Docker

Topics Covered Live

Session 1 - Virtualization Basics | Deployment | Accessibility | CPU | RAM | OS | Hard disk | Hardware control | Startup program | Cost-saving | Resource optimization | Hypervisor | Multi-OS | Virtual machines | VMware | Efficiency | Time reduction | Performance | Bare metal comparison

Session 2 - Introduction to DevOps | App development | Testing | Feedback loop | Server setup | Tool installation | Environment termination | DevOps mindset | Optimization | Containerization | Docker Engine | Docker Hub | Multi-OS support | Deployment | Cost-saving | Productivity | Cloud computing

Session 3 - Intro to Containerization | Docker Installation | Docker Images | Launching Containers | Container Management | Networking | App Deployment | Manual Configuration | File Transfer | App Access | Automation | DevOps Principles | Docker Engine | Docker Hub | Multi-OS Support

Session 4 - Containers launch from images | Configuring OS for applications | Manual vs. automated setup | Imperative vs. declarative automation | configuration management | Prebaked images for faster deployment | Scaling challenges in containerized environments | Custom image creation using Docker | Docker commit vs. Dockerfile | Dockerfile keywords (FROM, RUN, COPY, CMD) | Building and running Docker containers

Session 5 - Dockerfile | Build Time & Run Time | CMD vs ENTRYPOINT | Docker Build & Run | Docker History | Stopped Containers | Command Overwriting | Container Lifecycle | Argument Passing | Bulk Container Deletion

Session 6 - Docker Image Downloading & Usage | Running & Managing Containers | Setting Up MySQL in Docker | Environment Variables in Containers | Image Tagging & Versioning | Container Networking & Connectivity

Session 7 - Containers | Networking | Automation | Configuration | Scaling | Deployment | Dockerfiles

Session 8 - Container Image Size Optimization | Using Lightweight Images | Docker Buildkit vs Legacy Builder | Layering in Docker Images | Removing Unnecessary Metadata | Parallel Execution in Buildkit | Combining Commands Efficiently | Time & Resource Optimization

Session 9 - Docker Multi-Stage Builds | Java Build Process & Maven | Optimizing Container Image Size | Dockerfile Best Practices | Parallelism & BuildKit in Docker

Session 10 - Docker Image Optimization Techniques Multi-Stage Build & Best Practices | Using Distroless & Alpine Images | Security Enhancements in Docker | Scratch Images & Static Compilation

Session 11 - Docker Image Archiving (docker save & docker load) | Image Layer Structure & Metadata | Docker Build Caching | Using Docker Hub for Image Storage | Managing Image Versions & Tags

Session 12 - DIND (Docker-in-Docker) Concept | Jenkins Master-Slave in Docker | Docker Engine, Services & Sockets | Mounting Docker Socket for Nested Containers | Dockerfile & Volume Mounting Best Practices

Session 13 - Docker Container Health Checks | Using HEALTHCHECK Keyword in Dockerfiles | Managing Delayed Application Startups | Automating Checks with Exit Codes & CURL | Parent-Child Image Concept & ONBUILD Usage

Topics given in SelfPaced

Session 1 - Network Connectivity | IPs | NICs | Public/Private IPs | NAT | Routing Tables | Network Types | ifconfig | IPv4 | Netmask | Network Names | Ping | DNS Resolution | Default Routes | Static/Dynamic Config | Docker Networking | Security | IP Ranges | Prefix Length

Session 2 - Docker Networking | Switches | IP Addressing | DHCP | Subnets | Routers | Gateways | OSI Model | MAC Addresses | Bridge Networks | IPAM | Network Drivers | NAT | IP Masquerading | Public/Private IPs | Containers | Isolation | Packet Routing | SDN | Layer 2/3 Bridges

Session 3
Docker-info | Network-plugins | Bridge-driver | Custom-network | CIDR | IP-range | Container-networking | DNS | Fully-qualified-domain-name | /etc/hosts | Container-linking | Reverse-linking | WordPress-setup | MySQL-container | Port-mapping | Container-communication

Session 4 - Docker Storage: Persistence | Ephemeral storage | Volume mounting | Host directories | Read-only volumes | Database persistence | Volume command | Volume drivers | Local driver | Volume creation | Inspection | Mountpoints | Multi-container setup | Persistence | Fault tolerance

Session 7 - Running Container in Detached Mode | Docker Compose | Docker Engine | YAML Language | Multicontainer

