



MINI - PROJECT REPORT ON

“CONTAINER MANAGEMENT”

BY

1. HARSHWARDHAN MEHROTRA (2193113) MITU19BTCS0172
2. VIREN GHUIKHEDKAR (2193087) MITU19BTCS0100
3. SOHAM DHANDE (2193246) MITU19BTCS0085
4. SHREYANSH DUBEY (2193240) ITU19BTCS0089

Under the Guidance of
Dr. NILESH MARATHE

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

MIT SCHOOL of Engineering

Loni Kalbhor Pune

M.I.T. SCHOOL OF ENGINEERING

DEPARTMENT OF COMPUTER ENGINEERING

LONI – KALBHOR PUNE

CERTIFICATE



This is to certify that the Mini- Project report entitled

“CONTAINER MANAGEMENT”

submitted by

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3. SOHAM DHANDE (2193246) MITU19BTCS0085
4. SHREYANSH DUBEY (2193240)MITU19BTCS0089

is a record of bonafide work carried out by them, under my guidance, in partial fulfillment of the requirement for the Second Year of Engineering(Computer) at M.I.T. School of Engineering, Pune under MIT Art, Design & Technology University.

Date:

Place:

Dr. Nilesh Marathe

Guide,

Department of CSE
M.I.T. School of Engineering
Loni Kalbhor, Pune

Dean Engineering,

Head , Department of CSE
MIT School of Engineering
Loni-Kalbhor, Pune

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ABSTRACT

“Container Management” is a Web Application that create a system for creation, updation and deletion of containers. This will improve work for IT team to smoothen up the container handling and will increase portability, more consistent operation greater efficiency. This will reduce their hassle of keeping track of containers. This helps overall in preparing the IT team in managing containers.. Being a web application built with django, the software has the advantage of being portable and usable anywhere. Users can login anywhere at any time and monitor their network control. Our dashboard provides 3 essential domain options to work with, firstly to create a container, next is updation of the existing container and deletion of a container.

INTRODUCTION

Teams within an organization will often start experimenting with containers by pulling down container images and running them on their local machines. They may then move on to sharing containers they've developed with other team members through a container registry. As proficiency grows, they may even wire several containers together and deploy them as a single unit. As organizations start leveraging containers beyond the development/test phases and start adopting them in production, it becomes quickly apparent that additional tools are required to manage the containers effectively. This is where container management tools come into play.

PROBLEM STATEMENT

A vast number of containers can become too complex for an IT team to handle .So Container management will use software to automatically create, deploy and scale containers so as to make the work easier to handle.

Container management is necessary when enterprises rely on containers to quickly deploy and update applications

WORKING

FRONT END:->

The user is greeted with a splash screen stating the name of the application 'CONTAINER MANAGEMENT' as soon as they open the application. The Activity houses the buttons for allowing the users to give 3 options i.e. creation , updation and deletion of containers. The front-end was made keeping in mind the ease of use and instructiveness of the website so that users can easily navigate within our website. Tools and language used to build the front end were as follows - HTML5, CSS3, and Js

BACK END:->

We have used Docker API for getting all the information related to containers. It helped us to list the containers be it running or stopped , all the volumes, networks and images. It not only let us list them but to modify or delete them

