Experiment-1

Aim: Start DevOps with a workflow that includes four phases: to do, in progress, code review, and done.

Require Software & Tools: JIRA, KANBAN.

Procedure:

Phase 1: To Do

Objective: Identify and prioritize tasks or features to be developed.

Key Actions:

- Define tasks clearly in a backlog.
- Prioritize tasks based on impact, urgency, and dependencies.
- Assign owners or teams to each task.

Tools: Jira, Trello, GitHub Issues, or Asana.

Phase 2: In Progress

Objective: Actively work on tasks selected from the "To Do" phase.

Key Actions:

- Begin coding or configuring based on task requirements.
- Update the task status to reflect ongoing work.
- Ensure team members collaborate effectively (e.g., stand-ups, pair programming).

Best Practices:

- Use branches in version control systems for individual tasks (e.g., Git feature branches).
- Write unit tests alongside development.

Phase 3: Code Review

Objective: Validate the quality, functionality, and security of the code.

Key Actions:

- Submit pull requests for peer review.
- Review code for adherence to standards, logic, and potential issues.
- Approve or request changes.

Tools: GitHub Pull Requests, GitLab Merge Requests, Bitbucket.

Automation: Integrate CI/CD pipelines to run tests automatically during reviews.

Phase 4: Done

Objective: Mark tasks as completed and deploy changes if necessary.

Key Actions:

- Merge the approved code into the main branch.
- Deploy to staging or production environments.
- Monitor deployment and validate functionality.

Post-Completion:

- Add documentation for the changes.
- Gather feedback from stakeholders or users.

Workflow Visualization

A Kanban board or similar visual representation can help track the status of tasks across these phases. For example:

1. To Do: Contains all pending tasks.

2. In Progress: Tasks currently being worked on.

3. Code Review: Tasks awaiting review or approval.

4. Done: Completed and deployed tasks.

Tools: Trello, Jira, Azure.

Experiment-2

Aim: Setups Eclipse for Devops

Require Software & Tools: Eclipse, Java jdk-17, Tomcat v.9, TestNG and Dependencies.

Procedure:

Step-1: Install Jdk-17 and set the java path in System environment

Step-2: Download eclipse zip file and extract the contents of all eclipse file

Step-3: Create a Maven Project from eclipse as:

OR

Click on File in left corner -> Click on new -> click on Maven Project and follow the given image steps.

b. Click Next and Search org.apache.maven.archetypes and select webapp file

c. In a group id you can type anything like name and in the artefact id: you can type anything like your roll number

d. Click Finish

e. Type Y and Press enter, you should see a Build Success message.

Step-4: now open your pom.xml file and add your dependencies (Given file, Copy and Paste)

- Maven testing dependency
- Maven junit dependency
- Javax servlet api dependency
- Maven surefire plugin
- Maven compiler plugin(set configuration)

Step-5: Update your project once (Right click on Project -> click on Maven -> click on Update Project)

Step-6: Download Apache tomcat v9 from Official website.

Step-7: After Download the Apache tomcat, Extract the .zip file and paste your apache-tomcat-9.0.98 folder in your folder

Step-8: Now click on your project option in Menu -> Click on Properties -> Click on Targeted Runtime

Step-9: Click on new

Step-10: Select Apache Tomcat v9.0

Step-11: Click on Browse and Select your Extracted file and then click on finish.

Step-12: Now Click on help Menu -> click on Install new Software.

Step-13: Click on Add and it will show a popup dialog box

In the place of Name type: TestNG

In the place of Location type: https://testng.org/testng-eclipse-update-site/

Step-14: Click on Add -> It will load a testNG Dependencies -> Select TestNg and then click Next.

It will take 10 minute to update TestNG in our Project

Step-15: After downloading the all the dependencies it will show some file select all and click on next.

Step-16: Accept Terms and condition and click on finish

Step-17: After finish it will show restart option (Restart the Project) otherwise just update once of your project.

Step-18: Now Login your GitHub Account.

Step-19: Create a New Repository and Copy your Repository and paste in notepad

Step-20: After that Click on your Profile in Right corner -> Click on Setting.

