**DevOps Assignments (Local Setup, No Cloud Required)**

**5. Infrastructure Automation with Shell + Docker Compose**

**Objective:** Simulate DevOps automation without any cloud.

**• Tasks:**

**o** Automate setup of:

▪ Jenkins

▪ Redis

▪ Nginx

▪ Sample App

**o** Use Docker Compose to bring all services up

**o** Write a shell script (setup.sh) to prepare env and start services

**Setup instructions :**

set up and run a full stack including Jenkins (CI/CD), Redis (cache/database), Nginx (web server), and a custom app using Docker Compose and a shell script.

### **Docker Compose File (docker-compose.yml)**

This file defines all the services and how they work together.

services:

jenkins:

image: jenkins/jenkins:lts

ports:

- "8080:8080"

volumes:

- jenkins\_data:/var/jenkins\_home

healthcheck:

test: ["CMD", "curl", "-f", "http://localhost:8080"]

interval: 30s

retries: 3

redis:

image: redis:alpine

ports:

- "6379:6379"

healthcheck:

test: ["CMD", "redis-cli", "ping"]

interval: 10s

retries: 3

nginx:

image: nginx:alpine

ports:

- "80:80"

volumes:

- ./nginx/default.conf:/etc/nginx/conf.d/default.conf

depends\_on:

- sample-app

healthcheck:

test: ["CMD", "curl", "-f", "http://localhost"]

interval: 10s

retries: 3

sample-app:

build:

context: ./sample-app

dockerfile: Dockerfile

ports:

- "3000:3000"

healthcheck:

test: ["CMD", "curl", "-f", "http://localhost:3000"]

interval: 10s

retries: 3

volumes:

jenkins\_data:

### **Shell Script (**[**setup.sh**](http://setup.sh)**)**

### This script automates the deployment process in just a few commands:

#!/bin/bash

echo " Setting up environment..."

docker network create devops-net || true

echo " Building and starting containers..."

docker-compose up --build -d

echo " Checking container status..."

docker ps

echo " Tail logs (CTRL+C to exit)..."

docker-compose logs -f

**Run it with:** chmod +x setup.sh && ./[setup.sh](http://setup.sh)