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CONT_22CAH-742 :: CONTAINERIZATION WITH DOCKER

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Course Overview   Course Syllabus and Suggestive Readings

Course Syllabus and Suggestive Readings

c. Syllabus

Unit-1	Introduction of Docker	Contact Hours: 20
Introduction of Docker	Docker, Containerization, **Uses of container** Virtualization, **Difference between Docker and Virtual Machines** Docker Architecture, Features, Components of Docker, Advantages of Docker, **Advantages of Containerization over Virtualization**	
Experiment no. 1.1	1. Install Docker on Linux or windows 2. Using docker CLI with commands.	
Installation of Docker	Installation of Docker, Docker Hub, Difference between Docker Image and Container, Containers and shell, Creating Docker images, backing up a Docker Container, Restoring a Docker Container. Deploy, Login, Exit Container. List, Start, Stop and Restart Containers. Deleting Containers.	
Experiment no. 1.2	Pulling Docker Images from Docker Hub	
Chapter 1.3	Data Volumes and system Management Creating and mounting data volumes, Defining Volumes in images, Pruning unused resources.	
Experiment no. 1.3	Deploying Docker images as Stateless Containers.	
Experiment no. 1.4	Managing Containers with the Docker CLI	
Unit-2	Docker components	Contact Hours: 20
Docker Compose & Docker Swarm	Docker Compose and Compose installation, Introduction to Docker Swarm, Create Swarm, Maintain Swarm, Deploy Services to Swarm, Updates to Services, Managing Swarm Services.	

2.1		
Docker Files	Docker Files, Building Files, Public repositories, Private Registry, Building Web server Docker file, instruction commands, Container Linking	
Experiment no. 2.1	Building a Custom Docker Image for a Web Application	
Experiment no. 2.3	Maintaining State with Docker Volumes	
Unit-3	Docker Storage, ring and Kubernetes	Contact Hours:20
Docker volumes	How to manage data in docker, Types of storage available in docker, Multi Container environment, Docker volumes, Types of Volumes	
Experiment no. 3.1	Working with Docker Compose	
Docker networking aspects	Container Network model, Default Bridge Network, User Created Bridge, Host Network, Docker Cloud, Docker Log, Docker Compose, Continuous Integrations tools, Kubernetes architecture, Kubernetes Components, Working of Kubernetes.	
Experiment no. 3.2	Creating a Private Docker Image Repository	
Kubernetes	Introduction of kubernetes, Comparison of Docker and Kubernetes, Configuration of minikube on linux OS, Installing Kubernetes using the Docker Client Running first app on Kubernetes.	
Experiment no. 3.2	Cleaning Up Old Containers and Docker Images	

d. Self-study topics for Advance learners: Webapps with docker, Ports, Docker on AWS, Docker Push, Beanstalk, None Network

e. Textbooks and Reference books

Textbooks

T1Karl Matthias & Sean P. Kane, Docker: Up and Running, O'Reilly Publication.

-https://www.amazon.in/Docker-Shipping-Reliable-Containers-Production-ebook/dp/B00ZGRS4XM

T2Len Bass,Ingo Weber,Liming Zhu,DevOps, A Software Architects Perspective, Addison-Wesley-Pearson Publication.

-https://www.amazon.in/DevOps-Software-Architects-Perspective-Engineering/dp/0134049845

T3 John Ferguson Smart,Jenkins, The Definitive Guide, O'Reilly Publication.

-https://www.oreilly.com/library/view/jenkins-the-definitive/9781449311155/

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-https://www.inspirenignite.com/mh/itl803-devops-lab-syllabus-for-it-8th-sem-2019-pattern-mumbai-university/

Reference Books

R1 Sanjeev Sharma and Bernie Coyne,DevOps for Dummies, Wiley Publication

-https://www.ibm.com/downloads/cas/P9NYOK3B

R2Httermann, Michael, DevOps for Developers,Apress Publication.

-https://www.oreilly.com/library/view/devops-for-developers/9781430245698/

R3 Joakim Verona, Practical DevOps,Pack publication

-https://www.amazon.in/Practical-DevOps-Joakim-Verona/dp/1785882872

f. CO-PO Mapping

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2				1							3	1	
CO2	3			1	2							3	1	
CO3	3	3		1	2							2	3	
CO4	3		2	2	2							2	2	
CO5	3		3	2	3							2	3	

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