**Lab Exercise 25- Using Helm in Kubernetes**

Here’s a **very simple Helm project** for deploying an Nginx pod and exposing it via a NodePort service. This version does not include extra files like a ServiceAccount, making it minimal and beginner-friendly.

helm create nginx-nodeport

**Directory Structure**

nginx-nodeport /

├── templates/

│ ├── deployment.yaml

│ └── service.yaml

├── values.yaml

└── Chart.yaml

**Project Files**

**1. Chart.yaml**

Metadata about the Helm chart.

apiVersion: v2

name: simple-nginx

description: A minimal Helm chart for deploying Nginx

version: 0.1.0

appVersion: "1.0"

**2. values.yaml**

Default configuration for the chart.

replicaCount: 1

image:

repository: nginx

tag: "latest"

pullPolicy: IfNotPresent

service:

type: NodePort

port: 80

nodePort: 30000

**3. templates/deployment.yaml**

Defines the Nginx deployment.

apiVersion: apps/v1

kind: Deployment

metadata:

name: {{ .Release.Name }}-deployment

labels:

app.kubernetes.io/name: {{ .Chart.Name }}

app.kubernetes.io/instance: {{ .Release.Name }}

spec:

replicas: {{ .Values.replicaCount }}

selector:

matchLabels:

app.kubernetes.io/name: {{ .Chart.Name }}

app.kubernetes.io/instance: {{ .Release.Name }}

template:

metadata:

labels:

app.kubernetes.io/name: {{ .Chart.Name }}

app.kubernetes.io/instance: {{ .Release.Name }}

spec:

containers:

- name: nginx

image: "{{ .Values.image.repository }}:{{ .Values.image.tag }}"

imagePullPolicy: "{{ .Values.image.pullPolicy }}"

ports:

- name: http

containerPort: 80

protocol: TCP

**4. templates/service.yaml**

Defines the NodePort service.

apiVersion: v1

kind: Service

metadata:

name: {{ .Release.Name }}-service

spec:

type: {{ .Values.service.type }}

ports:

- port: {{ .Values.service.port }}

targetPort: 80

nodePort: {{ .Values.service.nodePort }}

selector:

app.kubernetes.io/name: {{ .Chart.Name }}

app.kubernetes.io/instance: {{ .Release.Name }}

**How to Deploy the Project**

1. **Create the Helm Chart**: Save the files in a folder named simple-nginx.
2. **Deploy the Chart**:

helm install nginx-nodeport ./nginx-nodeport

1. **Verify Deployment**: Check the pods and services:

kubectl get pods

kubectl get svc

1. **Access the Application**: Access Nginx using the NodePort:

http://<Node-IP>:30000

**Expected Outcome**

* A single Nginx pod runs in the cluster.
* The pod is accessible via a NodePort service.