Week 3 Practice Test - Kubernetes

1. **Which field in a Pod YAML definition specifies the container image to use?**

   a) spec.containers.image

   b) metadata.image

   c) spec.image

   d) containers.image

   Answer: a) spec.containers.image

2. **Which command is used to create a Pod from a YAML file?**

   a) `kubectl create -f pod.yaml`

   b) `kubectl run pod.yaml`

   c) `kubectl apply -f pod.yaml`

   d) `kubectl start pod.yaml`

   Answer: c) kubectl apply -f pod.yaml

3. **What will happen if a field is incorrectly specified in a YAML file while creating a Pod?**

   a) The Pod will be created with default values

   b) Kubernetes will ignore the incorrect field

   c) Kubernetes will throw a validation error

   d) The Pod will be created but in a CrashLoopBackOff state

   Answer: c) Kubernetes will throw a validation error

4. **Which command would you use to add a label to an existing Pod?**

   a) `kubectl label pod mypod app=frontend`

   b) `kubectl annotate pod mypod app=frontend`

   c) `kubectl apply label pod mypod app=frontend`

d) `kubectl set label pod mypod app=frontend`

Answer: a) kubectl label pod mypod app=frontend

5. **What is a key characteristic of Kubernetes labels?**

   a) They must be unique across the entire cluster

   b) They can be used to select a group of objects

   c) They are automatically applied by Kubernetes

   d) They are used for storing secrets

   Answer: b) They can be used to select a group of objects

6. **How do you define the number of replicas in a Deployment YAML file?**

   a) spec.template.spec.replicas

   b) spec.replicas

   c) metadata.replicas

   d) spec.template.replicas

   Answer: b) spec.replicas

7. **Which command scales a Deployment to 5 replicas?**

   a) `kubectl scale deployment mydeployment --replicas=5`

   b) `kubectl set replicas deployment mydeployment 5`

   c) `kubectl apply deployment mydeployment --replicas=5`

   d) `kubectl replicate deployment mydeployment 5`

   Answer: a) kubectl scale deployment mydeployment --replicas=5

8. **Which field in a Service YAML definition specifies the load balancer type?**

   a) spec.loadBalancerType

   b) spec.type

   c) metadata.type

   d) spec.ports.type

   Answer: b) spec.type

9. **What is the primary function of a Kubernetes Service of type LoadBalancer?**

   a) To expose the service on a static port on each node

   b) To provide an external IP address that forwards to the service

   c) To route internal traffic between Pods

   d) To provide persistent storage

   Answer: b) To provide an external IP address that forwards to the service

10. **Which type of Service is used to expose a Service to external traffic using a fixed port on each Node?**

    a) ClusterIP

    b) NodePort

    c) LoadBalancer

    d) ExternalName

    Answer: b) NodePort

11. **What is the default Service type in Kubernetes if not specified?**

    a) ClusterIP

    b) NodePort

    c) LoadBalancer

    d) ExternalName

    Answer: a) ClusterIP

12. **What range of ports does Kubernetes use for NodePort services by default?**

    a) 1-1024

    b) 1025-65535

    c) 30000-32767

    d) 20000-30000

    Answer: c) 30000-32767

13. **What is the primary function of a Service of type ClusterIP?**

    a) To expose the service to external traffic

b) To provide an internal IP for accessing the service within the cluster

c) To balance load across multiple Pods

d) To create persistent storage

Answer: b) To provide an internal IP for accessing the service within the cluster

14. **How do you define an environment variable for a container in a Pod specification?**

a) spec.template.env

b) spec.containers.env

c) spec.containers.envFrom

d) spec.env

Answer: b) spec.containers.env

15. **What is the main difference between a ReplicaSet and a ReplicationController?**