Session 8 - Network Infrastructure | Docker Compose | Multi container Concepts

Session 12 - Integrating docker file and docker-compose | Tomcat Server | Docker attach Command | Bash Program |ROOT Directory | Docker-compose build | Patting in docker-compose | ADD Keyword in Docker File | Copy & Extracting Files | Expose Ports & Keywords in docker file | ENV Keyword

Session 13 - PID | Why Docker is Superfast? | Need of OS | Process | Nested Process | Pgrep Command | /proc directory | Bash Shell | Kernel | Cgroup

Session 14 - Data Structure | Data Member| Create Class | Create Object | Use of Objects | Methods/ Functions | Mutator |Accesor | Validation | Mutable Property | Immutable Property | Control access of variable

Session 15 -Horizontal Scaling | SPOF | Container Cluster | Create Cluster | Swarm Tool | Why Cluster? | Master Node | Slave Node | Docker Swarm Command | Launch Container through Swarm | Docker Service Command

Session 16 - Cluster | Create Cluster using docker- swarm | Encapsulation | Task | Replication | Pre-created Load Balancers | Replicas Keyword | Fail Over| Fault Tolerance | State| Scaling | Scale Out | Scale In | Orchestration

Linux

Topics given in SelfPaced

Session 1 - Introduction of Linux |Operating System |CPU/RAM/Hardware|Linux distributor |RHEL9|Install RHEL9|Way to install OS|Bare metal |Virtualization |Cloud computing |Container technology |Hypervisor |Install Oracle VM|Rhel Image|ISO Image |Install RHel in VM |Root account |GUI & CLI & WebUI

Session 2 - GUI & CLI |Firefox Command |Crtl + c|Which Command |Gedit |Firefox code|Open Source Code |Gnome ScreenShot|foreground |Jobs command |Ping command |RAM File |Ctrl + z|Free command |History Command |Ctrl + l|Ctrl + s|Ctrl + q|Mkdir |Persistent Storage |ls & cd & Cat |Use of touch command

Session 5 - Text Editor |Vim Editor |Insert mode|Command mode |Vi command |User management |Permissions |Authentication |IAM concept |Create User |useradd command

|passwd file |shadow file |Set password |Remove password |User ID |Admin user |General user |System user |Root password | Finger database

Session 7 - Home directory |Passwd file|Getent|Ldap concept |Shell|bash shell|Bash command |Interactive and Non-interactive user |No login |Path concept |UID|Authentication |Switch user |Usermod|Shadow file|Recursive directory concept |Remove file |Secure file |Last Command |Log file |Pam concept

Kubernetes

Topics Covered Live

Session 1 - Introduction to Kubernetes | Challenges in application deployment | Docker and its limitations | Kubernetes architecture & components | Scaling, monitoring, and fault tolerance | Kubernetes Pods & Deployments| Networking & Load Balancing | Key kubectl commands for cluster management

Session 2 - Kubernetes Architecture | Nodes, Pods, and Containers | Cluster Management & Scaling | Kubernetes Scheduling & Deployment | Handling Failovers & High Availability | Kube-API, Kube-Scheduler & Kubelet | Using kubectl for Cluster Management

Session 3 - Kubernetes Cluster Overview | Interacting with Kubernetes | YAML for Configuration | Pods & Containers | Declarative Configuration | Launching & Managing Pods | Deleting & Recreating Resources

Session 4 - Kubernetes vs. Traditional Container Engines | Replication Controllers & Desired State Maintenance | Dynamic Scaling with Multiple Containers | Labeling & Pod Identification for Better Management | Using create vs. apply for Kubernetes Configuration Updates

Session 5 - Minikube Cluster & Status Checking | ReplicaSets & Fault Tolerance | Labels & Selectors in Kubernetes | Querying Resources with Selectors | Multi-OS Support for Selectors

Session 6 - Pod Creation & YAML Configurations | Service Types & Connectivity | Load Balancing & Traffic Management | NodePort & External Access | Auto Discovery of New Pods

Sesssion 7 - Defining & Deploying Kubernetes Services | Service Types: NodePort & ClusterIP | Debugging & Troubleshooting Pod Errors | Managing Environment Variables with ConfigMaps

Openshift

Topics Covered Live

Session 1 - OpenShift & Kubernetes Architecture | Containers, Pods, and Cluster Management | OpenShift Security, Networking & Monitoring | CI/CD with OpenShift (Source-to-Image - S2I) | OpenShift CLI (oc commands) & GUI | Deployments, Scaling & Load Balancing | OpenShift Private Registry & Automated Builds