FEATURES

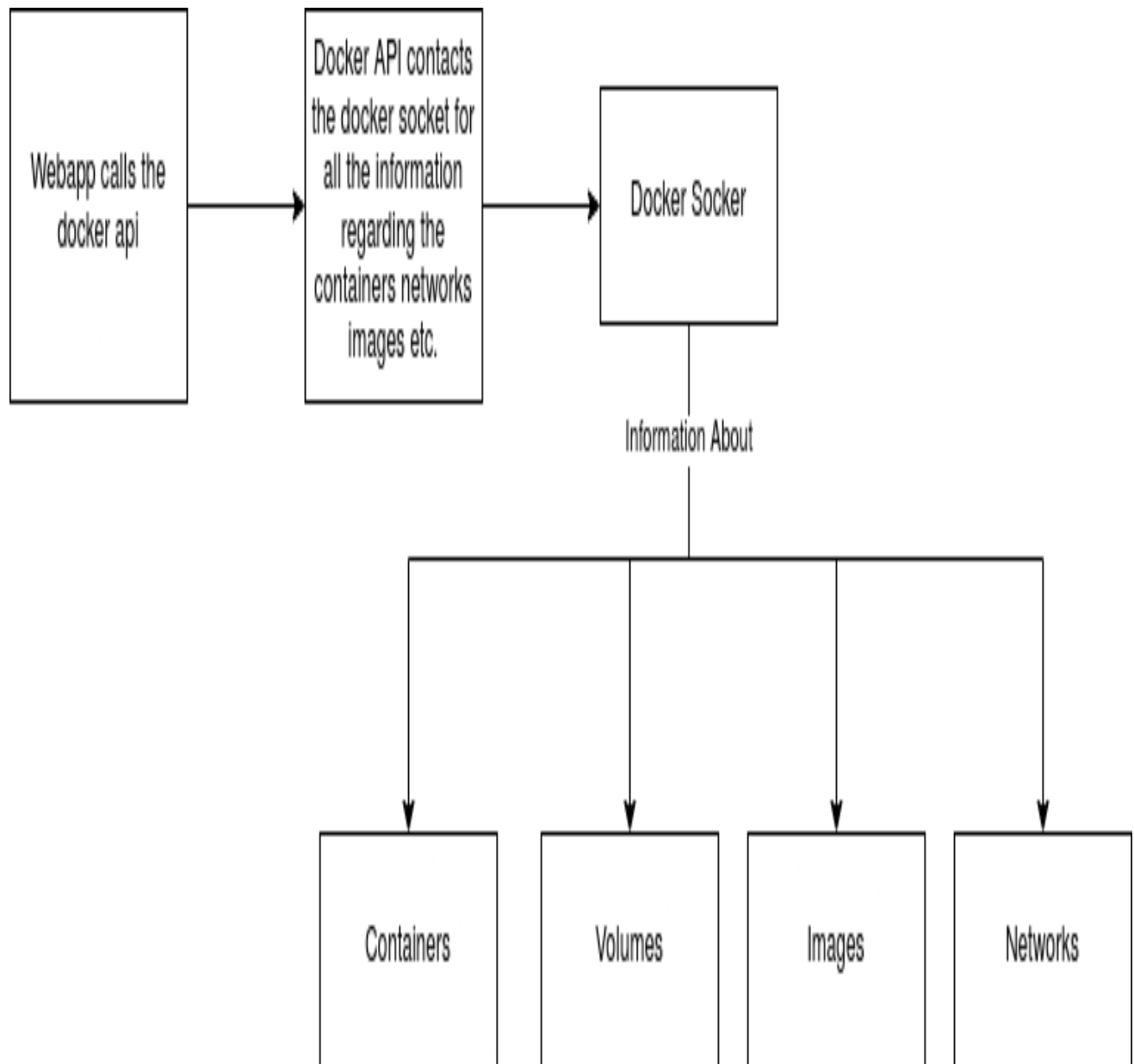
The aim of this project is to improve the work of a I.T team to smoothen up the container handling and will increase portability, more consistent operation greater efficiency. This will reduce their hassle of keeping track of containers.. This helps overall in preparing the IT team in managing containers.. Being a web application built with django, the software has the advantage of being portable and usable anywhere. Users can login anywhere at any time and monitor their network control. Our dashboard provides 3 essential domain options to work with, firstly to create a container, next is updation of the existing container and deletion of a container.