Step-21: It will show a new page, scroll down and select the developer setting -> click on personal access token -> select Token(Classic) -> click on Generate new token and select Generate new token(Classic) -> write your token name and select repo option and scroll down and click on Generate Token. (Follow the given Image)

Step-22: After Generating the token copy the token id and paste in a NotePad.

Step-23: Now come on your project and right click on your project -> Click on Team -> Click on Share Project.

Step- 24: It will open a Dialog Box for GitHub Setup, select the option Use or create repository in parent folder of project - > Select your Project and Click on Create Repository and click on Finish.

Step-25: After that again Right click on your Project and select the Team -> click on Commit -> and stage your all file -> and Write a comment (i.e. First Commit) and click on Commit and push -> after that it show an error dialog -> click OK -> now again click on Push Head Button

Step-26: After that again click on Push Head, it will show a dialog, paste your Repository URL in the URL section and type your GitHub User Id and Password in User, password section -> Click on preview -> Again click on Preview.

Step-27: After that it will again show a user Id and Password option -> just type your Github id in user section and paste your Token id in Password section -> click on push -> one more time it will ask user id and password just repeat your last step with user id and token id -> now check your repository on github, your file is uploaded or not

Step-28: Now you have to create a simple java code in SRC File, so first open your project from file manager -> open SRC - > Create two folder in SRC -> first name: java, second name: test -> now open test folder and create two more folder in test folder -> now come on your eclipse IDE and Update your project once -> After that create a java class file with a Statement “Hello World” in your SRC/TEST/java folder.

Step-29: Now Push again your all unstage files in your GitHub Repository with different version or Comment (it is just for Version Control).

Step-30: Now Check again your Repository your recent file is uploaded or not with different version.

Experiment-3

- Ec2 instance
- Ssh---custom---0.0.0.0/0
- Custom tcp---8080---anywhere---0.0.0.0/0
- http---anywhere---0.0.0.0/0
- connect ssh

-
  ```
  sudo wget -O /etc/apt/keyrings/jenkins-keyring.asc \
    https://pkg.jenkins.io/debian-stable/jenkins.io-2023.key
  ```

-
  ```
  echo "deb [signed-by=/etc/apt/keyrings/jenkins-keyring.asc]" \
    https://pkg.jenkins.io/debian-stable binary/ | sudo tee \
    /etc/apt/sources.list.d/jenkins.list > /dev/null
  ```
- `sudo apt-get update`
- `sudo apt update`
- `sudo apt install fontconfig openjdk-21-jre`
- `java -version`
- `sudo apt-get update`
- `sudo apt-get install Jenkins`
- `jenkins -version`
- `sudo systemctl enable jenkins`
- `sudo systemctl start jenkins`
- `sudo systemctl status jenkins`

Experiment-4

- 2 ec2 instances (sit and exp3)
- On exp3 download java, Jenkins
- Go Jenkins.io -> download -> right click on generic java package (.war) ->copy link address
- In git bash enter: $wget https://get.jenkins.io/war-stable/2.492.2/jenkins.war
- Start the Jenkins: $java -jar jenkins.war
- Browser ip:8080
- Check java is installed or not. If not install then install java
- Check maven is installed or not. if not install then install maven
- Check jenkins is installed or not . if not install then install Jenkins
- Go to the root directory
- sudo su -
- cd /opt
- Open the browser type maven download
- wget https://dlcdn.apache.org/maven/maven-3/3.9.9/binaries/apache-maven-3.9.9-bin.tar.gz
- Unzip the maven zip file: tar -xvzf apache-maven-3.9.9-bin.tar.gz
- Rename apache-maven-3.9.9 to maven: mv apache-maven-3.9.9 maven
- cd maven

