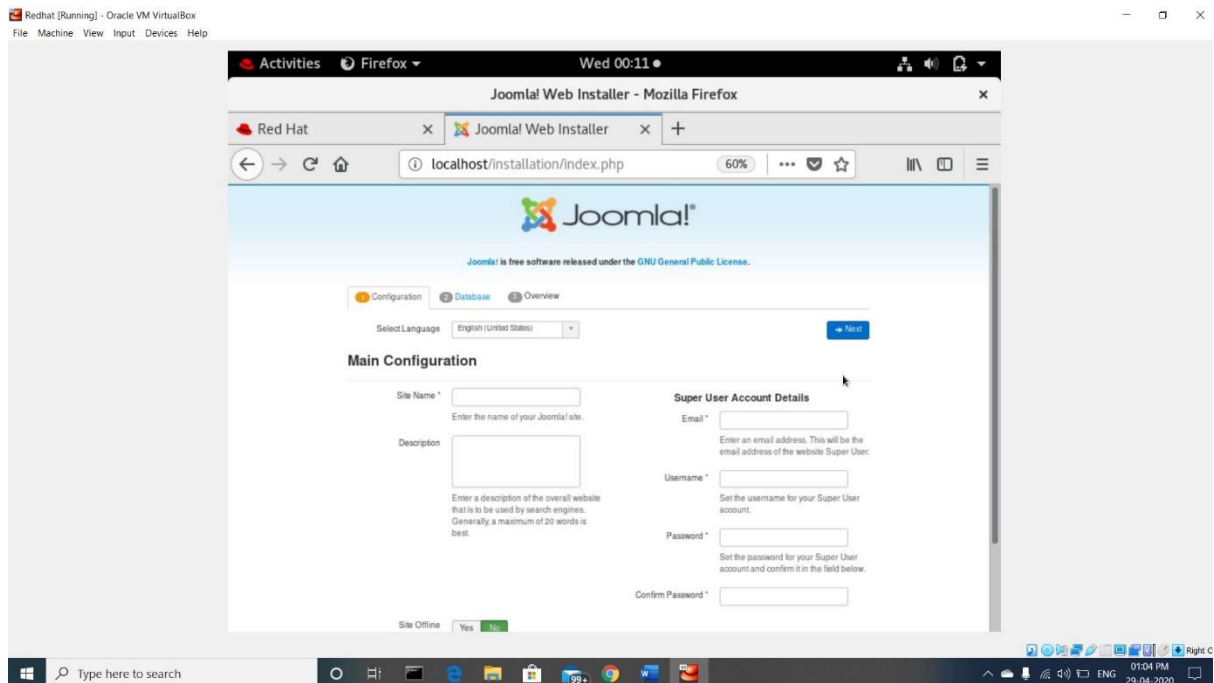
PROJECT OUTPUT: -

```
root@localhost:/mycompose
File Edit View Search Terminal Help
[root@localhost mycompose]# docker-compose up -d
Starting mycompose_dbyash_1 ... done
Starting mycompose_osyash_1 ... done
[root@localhost mycompose]#
```

```
root@localhost:/mycompose
File Edit View Search Terminal Help
====
osyash_1 |
osyash_1 | This server is now configured to run Joomla!
osyash_1 |
osyash_1 | NOTE: You will need your database server address, database name,
osyash_1 | and database user credentials to install Joomla.
osyash_1 |
osyash_1 | =====
====
osyash_1 | AH00558: apache2: Could not reliably determine the server's fully qu
alified domain name, using 172.21.0.3. Set the 'ServerName' directive globally t
o suppress this message
osyash_1 | AH00558: apache2: Could not reliably determine the server's fully qu
alified domain name, using 172.21.0.3. Set the 'ServerName' directive globally t
o suppress this message
osyash_1 | [Tue Apr 28 18:44:23.674436 2020] [mpm_prefork:notice] [pid 1] AH001
63: Apache/2.4.38 (Debian) PHP/7.3.17 configured -- resuming normal operations
osyash_1 | [Tue Apr 28 18:44:23.674500 2020] [core:notice] [pid 1] AH00094: Com
mand line: 'apache2 -D FOREGROUND'
osyash_1 | 172.21.0.1 - - [28/Apr/2020:18:44:37 +0000] "GET /installation/index
.php HTTP/1.1" 200 5226 "http://192.168.43.137/installation/index.php" "Mozilla/
5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/
81.0.4044.122 Safari/537.36"
```


This site can be accessed from Redhat (Base OS), Chrome (External OS with same network) as well as from mobile browser.

I have attached the screenshot for each case.



1:00 4G 0.48 KB/S VO LTE 78

192.168.43.137/installation/i 40

 Joomla!®

Joomla! is free software released under the GNU General Public License.

1 Configuration 2 Database 3 Overview

Select Language English (United States) Next

Main Configuration

Site Name * <input type="text"/> <small>Enter the name of your Joomla! site.</small>	Super User Account Details
Description <input type="text"/> <small>Enter a description of the overall website that is to be used by search engines. Generally, a maximum of 20 words is best.</small>	Email * <input type="text"/> <small>Enter an email address. This will be the email address of the website Super User.</small>
	Username * <input type="text"/> <small>Set the username for your Super User account.</small>
	Password * <input type="password"/> <small>Set the password for your Super User account and confirm it in the field below.</small>
	Confirm Password * <input type="password"/>
Site Offline <input type="radio"/> Yes <input checked="" type="radio"/> No <small>Set the site Frontend offline when installation is completed. The site can be set online later on through the Global Configuration.</small>	

Next

I have tried my best to explain you about Docker and my project. If you need to learn about docker in detail,

Go through the Following IIEC RISE link: -

https://www.youtube.com/watch?v=3Kn6_b-1mK4&list=PLAi9X1uG6jZ30QGz7FZ55A27jPeY8EwkE

I would like to thank **Mr. Vimal Daga** Sir who taught me about docker. I would like to thank IIEC Community for carrying out the free docker training.

According to me, Vimal Sir is one of the best mentors across the world. He has a great knowledge in each and every field of Computer Science. I am grateful to got the opportunity to learn from him.

He just taught about the entire docker in just 24 hrs of learning. His teaching skills are great.