PLATFORM AND TECHNOLOGY USED:

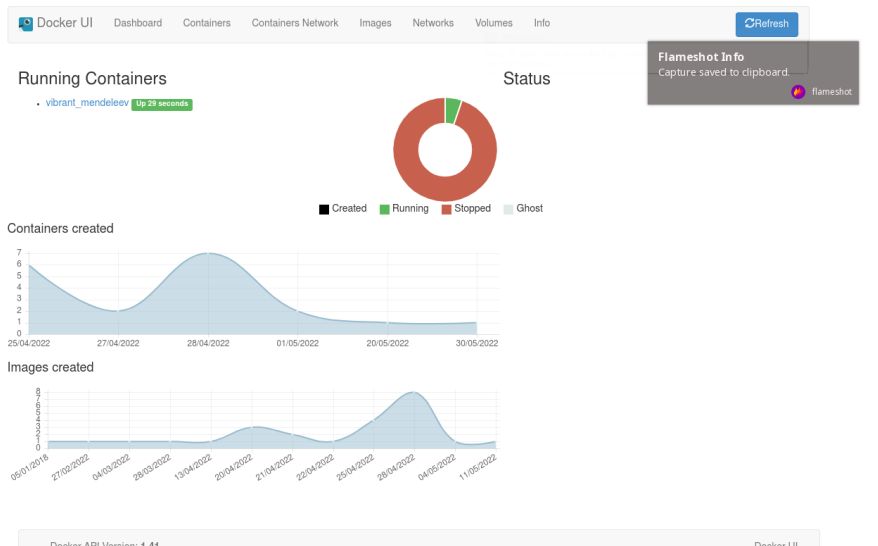
SR. NO.	TOOL	DESCRIPTION
1.	Docker API	The Docker Engine API is a Restful API accessed by an HTTP client such as wget or curl, or the HTTP library which is part of most modern programming languages. Docker provides an API for interacting with the Docker daemon (called the Docker Engine API), as well as SDKs for Go and Python. The SDKs allow you to build and scale Docker apps and solutions quickly and easily. If Go or Python don't work for you, you can use the Docker Engine API directly.
2.	Angular	Angular is a TypeScript-based free and open-source web application framework led by the Angular Team at Google and by a community of individuals and corporations. Angular is a complete rewrite from the same team that built AngularJS

3.	J.S	This object-centered script language most commonly used for designing web pages which are a standalone language developed in Netscape. It gives the user extra control over the browser with potential in the creation of new functions in scripts. This scripting language features case sensitive input with the detection of the user's browser and operating system. JavaScript is mostly used by validation in client edge technology.
4.	Github	GitHub, Inc. is a provider of Internet hosting for software development and version control using Git. GitHub provides a Web-based graphical interface. It provides access control and several collaboration features, such as a wikis and basic task management tools for every project.

FLOWCHART



OUTPUT



The screenshot shows the 'Containers' page in the Docker UI. The top navigation bar is the same as the previous screenshot. A 'Press F11 to exit full screen' notification is visible. The main content area is titled 'Containers:' and features a table of running containers. The table has columns for 'Name', 'Image', 'Command', 'Created', 'Status', and 'Log'. A single container is listed: 'vibrant_mendeleev' with image 'jenkins/jenkins-its-jdk11' and command '/sbin/tini -- /usr/local/bin/jenkins.sh'. The container was created on '2022-05-20' and has a status of 'Up About a minute'. A 'Flameshot Info' notification is visible in the top right corner, stating 'Screenshot aborted.' The bottom status bar shows 'Docker API Version: 1.41' and 'Docker UI'.

	Name	Image	Command	Created	Status	Log
<input type="checkbox"/>	vibrant_mendeleev	jenkins/jenkins-its-jdk11	/sbin/tini -- /usr/local/bin/jenkins.sh	2022-05-20	Up About a minute	stdout/stderr

Docker UI Dashboard Containers Containers Network Images Networks Volumes Info <button>Refresh</button>				
Images: <div>Actions Pull <input type="text" value="Filter"/></div>				
<input type="checkbox"/>	Select	Id	Repository	VirtualSize Created
<input type="checkbox"/>		sha256:7425d3a7c4...	nginx:latest	134.9 MB 2022-05-11
<input type="checkbox"/>		sha256:73264ace13...	jenkins/jenkins:its-jdk11	442.6 MB 2022-05-04
<input type="checkbox"/>		sha256:a81280a8b7...		167.0 MB 2022-04-28
<input type="checkbox"/>		sha256:b396c5188b...	s3upload:latest	1.12 GB 2022-04-28
<input type="checkbox"/>		sha256:a874d27b3...		2.10 GB 2022-04-28
<input type="checkbox"/>		sha256:08bb193e9e...		1.28 GB 2022-04-28
<input type="checkbox"/>		sha256:97cd7deabb...		1.28 GB 2022-04-28
<input type="checkbox"/>		sha256:4c277ca02e...		2.01 GB 2022-04-28
<input type="checkbox"/>		sha256:5deed32f38...		1.29 GB 2022-04-28
<input type="checkbox"/>		sha256:887aa17870...	s3-uploader:latest	230.1 MB 2022-04-28
<input type="checkbox"/>		sha256:85bc923b7e...	harsh18262/next-crud:latest	1.08 GB 2022-04-25
<input type="checkbox"/>		sha256:4376416600...		1.08 GB 2022-04-25
<input type="checkbox"/>		sha256:9db34d74a5...		1.08 GB 2022-04-25