a) ReplicaSets support more advanced label selectors

b) ReplicationControllers support rolling updates

c) ReplicaSets can manage StatefulSets

d) ReplicationControllers can manage DaemonSets

Answer: a) ReplicaSets support more advanced label selectors

16. **Which type of storage is temporary and tied to the lifecycle of a Pod?**

a) PersistentVolume

b) PersistentVolumeClaim

c) EmptyDir

d) HostPath

Answer: c) EmptyDir

17. **What happens to the data in an EmptyDir volume when the Pod is deleted?**

a) Data is persisted

b) Data is backed up automatically

c) Data is deleted

d) Data is moved to a new Pod

Answer: c) Data is deleted

18. **Which object is used to dynamically provision storage in Kubernetes?**

a) PersistentVolume

b) PersistentVolumeClaim

c) StorageClass

d) VolumeMount

Answer: c) StorageClass

19. **What is a PersistentVolume in Kubernetes?**

a) A type of Pod storage

b) A storage unit with a lifecycle independent of any individual Pod

c) A configuration for in-memory storage

d) A specification for mounting a ConfigMap

Answer: b) A storage unit with a lifecycle independent of any individual Pod

20. **What is the role of a provisioner in a StorageClass?**

a) To define how storage resources are provisioned

b) To specify the amount of storage available

c) To configure Pod resource limits

d) To manage network policies

Answer: a) To define how storage resources are provisioned

21. **Which command is used to roll back to a previous Deployment revision?**

a) `kubectl rollout undo deployment mydeployment`

b) `kubectl undo deployment mydeployment`

c) `kubectl revert deployment mydeployment`

d) `kubectl rollback deployment mydeployment`

Answer: a) kubectl rollout undo deployment mydeployment

22. How can you pause a Deployment in Kubernetes?

a) `kubectl pause deployment mydeployment`

b) `kubectl rollout pause deployment mydeployment`

c) `kubectl freeze deployment mydeployment`

d) `kubectl halt deployment mydeployment`

Answer: b) kubectl rollout pause deployment mydeployment

23. What is the primary use of Secrets in Kubernetes?

a) To store environment variables

b) To manage user authentication

c) To store sensitive information such as passwords and tokens

d) To configure Pod resources

Answer: c) To store sensitive information such as passwords and tokens

24. Which command creates a Secret from a literal value?

a) `kubectl create secret generic mysecret --from-literal=username=admin`

b) `kubectl apply secret generic mysecret --from-literal=username=admin`

c) `kubectl set secret generic mysecret --from-literal=username=admin`

d) `kubectl add secret generic mysecret --from-literal=username=admin`

Answer: a) kubectl create secret generic mysecret --from-literal=username=admin

25. What is Kustomize primarily used for in Kubernetes?

a) To manage ConfigMaps

b) To manage Secrets

c) To customize raw, template-free YAML files for multiple purposes

d) To automate Pod scaling

Answer: c) To customize raw, template-free YAML files for multiple purposes

26. What is the purpose of Namespaces in Kubernetes?

a) To provide network isolation between Pods

b) To organize resources into non-overlapping groups

c) To define resource quotas for nodes

d) To specify resource limits for containers

Answer: b) To organize resources into non-overlapping groups

27. How can you create a new Namespace?

a) `kubectl create namespace mynamespace`

b) `kubectl apply namespace mynamespace`

c) `kubectl add namespace mynamespace`

d) `kubectl set namespace mynamespace`

Answer: a) kubectl create namespace mynamespace

28. Which section in the kubeconfig specifies the credentials for accessing the cluster?

a) users

b) clusters

c) contexts

d) preferences

Answer: a) users

29. How do you create a ServiceAccount in Kubernetes?

a) `kubectl create serviceaccount myuser`

b) `kubectl add serviceaccount myuser`

c) `kubectl apply serviceaccount myuser`

d) `kubectl set serviceaccount myuser`

Answer: a) kubectl create serviceaccount myuser

30. What is the primary purpose of a RoleBinding in Kubernetes?

a) To bind users to Namespaces

b) To bind a Role to a set of users or groups

c) To bind a ServiceAccount to a Pod

d) To bind a PersistentVolume to a Pod

Answer: b) To bind a Role to a set of users or groups

31. What is the difference between a StatefulSet and a Deployment?

a) StatefulSet provides unique network identities to Pods, Deployment does not

b) Deployment provides unique network identities to Pods, StatefulSet does not

c) StatefulSet can scale Pods, Deployment cannot

d) Deployment can manage persistent storage, StatefulSet cannot

Answer: a) StatefulSet provides unique network identities to Pods, Deployment does not

32. Which component of Kubernetes is responsible for ensuring that the desired state of the cluster is maintained?

a) Kubelet

b) Kube-Proxy

c) Controller Manager

d) API Server

Answer: c) Controller Manager

33. What is the primary function of kube-proxy in Kubernetes?

a) To provide DNS resolution

b) To manage network policies

c) To maintain network rules for Pods

d) To route API requests to the appropriate service

Answer: c) To maintain network rules for Pods

34. How does Kubernetes ensure that Pods within the same Namespace can communicate with each other?

a) By default, all Pods within the same Namespace can communicate with each other

b) By setting up explicit network policies

c) By using NodePorts

d) By configuring LoadBalancers

Answer: a) By default, all Pods within the same Namespace can communicate with each other

35. What is Helm in the context of Kubernetes?

a) A tool for managing container runtime environments

b) A package manager for Kubernetes

c) A monitoring tool for Kubernetes clusters

d) A logging tool for Kubernetes clusters

Answer: b) A package manager for Kubernetes

36. What is a Helm Chart?

a) A blueprint for deploying a single application on Kubernetes

b) A list of Pods and their statuses

c) A set of network policies for Kubernetes

d) A configuration file for Kubernetes storage

Answer: a) A blueprint for deploying a single application on Kubernetes

37. Which Kubernetes object is used to define a persistent storage request?

a) PersistentVolume

b) StorageClass

c) PersistentVolumeClaim

d) VolumeMount

Answer: c) PersistentVolumeClaim

38. What is the main purpose of a StorageClass in Kubernetes?

a) To manage the lifecycle of storage volumes

b) To define the QoS of storage

c) To define dynamic provisioning of PersistentVolumes

d) To manage Pod resource limits

Answer: c) To define dynamic provisioning of PersistentVolumes

39. What is the primary purpose of an Ingress resource in Kubernetes?

a) To expose Pods to internal traffic

b) To expose Services to external traffic

c) To manage network policies

d) To manage Secrets and ConfigMaps

Answer: b) To expose Services to external traffic

40. Which component is required to implement Ingress resources?

a) Ingress Controller

b) Kubelet

c) Kube-Proxy

d) API Server

Answer: a) Ingress Controller

41. What is a Pod Security Policy in Kubernetes?

a) A configuration for Pod networking

b) A resource that defines security controls for Pods

c) A method for managing user permissions

d) A tool for monitoring Pod performance

Answer: b) A resource that defines security controls for Pods

42. Which tool is commonly used for monitoring Kubernetes clusters?

a) Prometheus

b) Jenkins

c) Docker

d) GitLab

Answer: a) Prometheus