

KUBERNETES FROM ZERO · FOUNDATIONS 6 OF 12 · LESSON 6 · LESSON KIT · ANSWER KEY

Kubernetes from Zero, part 6: Namespaces, labels and annotations

The answers to the homework sheet, matched by exercise number. Every answer comes from the lesson. Names with random suffixes will differ on your cluster.

Every command ran on a kind v0.33.0 cluster (node v1.37.0, kubectl v1.37.2) on 10 Nov 2026. Cluster: k8s-ep04.

Recall

1. Name the four namespaces every cluster starts with, and the extra one kind adds.

   `default`, `kube-system`, `kube-public` and `kube-node-lease`. kind adds `local-path-storage` for its storage provisioner. This series also has `k8s-from-zero` from part 4.

2. Can two Pods both be named `web`? Can namespaces be nested?

   Yes if they live in different namespaces. Resource names must be unique within a namespace, and the same name may appear in other namespaces. Namespaces cannot be nested, and each namespaced object belongs to exactly one.

3. Name three cluster-scoped types from the lesson, and say what `-n` does for them.

   Nodes, PersistentVolumes, StorageClasses, and Namespaces themselves. For cluster-scoped objects, `-n` is silently ignored. `kubectl api-resources` shows which types are namespaced.

4. Name the six recommended `app.kubernetes.io` keys.

   `name`, `instance`, `version`, `component`, `part-of` and `managed-by`. The docs call them recommended, and suggest putting them on every object.

5. What belongs in an annotation instead of a label, and what is the size limit?

   Anything that is not for identifying and selecting: who owns the object, a runbook link, a build ID, a Git commit, instructions for a tool. Values may contain spaces, URLs, JSON and YAML. You cannot select on an annotation. All annotations on one object are limited to 256 KiB. The lab prefix is `example.com/`.

Run this and explain

6. With the context namespace still `default`, run `kubectl get pods` and then `kubectl get pods -n kube-system`. What does the first command print in the lesson, and why?

   `No resources found in default namespace.` The Pods you care about are in another namespace. `-n` limits that one command. `-A` lists every namespace and adds a NAMESPACE column.

SCAN FOR THE LESSON

Lesson: **Kubernetes from Zero, part 6: Namespaces, labels and annotations**

https://aitamer.news/posts/k8s-from-zero-06-namespaces-labels-annotations/?utm_source=lessonkit&utm_medium=pdf&utm_campaign=k8s-06&utm_content=answer-key

NEXT IN THE SERIES **Next: Lesson 7, Deployments and ReplicaSets.** Kubernetes from Zero, part 7, Deployments and ReplicaSets. Lesson page

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7 Run `kubectl create namespace Team_C`. What class of error does the lesson describe?

> The name is rejected. The symptom in the lesson is `a lowercase RFC 1123 label must consist of lower case alphanumeric characters or '-'`. Namespace names cannot contain capitals, underscores or dots.

8 Run `kubectl label pod shop-cache note="talk to payments"`. What happens, and where should that sentence go?

> The value is rejected: `invalid label value`. Label values allow no spaces and at most 63 characters. Move the free text into an annotation.

9 Run `kubectl delete namespace team-b` after you have looked with `kubectl get all -n team-b`. What goes with the namespace?

> Everything inside it. The lesson's cleanup of `team-a` prints `namespace "team-a" deleted`. Deleting a namespace takes its objects with it.

Predict the outcome

10 You apply a Pod into `team-a`, then run `kubectl get pods` and see `No resources found in default namespace.` What is wrong, and which two commands does the lesson give?

> You are looking in a different namespace from the one the object is in. Add `-A`, or check `kubectl config view --minify | grep namespace:`.

11 A custom-columns command for `app.kubernetes.io/part-of` prints `<none>` even though the label is there. What did the shell do, and what is the fix in the lesson?

> The shell ate the backslashes in `app\.kubernetes\.io`. Unquoted, both columns came back empty, shown as `<none>`. Wrap the whole `custom-columns=` argument in single quotes.

12 `kubectl get ns` shows `team-b` as `Terminating` for a long time. What is the namespace waiting on, and what does the lesson tell you not to do?

> Something inside is waiting on a finalizer, a hook that must finish before deletion. Part 22 shows how to find and clear it. Do not force-delete without knowing what is waiting.

13 You `kubectl annotate` a key that already has a value, without `--overwrite`. What does the lesson print?

> `error: --overwrite is false but found the following declared annotation(s): 'example.com/last-reviewed' already has a value (2026-11-10)`. Annotate works like label: changing an existing value needs `--overwrite`, and a trailing `-` removes the key.

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