

DevOps Pipeline Case Study

PHASE 1

1. Creating file structure

```
cd "/Users/varshitanukala/Documents/Capgemini internship/case studies/2"  
  
mkdir -p devops-nodejs-pipeline/myapp/src  
  
mkdir devops-nodejs-pipeline/infra  
  
mkdir devops-nodejs-pipeline/ansible  
  
mkdir devops-nodejs-pipeline/scripts  
  
touch devops-nodejs-pipeline/myapp/Jenkinsfile  
  
touch devops-nodejs-pipeline/myapp/src/index.js  
  
touch devops-nodejs-pipeline/infra/main.tf  
  
touch devops-nodejs-pipeline/infra/variables.tf  
  
touch devops-nodejs-pipeline/ansible/deploy.yml  
  
touch devops-nodejs-pipeline/ansible/hosts.ini  
  
touch devops-nodejs-pipeline/scripts/build_and_push.sh  
  
touch devops-nodejs-pipeline/scripts/cleanup.sh  
  
touch devops-nodejs-pipeline/REPORT.md
```

Step 1: Git & GitHub Workflow

1. New Repository

- Name: devops-nodejs-pipeline
- Description: End-to-end CI/CD pipeline using Docker, Jenkins, Ansible, Terraform, AWS

- URL: <https://github.com/nukalavarshita/devops-nodejs-pipeline.git>

2. GIT

```
cd "/Users/varshitanukala/Documents/Capgemini internship/case studies/2/
devops-nodejs-pipeline"
```

```
git init
```

```
git remote add origin https://github.com/nukalavarshita/devops-nodejs-pipeline.git
```

```
git add .
```

```
git commit -m "Initial project structure"
```

```
git branch -M main
```

```
git push -u origin main
```

```
git checkout -b develop
```

```
git push -u origin develop
```

```
varshitanukala@Varshitas-MacBook-Pro ~ % cd "/Users/varshitanukala/Documents/Capgemini internship/case studies/2/
mkdir -p devops-nodejs-pipeline/myapp/src
mkdir devops-nodejs-pipeline/infra
mkdir devops-nodejs-pipeline/ansible
mkdir devops-nodejs-pipeline/scripts

touch devops-nodejs-pipeline/myapp/Jenkinsfile
touch devops-nodejs-pipeline/myapp/src/index.js
touch devops-nodejs-pipeline/infra/main.tf
touch devops-nodejs-pipeline/infra/variables.tf
touch devops-nodejs-pipeline/ansible/deploy.yml
touch devops-nodejs-pipeline/ansible/hosts.ini
touch devops-nodejs-pipeline/scripts/build_and_push.sh
touch devops-nodejs-pipeline/scripts/cleanup.sh
touch devops-nodejs-pipeline/REPORT.md

varshitanukala@Varshitas-MacBook-Pro 2 % cd "/Users/varshitanukala/Documents/Capgemini internship/case studies/2/devops-nodejs-pipeline"
git init

Reinitialized existing Git repository in /Users/varshitanukala/Documents/Capgemini internship/case studies/2/devops-nodejs-pipeline/.git/
varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline % git init
Reinitialized existing Git repository in /Users/varshitanukala/Documents/Capgemini internship/case studies/2/devops-nodejs-pipeline/.git/
varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline % git remote add origin https://github.com/nukalavarshita/devops-nodejs-pipeline.git
[ varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline % git add .
git commit -m "Initial project structure"

[main (root-commit) 273049b] Initial project structure
 10 files changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 .DS_Store
 create mode 100644 REPORT.md
 create mode 100644 ansible/deploy.yml
 create mode 100644 ansible/hosts.ini
 create mode 100644 infra/main.tf
 create mode 100644 infra/variables.tf
 create mode 100644 myapp/Jenkinsfile
 create mode 100644 myapp/src/index.js
 create mode 100644 scripts/build_and_push.sh
 create mode 100644 scripts/cleanup.sh
```

```

create mode 100644 infra/main.tf
create mode 100644 infra/variables.tf
create mode 100644 myapp/Jenkinsfile
