

# CKAD

## Certified Kubernetes App Developer

### Objective:

The **Certified Kubernetes Application Developer** exam certifies that users can design, build, configure, and expose native cloud applications for Kubernetes.

The **Certified Kubernetes Application Developer (CKAD)** certification is designed to guarantee that certification holders have the knowledge, skills, and capability to design, configure, and expose cloud-native applications for Kubernetes and also perform the responsibilities of Kubernetes application developers.

### Topics:

- Kubernetes Certification
- Design and Deploy applications on Kubernetes Cluster
- Develop Cloud First Applications
- Secure Kubernetes cluster with Secrets and Network Policies
- Create and Schedule Jobs in Kubernetes
- Create and Configure Persistent Volumes
- Configure Readiness and Liveness Probes in a cluster
- Troubleshoot Applications Deployed using Logs
- Upgrade and Rollback Applications deployed on Kubernetes

### Prerequisites:

- Basic System Administration
- Basic Application Development - Python
- Linux VMs to follow along (This is optional as labs are provided with course)
- Kubernetes Basics

### Public

- System Administrators
- Application Developers
- Those looking to get Certified on Kubernetes

### Certification Exam Domains & Competencies

- **Application Design and Build 20%**
  - Define, build and modify container images
  - Understand Jobs and CronJobs
  - Understand multi-container Pod design patterns (e.g. sidecar, init and others)
  - Utilize persistent and ephemeral volumes
- **Application Deployment 20%**
  - Use Kubernetes primitives to implement common deployment strategies (e.g. blue/green or canary)
  - Understand Deployments and how to perform rolling updates
  - Use the Helm package manager to deploy existing packages

- **Application Observability and Maintenance 15%**
  - Understand API deprecations
  - Implement probes and health checks
  - Use provided tools to monitor Kubernetes applications
  - Utilize container logs
  - Debugging in Kubernetes
- **Application Environment, Configuration and Security 25%**
  - Discover and use resources that extend Kubernetes (CRD)
  - Understand authentication, authorization and admission control
  - Understanding and defining resource requirements, limits and quotas
  - Understand ConfigMaps
  - Create & consume Secrets
  - Understand ServiceAccounts
  - Understand SecurityContexts
- **Services and Networking 20%**
  - Demonstrate basic understanding of NetworkPolicies
  - Provide and troubleshoot access to applications via services
  - Use Ingress rules to expose applications

#### **Exam :**

- English language
- Online (PSI Browser + HD Camera)
- 66 % score to pas exam
- Exams are scored automatically, usually within 24 hours of completion. Exams are scored automatically, usually within 24 hours of completion.
- CKAD Certification are valid for 3 years

### Path:

1. **preparation**
  - <https://k21academy.com/docker-kubernetes/kubernetes-developer/certified-kubernetes-application-developer-ckad-step-by-step-activity-guide-hands-on-lab/>
2. **training**
  - a. cours + Labs + mock exercise : 4 days
    - i. labs on personal laptop
  - b. mock exam preparation
  - c. mock exam
3. **exam scheduling**

### Course Program:

- **Core concepts:**
  - architecture, Pods; ReplicatSet, Deployment, Namespace
- **Configuration:**
  - cli, ConfigMap, Secret, ServiceAccount; Taint/Toleration, Node Selector/Affinity
- **Multi-container Pods:**
  - multi-cotainer Pods, Init Container
- **Observability:**
  - Readiness, Liveness, Container logging, Monitoring
- **Pod Design:**
  - Label, selector, Deployment, Rolling update
- **Service Networking:**
  - Serveide , cluster IP, Ingress, Network policy
- **State Persistence:**
  - Persistent Volume, Storage class, Statefull Set, Headless service
- **Others: kubeconfig,**
  - Api group, authorization, cluster roles, Admission controller, CRD, deployment strategy, helm introduction;

### Preparation Materials:

- **course:**
  - <https://k21academy.com/docker-kubernetes/kubernetes-developer/certified-kubernetes-application-developer-ckad-step-by-step-activity-guide-hands-on-lab/>
- **exercices:**
  - <https://github.com/dgkanatsios/CKAD-exercises>
- **Mock exam:**
  - <https://killercoda.com/killer-shell-ckad>
  - <https://killer.sh/>