

# Lab: Using Kustomize with Kubernetes

## Prerequisites


- Kubernetes cluster (Minikube, Kind, or any cluster)
  - `kubectl` installed
  - `kustomize` installed (or use `kubectl kustomize`)
- 

## Directory Structure


```
kustomize-lab/  
├── base/  
│   ├── deployment.yaml  
│   ├── service.yaml  
│   └── kustomization.yaml  
└── overlays/  
    ├── dev/  
    │   ├── kustomization.yaml  
    │   └── patch.yaml  
    └── prod/  
        ├── kustomization.yaml  
        └── patch.yaml
```

---


## Create the Base Configuration

 `base/deployment.yaml`

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: nginx
spec:
  replicas: 2
  selector:
    matchLabels:
      app: nginx
  template:
    metadata:
      labels:
        app: nginx
    spec:
      containers:
        - name: nginx
          image: nginx:1.21
          ports:
            - containerPort: 80
```

 base/service.yaml

```
apiVersion: v1
kind: Service
metadata:
  name: nginx
spec:
  selector:
    app: nginx
  ports:
    - protocol: TCP
      port: 80
      targetPort: 80
```


 base/kustomization.yaml

```
resources:
  - deployment.yaml
  - service.yaml
```

---

## Create Overlays

### Dev Overlay

 overlays/dev/kustomization.yaml

```
resources:
  - ../../base


patches:
  - path: patch.yaml
```

 overlays/dev/patch.yaml

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: nginx
spec:
  replicas: 1
```

---

## Prod Overlay

 overlays/prod/kustomization.yaml

```
resources:
  - ../../base

patches:
  - path: patch.yaml
```

 overlays/prod/patch.yaml

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: nginx
spec:
  replicas: 4
```

---

## Apply the Configurations

### Dev

```
kubectl apply -k overlays/dev
```

## Prod

```
kubectl apply -k overlays/prod
```

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## Verify

```
kubectl get deployments  
kubectl get services
```

You should see an `nginx` deployment with the correct number of replicas depending on the environment.

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## Clean Up

```
kubectl delete -k overlays/dev  
# or  
kubectl delete -k overlays/prod
```

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