Docker UI Dashboard Containers Containers Network Images Networks Volumes Info Refresh

Container: /vibrant_mendelev

Rename

Stop Kill Pause Restart Commit

Created:

2022-05-20 00:07:26

Path:

/sbin/init

Args:

-- /usr/local/bin/jenkins.sh

Exposed Ports:

• 50000/tcp

• 8080/tcp

Environment:

• PATH=/opt/java/openjdk/bin:/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin

• LANG=C.UTF-8

• JENKINS_HOME=/var/jenkins_home

• JENKINS_SLAVE_AGENT_PORT=50000

• REF=/usr/share/jenkins/ref

• JENKINS_VERSION=2.332.3

• JENKINS_UC=https://updates.jenkins.io

• JENKINS_UC_EXPERIMENTAL=https://updates.jenkins.io/experimental

• JENKINS_INCREMENTALS_REPO_MIRROR=https://repo.jenkins-ci.org/incrementals

• COPY_REFERENCE_FILE_LOG=/var/jenkins_home/copy_reference_file.log

• JAVA_HOME=/opt/java/openjdk

CODE:

https://github.com/harsh18262/Container_management_system

Literature Survey:

Sr No.	Referred Paper/Journal	Year of Publication	Summary of paper referred
1	Research of Port Container Management System Based on RFID	2014	This paper helped us to understand to explore the port container intelligent management and its effect on the quality and safety of container transport.
2	A Performance Study of Containers in Cloud Environment	2016	This journal helped us to understand how that system containers are more suitable to sustain I/O-bound workload

3	A survey on Docker and its significance in cloud	2016	<p>This journal gave us a a brief about Docker. Docker which is a light weight virtualization tool has enabled developers to build and run applications in distributed environment effectively and efficiently</p>
4	A Survey on Docker Container and its Use Cases	2020	<p>This journal helped us understanding the uses of docker that It has a wider scope of benefits for both Developers and System Administrators by allowing Developers to write code without having to worry about the system, that it will ultimately be running on. Also, it potentially reduces the number of systems and offers flexibility for the operations staff.</p>

5	Virtualization Using Docker Containers: For Reproducible Environments and Containerized Applications	2018	It contains contents regarding virtualization. The evolution of microservices has changed the requirements of underlying infrastructure, technologies, and tools which were once used to manage the applications. These services improved the agility of delivering software which are portable across all the platforms and infrastructures
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CONCLUSION

To conclude we are making a website which will improve work for IT team to smoothen up the container handling.
.This will improve their way of life a bit.

REFERENCES

1) Research of Port Container Management System Based on RFID

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https://www.researchgate.net/publication/282541992_Research_of_Port_Container_Management_System_Based_on_RFID

2) A Performance Study of Containers in Cloud Environment

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https://www.researchgate.net/publication/310514065_A_Performance_Study_of_Containers_in_Cloud_Environment

3) Virtualization Using Docker Containers: For Reproducible Environments and Containerized Applications

https://repository.stcloudstate.edu/cgi/viewcontent.cgi?article=1091&context=msia_etds

Annexure:

Annexure I: Form A-Title Approval

Annexure II: Form B-Market and financial feasibility

Annexure III: Literature survey paper

Annexure IV: Project Tracker Sheet

CSE Department, MIT School of Engineering, MIT ADT University, Pune

THANK YOU