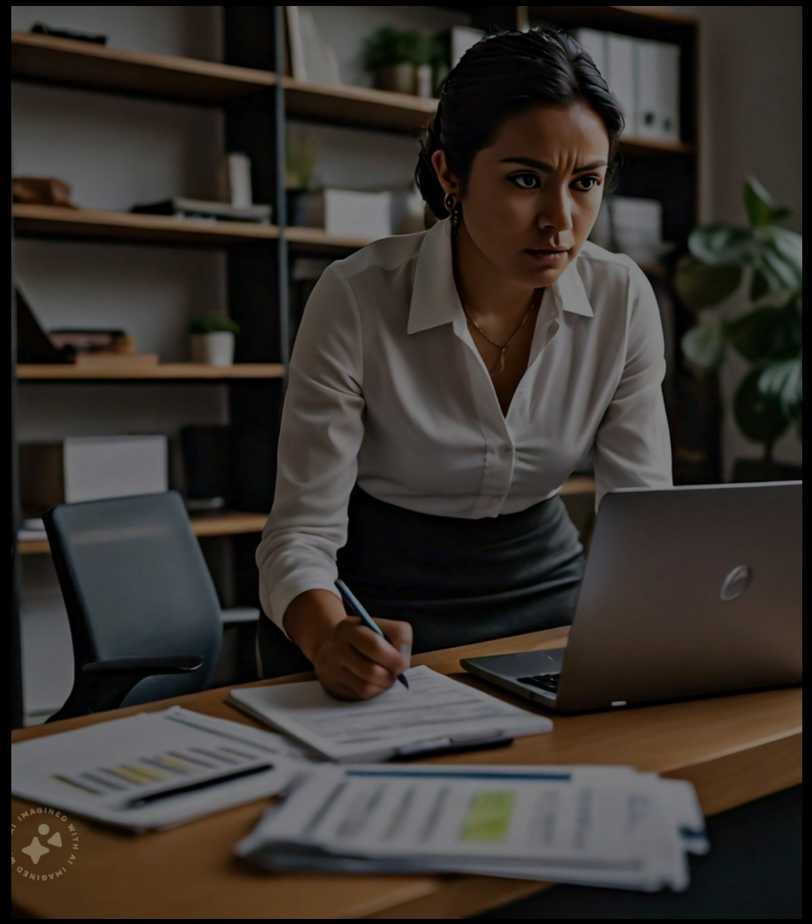
TS
TECH TEACH
EDUCATIONALSOLUTIO

Kubernetes

OUR MISSION :



"Our mission is to empower learners worldwide through innovative technology, personalized learning experiences, and accessible educational resources. We strive to cultivate a community where every individual can achieve their full potential, regardless of their background or circumstances."

OUR VALUES :

"To pioneer the future of education by leveraging cutting-edge technology to make learning more engaging, effective, and inclusive. We envision a world where education transcends boundaries, creating opportunities for lifelong learning and fostering a society enriched by knowledge and creativity."

COURSE CURRICULUM:

Week 1: Kubernetes Fundamentals Review

- Day 1-2: Introduction to Kubernetes
  - Overview of Kubernetes architecture and components.
  - Setting up a local Kubernetes environment (Minikube, kind, or MicroK8s).
- Day 3-4: Core Kubernetes Concepts
  - Understanding Pods, Deployments, and Services.
  - Hands-on with basic kubectl commands.
- Day 5: Kubernetes Networking
  - Overview of Kubernetes networking concepts.
  - Setting up basic network policies.

COURSE CURRICULUM:

Week 2: Advanced Kubernetes Objects

- Day 1-2: ConfigMaps and Secrets
  - Managing application configurations with ConfigMaps and Secrets.
  - Hands-on: Using ConfigMaps and Secrets in a Kubernetes application.
- Day 3-4: Persistent Storage
  - Understanding Persistent Volumes (PV) and Persistent Volume Claims (PVC).
  - Hands-on: Using PVs and PVCs with Stateful applications.
- Day 5: StatefulSets and DaemonSets
  - Understanding StatefulSets for stateful applications.
  - Using DaemonSets for node-specific tasks.

COURSE CURRICULUM:

Week 3: Kubernetes Scheduling and Scaling

- Day 1-2: Advanced Scheduling
  - Taints and Tolerations, Node Affinity/Anti-Affinity.
  - Hands-on: Customizing pod scheduling.
- Day 3-4: Horizontal and Vertical Scaling
  - Configuring Horizontal Pod Autoscaler (HPA) and Vertical Pod Autoscaler (VPA).
  - Hands-on: Implementing autoscaling in a Kubernetes cluster.
- Day 5: Kubernetes Jobs and CronJobs
  - Running batch jobs with Kubernetes Jobs.
  - Scheduling tasks with CronJobs.

COURSE CURRICULUM:

Week 4: Kubernetes Security

- Day 1-2: RBAC (Role-Based Access Control)
  - Setting up and managing RBAC policies.
  - Hands-on: Implementing user roles and permissions.
- Day 3-4: Network Policies
  - Securing communication between Pods with Network Policies.
  - Hands-on: Creating and applying Network Policies.
- Day 5: Securing Kubernetes Clusters
  - Best practices for securing Kubernetes clusters.
  - Using tools like Kubernetes Security Contexts and Pod Security Policies.

COURSE CURRICULUM:

Week 5: Kubernetes Monitoring and Logging

- Day 1-2: Monitoring with Prometheus and Grafana
  - Setting up Prometheus for monitoring Kubernetes clusters.
  - Visualizing metrics with Grafana.
- Day 3-4: Logging with EFK Stack (Elasticsearch, Fluentd, Kibana)
  - Setting up the EFK stack for centralized logging.
  - Hands-on: Collecting and visualizing logs.
- Day 5: Advanced Monitoring and Alerting
  - Configuring advanced monitoring and alerting rules.
  - Integrating alerting with tools like Alertmanager.

COURSE CURRICULUM:

Week 6: Kubernetes Networking and Service Mesh

- Day 1-2: Ingress Controllers
  - Setting up and configuring Ingress Controllers.
  - Hands-on: Managing external access to services.
- Day 3-4: Service Mesh with Istio or Linkerd
  - Introduction to Service Mesh concepts.
  - Deploying and configuring Istio or Linkerd in a Kubernetes cluster.
- Day 5: Advanced Service Mesh Features
  - Traffic management, security, and observability with Service Mesh.
  - Hands-on: Implementing Service Mesh features.

COURSE CURRICULUM:

Week 7: CI/CD with Kubernetes

- Day 1-2: Introduction to CI/CD Pipelines
  - Overview of CI/CD concepts and tools (Jenkins, GitLab CI, etc.).
  - Integrating CI/CD with Kubernetes.
- Day 3-4: GitOps with ArgoCD or Flux
  - Understanding GitOps principles.
  - Hands-on: Setting up ArgoCD or Flux for GitOps-based deployments.
- Day 5: Advanced CI/CD Practices
  - Blue-Green Deployments and Canary Releases.
  - Hands-on: Implementing advanced deployment strategies.

COURSE CURRICULUM:

Week 8: Final Project and Presentations

- Day 1-4: Project Development
  - Students work on a comprehensive final project that integrates multiple aspects of the curriculum.
- Day 5: Project Presentation and Evaluation
  - Students present their projects.
  - Feedback and evaluation.

Our Partners Company's

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THANK YOU

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