**Node.js Application with Docker, Docker Compose, GitHub, and GitLab CI/CD**

**Step 1: Install Required Tools on Ubuntu**

Before starting, install **Docker, Docker Compose, GitHub CLI, and GitLab Runner**.

**Install Docker**

sudo apt update

sudo apt install -y apt-transport-https ca-certificates curl software-properties-common

curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo gpg --dearmor -o /usr/share/keyrings/docker-archive-keyring.gpg

echo "deb [arch=amd64 signed-by=/usr/share/keyrings/docker-archive-keyring.gpg] https://download.docker.com/linux/ubuntu focal stable" | sudo tee /etc/apt/sources.list.d/docker.list > /dev/null

sudo apt update

sudo apt install -y docker-ce docker-ce-cli containerd.io

sudo usermod -aG docker $USER

newgrp docker

docker –version

**Install Docker Compose**

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

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

docker-compose --version

**🛠 Install GitHub CLI**

sudo apt install gh

gh auth login

**🛠 Install GitLab Runner**

curl -L https://packages.gitlab.com/install/repositories/runner/gitlab-runner/script.deb.sh | sudo bash

sudo apt install gitlab-runner -y

gitlab-runner --version

**Step 2: Create a Node.js Application**

mkdir nodejs-app && cd nodejs-app

npm init -y

npm install express

**🛠 Create server.js**

const express = require('express');

const app = express();

const port = process.env.PORT || 3000;

app.get('/', (req, res) => {

res.send('Hello from Node.js running with Docker, GitHub & GitLab CI/CD!');

});

app.listen(port, () => {

console.log(`Server is running on port ${port}`);

});

**Step 3: Create Docker Configuration**

**🛠 Create a Dockerfile**

FROM node:14

WORKDIR /app

COPY package.json .

RUN npm install

COPY . .

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

EXPOSE 3000

**🛠 Create docker-compose.yml**

version: '3'

services:

nodejs-app:

build: .

ports:

- "3000:3000"

**Step 4: Test the Application Locally with Docker Compose**

docker-compose up --build -d

docker ps

curl http://localhost:3000

Stop the application:

docker-compose down

✅ **Docker setup is working!** 🎉

**Step 5: Push the Code to GitHub**

**Initialize a GitHub Repository**

git add .

git commit -m "Initial commit - Node.js with Docker Compose"

git push -u origin main

✅ **Your Node.js application is now hosted on GitHub!** 🎉

**Step 6: Push the Code to GitLab**

**Create a GitLab Repository**  
Go to [GitLab](https://gitlab.com) → **New Project** → **Import from GitHub**

**Step 7: Set Up GitLab CI/CD**

**🛠 Create .gitlab-ci.yml**

stages:

- build

- test

- push\_to\_dockerhub

- deploy

build\_job:

stage: build

script:

- docker build -t node-app:latest .

tags:

- dev

test\_job:

stage: test

script:

- echo "testing ..."

tags:

- dev

push\_job:

stage: push\_to\_dockerhub

script:

- docker login -u $DOCKERHUB\_USER\_NAME -p $DOCKERHUB\_PASS

- docker image tag node-app:latest $DOCKERHUB\_USER\_NAME/node-app:latest

- docker push $DOCKERHUB\_USER\_NAME/node-app:latest

tags:

- dev

deploy\_job:

stage: deploy

script:

- docker compose up -d

tags:

- dev