Python Training

Topics Covered Live

Python Bootcamp - Session 1: CPU Performance | Polyglot Programming | Installing Anaconda | REPL | Statements | RAM | OS | Interpreters | Kernel | Variables | Data Types | Integers | Boolean | Float | Strings | f-String | Arrays | Tuples | CRUD | Lists | Operators | Loops

Python Bootcamp - Session 2: Built-in Functions | TTS (pyttsx3) | Modules & Imports | PIP & Libraries | OS Module | Memory Management | Process Execution | Stack Memory | Function Calls | Return Mechanism | Variables | OOP Intro | Classes & Objects | CRUD | Methods | Special Methods

Python Bootcamp - Session 3: List vs Tuple | Dictionary Data Structure | Using Loops for Data Retrieval | Function Variables & Assignments | Working with *args and **kwargs | Storing and Accessing Contact Data | Indexing and Position-Based Access | Tuples vs Lists in Function Arguments

Python Training by Mr. Vimal Daga

Topics Covered SelfPaced

Session 1 - List & Array |2D data |row-wise and column-wise operation|Numpy |primitive data Structure |Custom data Structure|Install NumPy |Computer Vision |Install OpenCV-Python |Click

the photo|Imwrite()|imshow()|waitkey()|Create Own Image |Pixel |RGB color |2D & 3D|Crop image

Session 2 - Conditions |True & False |Operators|Multi-line comment |Boolean|End= keyword |Inline way block of code |conditional expression or ternary operator|Functional programming|Logical Operators|AND, OR & NOT |Truth table|Lazy Operator |IN Operator

Session 3 - program file |Process|Run time |Data sources |Speech Recognize |Mic |Pyaudio |Google Speech Recognize |Microphone function |Recognizer function |listen function |Context manager|With keyword|Create a Speech Recognize program|Timeout concept|loop |While loop |Break keyword

Session 4 - Iteration |While loop|For Loop |Append function |In keyword|Index number |Dir function |iterator|Indentation Error|pass keyword |iterable|Pointer |__next__ function |Extract Data|ETL Concept |Inline list with for loop |List comprehension

Session 5 - Generator | Function | Stack memory | Return keywords | Yield keyword | while loop | For loop | Append

Session 6 - Time Complexity |Space Complexity |Memory profiler |Inner_wrapper function|Annotation & Decorator|@ Symbol|From Keyword|Create a code for memory Space|Timeit function |Default timer function |Lambda function |This module |Inline concept |Functional Programming|filter function

Session 7 - Memory | Memory Address | Python Virtual Machine (PVM) | Memory Management | Reference Concept | Mutable & Immutable | iadd Function | is Keyword | import copy | Shallow Copy | Deep Copy | Garbage | Ctype Module CPython | Memory Interning | Cvzone | Click Photo

Session 8 - Function | Stack Memory | Namespace | Tuple | Dictionaries

Session 9 - Module | Standard | Built-in | Package | C-extension | Binary Code | import sys | import numpy | sys.path

Session 10 - Concurrency | Parallelism | Optimization | Context-switching | Threads | Processes | I/O-bound | Efficiency | Multitasking | Threading module | Threading module | current_thread() | start() method | PID (Process ID)

Session 12 - Threads | CPUs | Parallelism | Global Interpreter Lock | Threading Model | Multi-Threading and GIL | Locking | Global Variables | Race Conditions | Locks and Deadlocks

Session 13 - Parallelism | CPU-intensive | Core-utilization | GIL-bypass | Process-based | Simultaneous | Independence | Efficiency | Separation | Scalability | Memory-isolation | Non-shared | Deadlock-prevention | Race-condition-avoidance | Performance-boost

Session 14 - Multiprocessing | Parallelism | Data Handling | Shared Memory | Queue | Pipe | CPU Affinity | cpu_count() | Process Creation | Lock | Value | Process Explorer | Memory Space | Data Sharing | Race Condition | GIL | Locking Strategy | Context Manager

OOPs (Object-Oriented Programming)

Topics Covered Live

Session 01 - OOP | Data-organization | Custom-structures | Encapsulation | Classes | Objects | Instantiation | Attributes | Methods | Self-variable | Memory-management | CRUD-operations | Getter | Setter | Abstraction | Reusability

Session 2 - Classes & Objects in Python | Access Modifiers: Public, Private, Protected | Encapsulation & Data Validation | Constructors & Automatic Execution | Global vs Local Variables | Class Variables vs Instance Variables

Data Structure & Algorithms (DSA)

