Certified Kubernetes Application Developer (CKAD) Exam Curriculum

A Cloud Native Computing Foundation (CNCF) Publication

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This document provides the curriculum outline of the Knowledge, Skills and Abilities that a Certified Kubernetes Application Developer (CKAD) can be expected to demonstrate.

CKAD Curriculum

20% - Application Design and Build

- Define, build and modify container images
- Choose and use the right workload resource (Deployment, DaemonSet, CronJob, etc.)
- Understand multi-container Pod design patterns (e.g. sidecar, init and others)
- Utilize persistent and ephemeral volumes

20% - Application Deployment

- 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
- Kuztomize

15% - Application Observability and Maintenance

- Understand API depreciations
- Implement probes and health checks
- Use built-in CLI tools to monitor Kubernetes applications
- Utilize container logs
- Debugging in Kubernetes

25% - Application Environment, Configuration and Security

- Discover and use resources that extend Kubernetes (CRD, Operators)
- Understand authentication, authorization and admission control
- Understand requests, limits, quotas
- Define resource requirements
- Understand ConfigMaps
- Create & consume Secrets
- Understand ServiceAccounts
- Understand Application Security (SecurityContexts, Capabilities, etc.)

20% - Services and Networking

- Demonstrate basic understanding of NetworkPolicies
- Provide and troubleshoot access to applications via services
- Use Ingress rules to expose applications

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Cloud native computing uses an open source software stack to deploy applications as microservices, packaging each part into its own container, and dynamically orchestrating those containers to optimize resource utilization. The Cloud Native Computing Foundation (CNCF) hosts critical components of those software stacks including Kubernetes, Fluentd, Linkerd, Prometheus, OpenTracing and gRPC; brings together the industry's top developers, end users, and vendors; and serves as a neutral home for collaboration. CNCF is part of The Linux Foundation, a nonprofit organization. For more information about CNCF, please visit: https://cncf.io/.