- ll
- Note down the maven path
- #pwd
  Output: /opt/maven
- Move to: cd bin
- #ll
- Note down the maven bin path (/opt/maven/bin): #pwd
- Now check the maven is install or not
  mvn --version (or) ./mvn --version
- Go to root dir: cd ~
- mvn --version
- It shows not found
- So we need to create environment variable
- Go to root directory with below command: cd ~
- ll
- sudo vim .profile
- Go to the insert mode(click on I) and give the maven, java home and m2 paths here
- M2_HOME=/opt/maven
- M2=/opt/maven/bin
- JAVA_HOME=/usr/lib/jvm/java-21-openjdk-amd64
- PATH=$PATH:HOME/bin:$JAVA:$M2:HOME:$M2
- :wq
- To get the java_home path: #find / -name java-21* (/usr/lib/jvm/java-21-openjdk-amd64)
- #echo $PATH
- U CAN'T SEE THE JAVA AND MAVEN PATH ABVOE . SO WE NEED TO RESTART THE .PROFILE FILE with below command: #source .profile
- Now go to the jenkins dashboard u need to install one plugin (maven integratin)
  Managejenkins-->plugins-->available plugins-->maven integration plugin
- Without this plugin we can't able to see the maven project
- Once installed, click on the restart Jenkins
- U need to add java and maven paths in the jenkins
  Go to jenkins dashboard-->managejenkins-->tools Add JDK and add MAVEN
  Java path: /usr/lib/jvm/java-21-openjdk-amd64
  Maven path: /opt/maven
- Dashboard-->newitem-->war(give any name)
- Source code management-->select git--> give the github url project path(open my github account-->go to repositories)
- Select the repository select maven project click on ok
- Select the build goal and options write the command clean install click on apply and save
- Click on build now

- If job execution is taking lot of time
- Then logout the jenkins
- Stop the dev instance
- Restart the dev instanc
- Start the jenkins server

Experiment-5

How to setup Ansible and SSH keys in AWS

⚙️ Ansible and SSH Key Setup in AWS

📌 Step 1: Launch EC2 Instances

- Create **3 Ubuntu EC2 Instances**:
  - ansible (Control Node)
  - server1 (Managed Node)
  - server2 (Managed Node)
- HTTP---80---Anywhere

📌 Step 2: Setup on Ansible EC2 Instance

🔧 Login and Install Ansible

```
sudo su -

apt update -y

apt-add-repository ppa:ansible/ansible

apt update

apt install ansible -y

ansible --version
```

📌 Step 3: Configure Hostnames for Easier Access

Edit the hosts file:

nano /etc/hosts

Add the following lines:

server1-public-ip server1

server2-public-ip server2

📌 Step 4: Generate SSH Keys and Share with Servers

🔑 Generate SSH key on Ansible server:

ssh-keygen -t rsa

# Press Enter three times to accept defaults

cat ~/.ssh/id_rsa.pub

🔑 Copy and paste the public key to server1 and server2:

On both server1 and server2:

sudo apt update

mkdir -p ~/.ssh

nano ~/.ssh/authorized_keys

# Paste the public key here (do not remove existing text)

📌 Step 5: Verify SSH Connection from Ansible

On Ansible server, test SSH access:

ssh ubuntu@server1

exit

ssh ubuntu@server2

exit

✅ If no password is asked, SSH keys are properly set up.

📌 Step 6: Setup Ansible Inventory and Config

Create ansible directory:

```
mkdir /root/ansible

cd /root/ansible
```

Create inventory file:

```
nano inventory
```

Add:

```
[webservers]

server1

server2
```

Create ansible.cfg file:

```
nano ansible.cfg
```

Add:

```
[defaults]

inventory=/root/ansible/inventory

remote_user=ubuntu

ask_pass=false
```

📌 Step 7: Create YAML Playbook to Install Web Servers

```
nano install_webservers.yml
```

Paste:

```
---

- name: Install Web Servers

  hosts: webservers

  become: true

  tasks:



    - name: Install Nginx on server1

      apt:
```

```
      name: nginx
      state: present
    when: inventory_hostname == 'server1'

  - name: Install Apache on server2
    apt:
      name: apache2
      state: present
    when: inventory_hostname == 'server2'

  - name: Ensure Nginx is started and enabled on server1
    service:
      name: nginx
      state: started
      enabled: yes
    when: inventory_hostname == 'server1'

  - name: Ensure Apache is started and enabled on server2
    service:
      name: apache2
      state: started
      enabled: yes
    when: inventory_hostname == 'server2'
```

📌 Step 8: Run the Playbook

```
ansible-playbook -i /root/ansible/inventory install_webservers.yml
```

