DOCKER Application Management Web Portal

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Abstract: *Whenever we want to execute some commands on an operating system other than the current host operating system on our systems, it can be very lengthy process. We may need to dual boot our system or install the operating system on a Virtual-Box. These both solutions need to install the full operating system just to execute some commands. But now there is another solution for this problem and that is Docker.*

Docker containers wrap up a piece of software in a complete filesystem that contains everything it needs to run: code, runtime, system tools, system libraries anything you can install on a server. This guarantees that it will always run the same, regardless of the environment it is running in.

Containers running on a single machine all share the same operating system kernel so they start instantly and make more efficient use of RAM. Images are constructed from layered file systems so they cans hare common files, making disk usage and image downloads much more efficient.

Docker containers are based on open standards allowing containers to run on all major Linux distributions and Microsoft operating systems with support for every infrastructure. Containers isolate applications from each other and the underlying infrastructure while providing an added layer of protection for the application.

Keywords: *Docker Container, Terminal, Dockerfile, Docker Hub, Images, Docker Engine, Docker Machine, Docker Registry.*

The Architecture is important to understand the basic blocks of the system. Following are some important blocks of system

- User Manager – It will manage all admin and user accounts.
- User Interface – It will be the interface of Docker Web Portal.

1. Introduction :

Docker Application Management Web Portal allows the user to use the Docker Application anywhere in the world through this web portal. This portal has the user management so that only the authorized users can use the Docker containers. It also has the Image Manager and Container Manager to facilitate the manipulation of images and containers. It also fastens the process of pulling the image from hub and creating a container.

2. Literature survey :

Whenever we want to execute some commands on an operating system other than the current host operating system on our systems, it can be very lengthy process. We may need to dual boot our system or install the operating system on a Virtual Box. These both solutions need to install the full operating system just to execute some commands. But now there is another solution for this problem and that is Docker. Docker is an open platform for building, shipping and running distributed applications. It gives programmers, development teams and operations engineers the common toolbox they need to take advantage of the distributed and networked nature of modern applications. Docker containers wrap up a piece of software in a complete system that contains everything it needs to run: code, runtime, system tools, system libraries anything you can install on a server. This guarantees that it will always run the same, regardless of the environment it is running in.

3. Block Diagram :

- Image Manager - It will handle images and facilitate the manipulation of images.
- Container Manager - It will used to manage and manipulate the containers.
- Docker Manager
- Database
- Log Manager
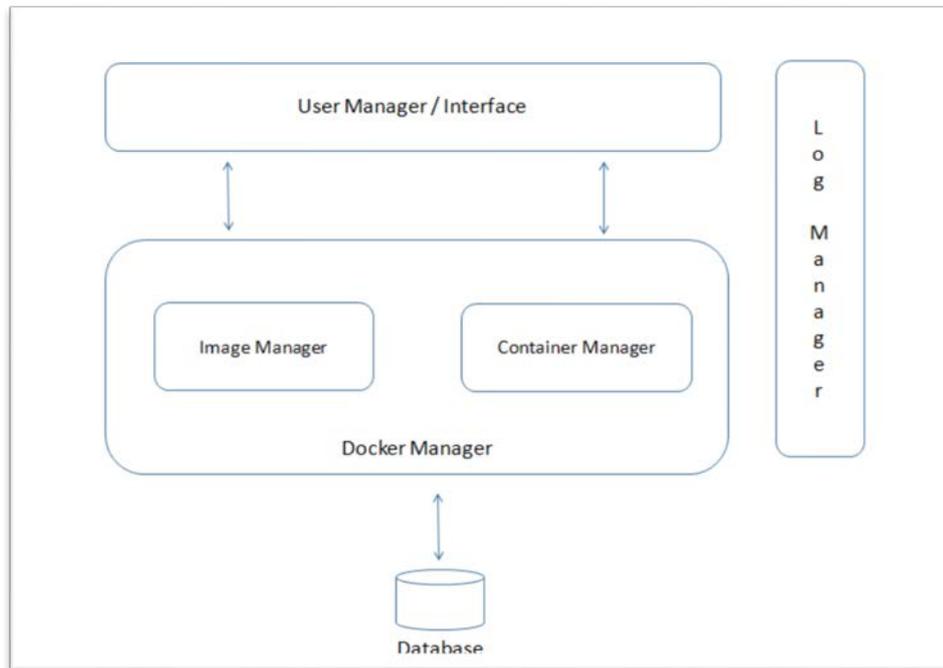
3.1 Block Diagram

Working of the tool:

- **Application Deployment:**

Step 1: Open the web page
http://docker.pranavhivarekar.in/

Step 2: Login on the first page i.e. the login page and enter the valid credentials to start using the web portal.