Topics Covered Live

Session 1 - Concurrent users | Traffic patterns | Scalability | Server limits | Automation | System design | Tsunami effect | Infrastructure management | Problem-solving | Performance optimization | Full-stack development | DevOps | SRE | Machine learning | MLOps | GenAIOps | DevSecOps | Efficiency | Resource optimization | Time complexity |

Session 2 - Data structures | Algorithms | Optimization | Profit | Resource management | Time complexity | Big O notation | Algorithmic thinking | Pseudo code | Programming languages | Worst-case scenario | Constant time | Problem-solving | Efficiency | Scalability | Performance | Cost reduction | Automation | System design | Resource allocation

Session 3 - Problem-solving | Algorithm | Runtime | RAM | CPU | Servers | Optimization | Space Complexity | Time Complexity | Efficiency | Cost | Performance | Execution | Process | Resources | Function | Analysis | Solid Principle | Modularity | Compute Device

Session 4 - Algorithms & Functions | Understanding Time Complexity (Big O Notation) | Loops in Python (Iteration & Recursion) | Using range() in for loops | Importance of Efficient

Programming | Constant Time Complexity O(1) Explained | Variable Time Complexity O(n) & Real-World Scenarios | Resource Planning & Scalability (Hotstar Example) | Types of Time Complexities (O(1), O(n), $O(n^2)$, O(log n), $O(2^n)$) | Problem-Solving with Natural Number Sum

Session 5 - Natural Number Sum | Real-world Problem Mapping | Identifying Patterns | Loop Implementation | Pseudocode Writing
| Variable Naming | Time Complexity (Big O) | Function Optimization | Jupyter Magic Commands | Arithmetic Progression Formula

Session 6 - Algorithmic Thinking | Iteration vs. Recursion | Function Design & Modularity | Direct & Indirect Recursion | Base Conditions in Recursive Functions

Session 7 - Recursion Basics | Reverse Printing with Recursion | Base Condition in Recursion | Top-Down vs. Bottom-Up Approach | Stack Memory & Activation Records | Function Calls & Stack Frame Management | Stack Overflow & Recursion Limits | Increasing Recursion Limit in Python | Tracing Tree for Recursion Flow

Session 8 - Recursion Basics | Tail Recursion & Optimization | Factorial Calculation using Recursion | Call Stack & Stack Overflow | Tail Call Optimization (TCO) | Permutations & Combinations | Seating Arrangement Problem | Iterative vs Recursive Approaches | Time Complexity of Recursion (O(n))

Session 9 - Recursion & Stack Memory Issues | Iteration as an Alternative to Recursion | Python Interpreter vs. Compilers | Tail Call Optimization (TCO) | Using Accumulators for Tail Recursion

Session 10 - Iterative vs. Recursive Problem Solving | Fibonacci Series in Computation & Nature | Optimizing Recursion with Dynamic Programming | Mathematical Modeling in Algorithms | Pattern Recognition for Efficient Computing

Session 11 - Fundamentals of Dynamic Programming | Recursion vs. Iteration in Dynamic programming | Memoization & Tabulation Techniques | Applications of Dynamic Programming in Real-world Problems | Optimizing Recursive Algorithms

Full Stack Development

Topics Covered Live

Session 1 - Web Development Overview | Front-End | HTML | CSS | JavaScript | UI/UX | Back-End | Python | Java | C++ | Ruby | Server | Client Requests | Polyglot | Microservices | Frameworks |

Tailwind | Bootstrap | React | API | Flask | Tech Stack | Full-Stack | Cloud | DevOps | IoT | Security | Scalability

Session 2 - Front-End | HTML | Web Browser Processing & Rendering | Form Handling & Data Submission | URL Parameters & Client-Server Interaction | HTML Attributes & Their Uses
Session 3 - API and its Role | Client-Server Interaction | HTTP & HTTPS Protocols | URL Structure & Routing| Flask for API Development | Using Decorators in Python | Handling API Responses & Errors | Embedding HTML in Backend Code

Session 4 - Flask Routes & Dynamic URL Handling | Passing Parameters in URL Paths | Using render_template for HTML Pages | Implementing Jinja Templating for Dynamic Content | Structuring Flask Apps with a templates/ Directory

Session 5 - Client-Server Model & HTTPS | CRUD Operations & HTTP Methods | Request Headers, Payloads & Status Codes | Network Requests & Developer Tools | Express.js & Flask for Backend Development | Routing & Data Handling in Web Apps

Session 6 - HTTP Methods & API Communication | API Testing with Postman | Request/Response Handling & Status Codes | CRUD Operations & Data Management | Query Parameters vs. Secure Data Transmission