✅ **Verification:**

- Open server1 public IP in browser → You should see **Nginx**

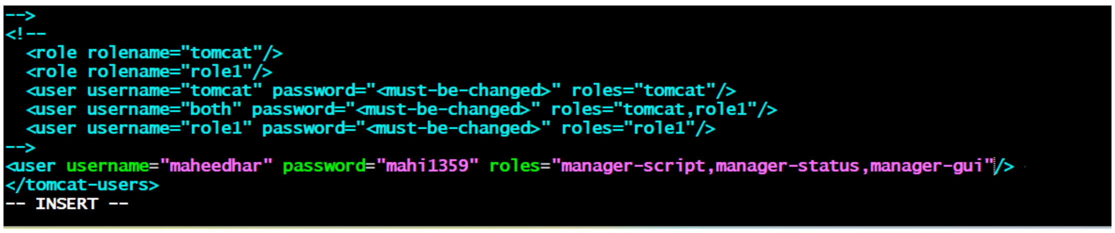
- Open server2 public IP in browser → You should see **Apache2**

🎉 **Done!** You've successfully set up Ansible with SSH keys and deployed web servers.

Experiment-6

Deploy artifcat into sit server

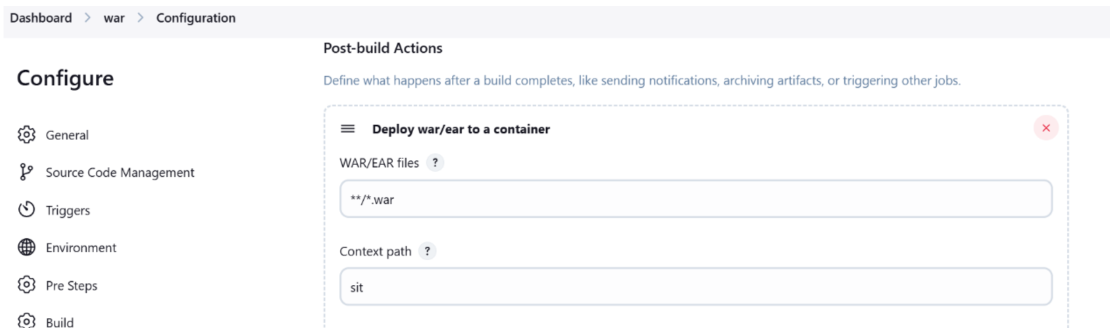
- Connect to sit machine with git bash
- Update the apt repository: sudo apt-get update
- Install tomcat 9: sudo apt-get install -y tomcat9
- Now install tomcat9 admin as well: sudo apt-get install tomcat9-admin
- how can we access the tomcat
  Take the publicip of sit server and add 8080(copy paste this command on the browser)
- Now go to below path
  cd /etc/tomcat9
- $ll
- now we need to add user in the tomcat-users.xml file: sudo vim tomcat-users.xml
- Go to the insert mode



```
-->
<!--
  <role rolename="tomcat"/>
  <role rolename="role1"/>
  <user username="tomcat" password="<must-be-changed>" roles="tomcat"/>
  <user username="both" password="<must-be-changed>" roles="tomcat,role1"/>
  <user username="role1" password="<must-be-changed>" roles="role1"/>
-->
<user username="maheedhar" password="mahi1359" roles="manager-script,manager-status,manager-gui"/>
</tomcat-users>
-- INSERT --
```

:wq

- Now restart the tomcat service: sudo service tomcat9 restart
- Now u can add one plugin in the jenkins (deploy to container)
- Manage jenkins-->plugins-->available plugins-->select deploy to container and install it
- Now go to the jenkins dashboard
- Select the war job
- Select the configure
- Select the post build action and search deploy war/ear to a container


Dashboard > war > Configuration

Configure

General
Source Code Management
Triggers
Environment
Pre Steps
Build

Post-build Actions

Define what happens after a build completes, like sending notifications, archiving artifacts, or triggering other jobs.