Step 3: After logging in successfully, select an option from various options provided for User, Image & Container creation and manipulation.


4. System Features :

This project will work as Software as a Service Platform (SaaS) to manage Docker applications and related things.Our system will be based on Client-server architecture. We have employed a powerful commodity server. The server will be responsible for accepting client requests and giving them results accordingly.

**4.1. Architecture Diagram**

5. UI Features :

User Interface of Docker web portal has following features:
- Login Page for validating the users.
- User profile where user can provide information about himself like a display picture.
- Has provided buttons like search/pull/view/build to manage the images.
- Has provided buttons like pause/stop/kill/run-commands for managing the containers.
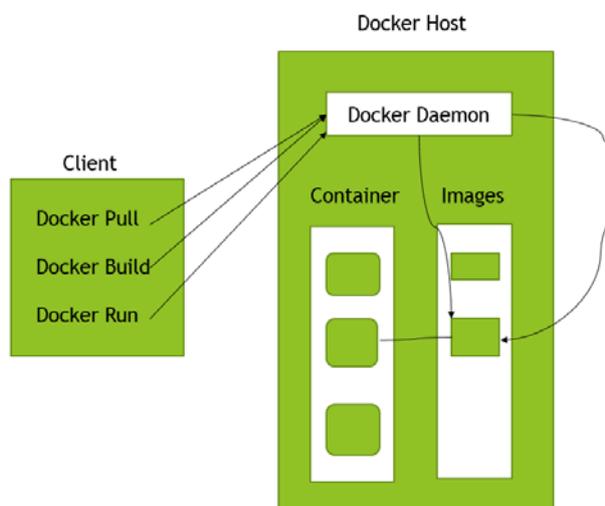
- Has a terminal which can be used to access the container through its container id.

- Has provided the log manager so the user can see which commands he has run on his container.
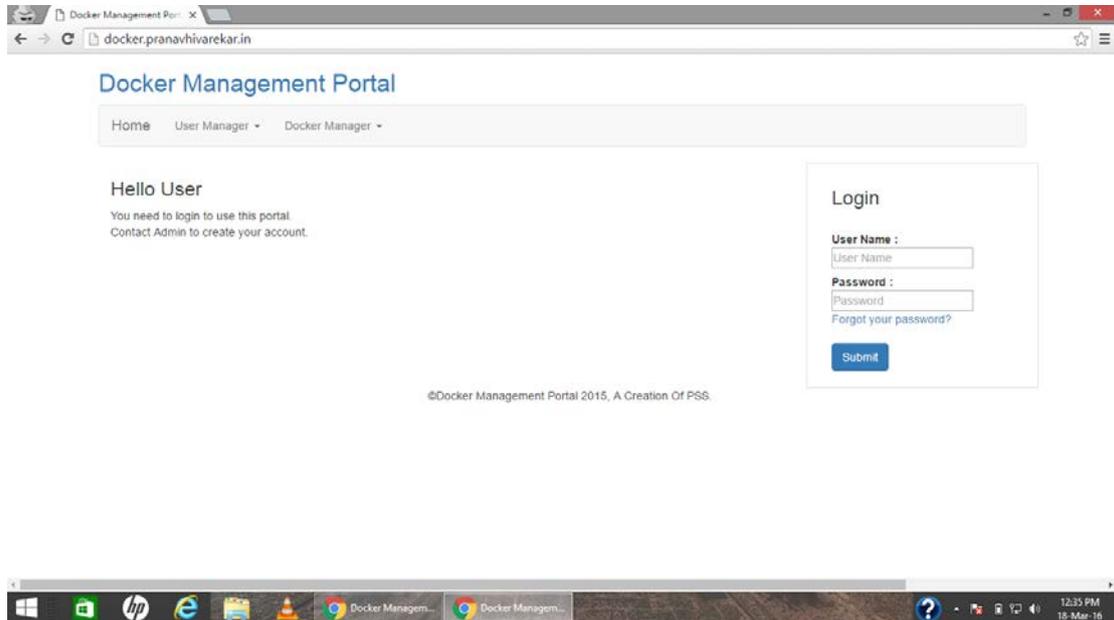
5.1. UI sample

6. Conclusion:

The Docker Application Management Web Portal has been successfully designed and tested. Previously users had to install Docker on their local machine. They also needed high internet speed to download OS Images from Docker Hub. But now our Docker Web Portal allow users to access Docker on cloud and user don't have to install Docker on local machine rather they can use a remote server on which Docker is already installed. Users also don't need to have high speed internet as the Docker Server itself will have high speed internet to download OS Images on server itself. So overall this Docker Web Portal provides the easy access to the Docker and provides efficiency also.

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