Deploy war/ear to a container

WAR/EAR files: **/*.war

Context path: sit

- Add container tomcat 9
- Add the credentials
- Select the credentials and give the tomcat url (sit server path along with 8080 port no)
- Click on apply and save
- And run the build now
- How can we check the artifact is deployed or not
- Take the sit public ip address and port no and give the context path name
- Ex: http://3.110.55.250:8080/sit

Experiment-7

```
$ git clone https://github.com/RamyaReddyM/DevOps-2.git

$ cd Devops-2

$ ll

$ cd src

$ cd main

$ cd webapp

$ vim index.jsp

$ git add .

$ git status

$ git commit -m "commit msg"

$ git status

$ git push origin master
```

- Go to Jenkins
- Configure project
- Triggers

- Untick all
- Tick only poll scm
- Schedule: * * * * *
- Apply and save
- Don’t build now
- It will automatically build
- Refresh tomcat
- Changes will be seen automatically

Experiment-8

Build And Deploy a grid for Chrome and Firefox based testing

Step 1: Launch AWS EC2 Instance:-

Go to AWS EC2 Console.

Launch a new instance with the following settings:

-Name: SeleniumGridServer

- Amazon Machine Image: Ubuntu Server 22.04 LTS (Free Tier)

- Instance Type: t2.micro

- Key Pair: Create New Key Pair or select one

- Add Security Group Rule:

1)SSH (default)

2)Custom TCP (port:4444, Source type: Anywhere)

Step 2: Connect to EC2 Instance

Step 3: Install Docker and Docker Compose:-

1. sudo apt update

To Install Docker

2. sudo apt install -y docker.io

To start and enable Docker

3. sudo systemctl start docker
4. sudo systemctl enable docker

To Install Docker Compose

5. sudo curl -L "https://github.com/docker/compose/releases/download/v2.17.3/docker-compose-$(uname -s)-$(uname -m)" -o /usr/local/bin/docker-compose

6. sudo chmod +x /usr/local/bin/docker-compose

To Check versions

7. docker –version

8. docker-compose –version

Step 4: Create Selenium Grid with Docker Compose:-

1. mkdir selenium-grid && cd selenium-grid

2. nano docker-compose.yml

Paste this code:

```
version: "3"

services:

  selenium-hub:

    image: selenium/hub:4.0.0-rc-2-20210930

    container_name: seleniumHub

    ports:

      - "4444:4444"


  chrome:

    image: selenium/node-chrome:4.0.0-rc-2-20210930

    container_name: chromeNode

    depends_on:

      - selenium-hub

    environment:

      - SE_EVENT_BUS_HOST=selenium-hub

      - SE_EVENT_BUS_PUBLISH_PORT=4442

      - SE_EVENT_BUS_SUBSCRIBE_PORT=4443

    shm_size: 2g
  firefox:
    image: selenium/node-firefox:4.0.0-rc-2-20210930
    container_name: firefoxNode
    depends_on:
      - selenium-hub
    environment:
      - SE_EVENT_BUS_HOST=selenium-hub
      - SE_EVENT_BUS_PUBLISH_PORT=4442
      - SE_EVENT_BUS_SUBSCRIBE_PORT=4443
    shm_size: 2g
```

(OR)

```
version: "3"
services:
  selenium-hub:
    image: selenium/hub:4.0.0-rc-2-20210930
    container_name: selniumHub
    ports:
      - "4444:4444"

  chrome:
    image: selenium/node-chrome:4.0.0-rc-2-20210930
    container_name: chromeNode
    depends_on:
      - selenium-hub
    environment:
      SE_EVENT_BUS_HOST: selenium-hub
      SE_EVENT_BUS_PUBLISH_PORT: 4442
      SE_EVENT_BUS_SUBSCRIBE_PORT: 4443

  firefox:
    image: selenium/node-firefox:4.0.0-rc-2-20210930
    container_name: firefoxNode
    depends_on:
      - selenium-hub
    environment:
      SE_EVENT_BUS_HOST: selenium-hub
      SE_EVENT_BUS_PUBLISH_PORT: 4442
      SE_EVENT_BUS_SUBSCRIBE_PORT: 4443
```

Save (Ctrl + O, Enter), then exit (Ctrl + X)

Step 5: Start the Selenium Grid:-

To Run the grid:

```
sudo docker-compose up -d
```

To Check containers:

```
sudo docker ps
```

Step 6: Access Selenium Grid UI:-

Open in your browser: http://<Your-EC2-Public-IP>:4444/ui

Step 7: Run a Sample Python Test:-
Create a Virtual Environment:

Install Python and Selenium:

```
sudo apt install python3-venv python3-full -y
```

```
python3 -m venv venv
```

```
source venv/bin/activate
pip install selenium
nano test_grid.py
```

Paste below code:

```
from selenium import webdriver

from selenium.webdriver.common.by import By

browser = "chrome"

GRID_URL = "http://localhost:4444/wd/hub"

options = None

if browser == "chrome":

    options = webdriver.ChromeOptions()

elif browser == "firefox":

    options = webdriver.FirefoxOptions()

else:

    raise Exception("Unsupported browser!")

driver = webdriver.Remote(

command_executor=GRID_URL,

    options=options

)

driver.get("https://www.google.com")

print("Title:", driver.title)

driver.quit()
```

Save (Ctrl + O, Enter), then exit (Ctrl + X)

```
python3 test_grid.py
```

Experiment-9

- Create the **google cloud console** free account
- It is a two step process

- It is deducting the 2 rupees from your account and it will give the 330$ free credit points.
- **NOTE: Don't active the full account**
- Once the account is created u can login to google cloud console
- NOW CREATE THE KUBERNETES CLUSTER
- Open the cloud shell
- To see the cluster list run the below command:

  ```
  gcloud container clusters list
  ```

  (no clusters are there)
- You create the cluster with below command:

  ```
  gcloud container clusters create my-cluster --zone us-central1-a
  ```
- Cluster creation is taking 5 to 10 min time
- Once the cluster is created u can see the below message automatically
- Now u go and check kubernetes engine--->cluster, you can see the my-cluster is running
- Run the below command

  ```
  gcloud container clusters get-credentials my-cluster --zone us-central1-a
  ```
- To see the list of nodes:

  ```
  kubectl get nodes
  ```
- Create the pods

  ```
  kubectl run --image tomcat webserver
  ```
- To see the pods list

  ```
  kubectl get pods
  ```
- To get the list of pods along with ip address and which node the pod is running

  ```
  kubectl get pods -o wide
  ```
- Actually u can create the pod using definition file Create pd-df1.yaml

```
vim pd-df1.yaml
```

```
apiVersion: v1

kind: Pod

metadata:

  name: jenkins-pod
```

```
spec:
  containers:
  - name: myjenkins
    image: jenkins/jenkins
    ports:
    - containerPort: 8080
      hostPort: 8080
```

- for accessing the application u need to open the port
- How to open the port:

```
gcloud compute firewall-rules create rule2 --allow tcp:8080

kubectl create -f pd-df1.yaml

kubectl get pods -o wide

kubectl get nodes -o wide
```

- How can we access the pod
- Take the external ip add the port no 8080
- Open the browser paste ipaddress:8080
- Now u can able to see the jenkins

Experiment-10

✅ A) Create an EC2 Instance

- Launch an **Ubuntu** EC2 instance on AWS.
- Select appropriate key pair and security group (allow port 22(SSH), 80(HTTP), and 3000(Custom TCP)).

✅ B) Install Required Packages

SSH into your EC2 instance:

```
ssh -i your-key.pem ubuntu@your-ec2-public-ip
```

Update and install packages:

```
# 1. Update system and install Nginx
```

```
sudo apt update -y
sudo apt install nginx -y

# 2. Install Node.js (latest stable) using NVM (preferred)
curl -o- https://raw.githubusercontent.com/nvm-sh/nvm/v0.39.7/install.sh | bash
source ~/.bashrc
nvm install 18
nvm use 18

# 3. Install PM2 globally
npm install -g pm2
```

```
sudo apt update -y
sudo apt install nginx -y
sudo apt install nodejs -y
sudo apt install npm -y
sudo npm install -g pm2
```

✅ C) Create a Node.js App

1. Create your app directory and file:

```
cd /home/ubuntu
nano hello.js
```

Paste this code:

```
const http = require('http');
const hostname = '0.0.0.0';
const port = 3000;
const server = http.createServer((req, res) => {
  res.statusCode = 200;
  res.setHeader('Content-Type', 'text/plain');
  res.end('Hello World!\n');
});
server.listen(port, hostname, () => {
  console.log(`Server running at http://${hostname}:${port}/`);
});
```

Save with Ctrl+O, then Enter, then Ctrl+X.

2. Run the app with PM2:

```
pm2 start hello.js --name app
```

✅ D) Set Up Nginx as Reverse Proxy

```
sudo rm /etc/nginx/sites-enabled/default
sudo ln -s /etc/nginx/sites-available/example.com /etc/nginx/sites-enabled/
sudo systemctl restart nginx
```

Edit Nginx config:

```
sudo nano /etc/nginx/sites-available/example.com
```

Paste this (replace with your EC2 public IP):

```
server {
    listen 80;
    server_name YOUR_EC2_PUBLIC_IP;

    location / {
        proxy_pass http://localhost:3000;
        proxy_http_version 1.1;
        proxy_set_header Upgrade $http_upgrade;
        proxy_set_header Connection 'upgrade';
        proxy_set_header Host $host;
        proxy_cache_bypass $http_upgrade;
    }
}
```

```
sudo nginx -t
sudo systemctl reload nginx
```

Create a symlink:

```
sudo ln -s /etc/nginx/sites-available/example.com /etc/nginx/sites-enabled/
```

Restart Nginx:

```
sudo systemctl restart nginx
```

Test your app in a browser: http://YOUR_EC2_PUBLIC_IP
You should see: **Hello World!**

✅ E) Set Up Docker

1. Install Docker and Docker Compose:

```
sudo apt install -y docker.io
sudo apt install -y docker-compose
```

2. Prepare app directory for Docker:

```
mkdir -p /home/ubuntu/node
cd /home/ubuntu/node
```

Move your hello.js file:

```
cp /home/ubuntu/hello.js .
```

3. Create Dockerfile:

```
nano Dockerfile
```

Paste this:

```
FROM node:12
WORKDIR /app
COPY . .
```

RUN npm install

EXPOSE 3000

CMD ["node", "hello.js"]

Save and exit.

4. Create .dockerignore:

nano .dockerignore

Paste:

node_modules

npm-debug.log

✅ **F) Build and Push Docker Image**

1. Build Docker image:

sudo docker build -t your_dockerhub_username/node-app:latest .

Replace your_dockerhub_username with your real Docker Hub username.

2. Check image is built:

sudo docker images

3. Log in to Docker Hub:

sudo docker login

Enter your Docker Hub username and password.

4. Push the image:

sudo docker push your_dockerhub_username/node-app:latest

5. Verify on Docker Hub:

Go to: https://hub.docker.com/repositories
Check if your image node-app is listed under your username.

Experiment-11

ACCESS GRAFANA:

- kubectl get secret prometheus-grafana -n monitoring -o jsonpath="{.data.admin-user}" | base64 --decode ; echo
  If you run the above command u can see the username for grafana (**admin**)

- kubectl get secret prometheus-grafana -n monitoring -o jsonpath="{.data.admin-password}" | base64 --decode ; echo
  If you run the abvoe command u can see the password for grafana (**prom-operator**)
- PORT FORWARDING
  kubectl port-forward svc/prometheus-grafana 3000:80 -n monitoring
- Click on the web preview give the port no 3000 and click on change and preview. u can see the grafana
- You can login with admin and prom-operator

Experiment-12

PROMETHEUS SETUP:

- helm repo add prometheus https://prometheus-community.github.io/helm-charts
- helm repo update
- helm repo add prometheus-community https://prometheus-community.github.io/helm-charts
- helm repo update
- helm install prometheus prometheus-community/kube-prometheus-stack --namespace monitoring --create-namespace
  This will install prometheus, alertmanager and grafana
- Check the prometheus pods and services:
  kubectl get pods -n monitoring

  kubectl get svc -n monitoring
- Access prometheus and port forwarding

  kubectl port-forward svc/prometheus-kube-prometheus-prometheus 9090:9090 -n monitoring
- Click on the webpreview
- Change port no to 9090
- Click on change and preview
- Now u can able to see prometheus in the browser