create mode 100644 myapp/index.js
create mode 100644 scripts/build_and_push.sh
create mode 100644 scripts/cleanup.sh
varshitanukala@Vrshtas-MacBook-Pro devops-nodejs-pipeline % git branch -M main
git push -u origin main

git checkout -b develop
git push -u origin develop

Username for 'https://github.com': nukalavarshta
Password for 'https://nukalavarshta@github.com':
remote: Support for password authentication was removed on August 13, 2021.
remote: Please see https://docs.github.com/get-started/getting-started-with-git/about-remote-repositories#cloning-with-https-urls for information on currently recommended modes of authentication.
fatal: Authentication failed for 'https://github.com/nukalavarshta/devops-nodejs-pipeline.git'
Switched to a new branch 'develop'
Username for 'https://github.com': nukalavarshta
Password for 'https://nukalavarshta@github.com':
remote: Support for password authentication was removed on August 13, 2021.
remote: Please see https://docs.github.com/get-started/getting-started-with-git/about-remote-repositories#cloning-with-https-urls for information on currently recommended modes of authentication.
fatal: Authentication failed for 'https://github.com/nukalavarshta/devops-nodejs-pipeline.git'
varshitanukala@Vrshtas-MacBook-Pro devops-nodejs-pipeline % git branch -M main
git push -u origin main

git checkout -b develop
git push -u origin develop

Username for 'https://github.com': nukalavarshta
Password for 'https://nukalavarshta@github.com':
remote: Support for password authentication was removed on August 13, 2021.
remote: Please see https://docs.github.com/get-started/getting-started-with-git/about-remote-repositories#cloning-with-https-urls for information on currently recommended modes of authentication.
fatal: Authentication failed for 'https://github.com/nukalavarshta/devops-nodejs-pipeline.git'
Switched to a new branch 'develop'
Username for 'https://github.com': C
varshitanukala@Vrshtas-MacBook-Pro devops-nodejs-pipeline % git branch -M main
git push -u origin main

git checkout -b develop
git push -u origin develop

Username for 'https://github.com': nukalavarshta
Password for 'https://nukalavarshta@github.com':
Enumerating objects: 9, done.
Counting objects: 100% (9/9), done.
Delta compression using up to 8 threads
Compressing objects: 100% (7/7), done.
Writing objects: 100% (9/9), 1.16 KiB | 1.16 MiB/s, done.
Total 9 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/nukalavarshta/devops-nodejs-pipeline.git
 * [new branch]   main      -> develop
branch 'main' set up to track 'origin/main'.
Switched to a new branch 'develop'
Total 0 (delta 0), reused 0 (delta 0), pack-reused 0
remote:
remote: Create a pull request for 'develop' on GitHub by visiting:
remote:   https://github.com/nukalavarshta/devops-nodejs-pipeline/pull/new/develop
remote: To https://github.com/nukalavarshta/devops-nodejs-pipeline.git
 * [new branch]   develop -> develop
branch 'develop' set up to track 'origin/develop'.
varshitanukala@Vrshtas-MacBook-Pro devops-nodejs-pipeline %

```

3. Protect **main** branch (via GitHub Web UI)

- Go to your repo → Settings → Branches → Add protection rule:
 - Branch: **main**
 - Require pull request before merging
 - Require at least 1 approving review

The screenshot shows the 'Branch protection rule' configuration for the 'main' branch. The 'Branch name pattern' is set to 'main'. The rule applies to 1 branch, also named 'main'. Under 'Protect matching branches', several options are enabled:

- Require a pull request before merging**: When enabled, all commits must be made to a non-protected branch and submitted via a pull request before they can be merged into a branch that matches this rule.
- Require approvals**: When enabled, pull requests targeting a matching branch require a number of approvals and no changes requested before they can be merged. The required number of approvals before merging is set to 1.
- Dismiss stale pull request approvals when new commits are pushed**: New reviewable commits pushed to a matching branch will dismiss pull request review approvals.
- Require review from Code Owners**: Requires an approved review in pull requests including files with a designated code owner.
- Require approval of the most recent reviewable push**: Whether the most recent reviewable push must be approved by someone other than the person who pushed it.
- Require status checks to pass before merging**: Choose which status checks must pass before branches can be merged into a branch that matches this rule. When enabled, commits must first be pushed to another branch, then merged or pushed directly to a branch that matches this rule after status checks have passed.
- Require branches to be up to date before merging**: This ensures pull requests targeting a matching branch have been tested with the latest code. This setting will not take effect unless at least one status check is enabled (see below).

A preview button is visible on the right side of the configuration area.

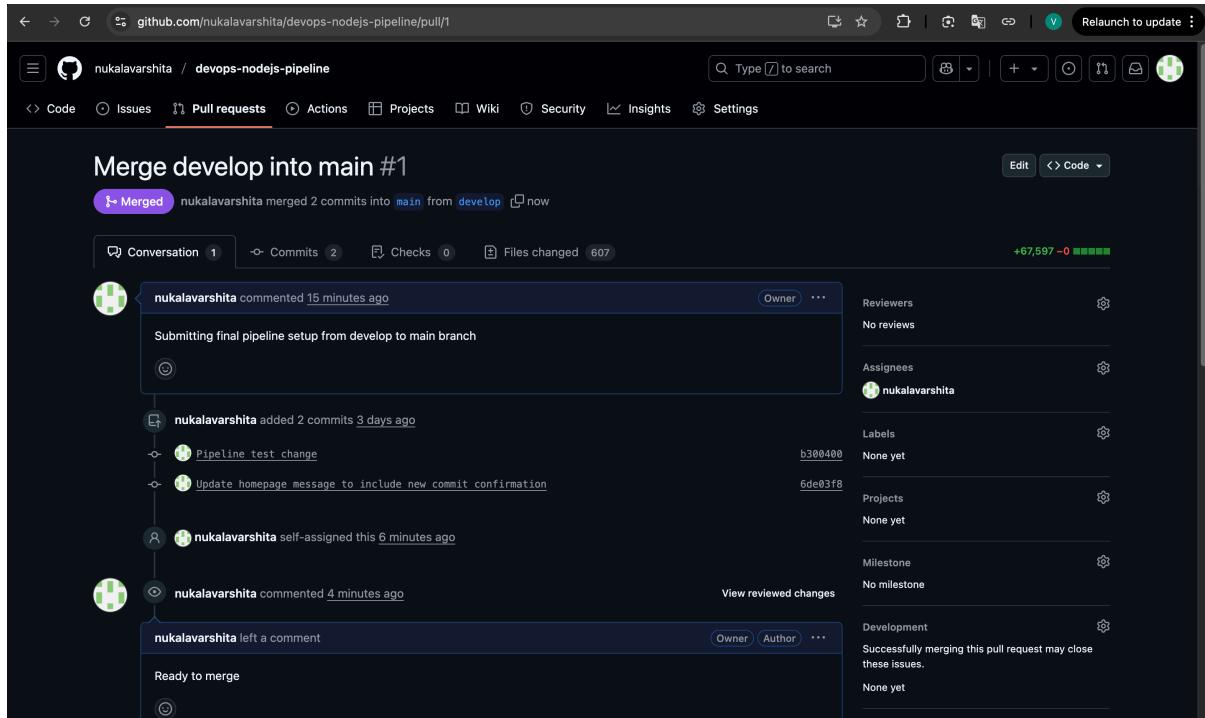
The screenshot shows a pull request titled 'Merge develop into main #1'. The pull request has 2 commits from the 'develop' branch. The commit details are:

- nukalavarshita commented now: Submitting final pipeline setup from develop to main branch
- nukalavarshita added 2 commits 3 days ago:
 - Pipeline test change (commit b300400)
 - Update homepage message to include new commit confirmation (commit 6de03f8)

The pull request interface shows the following status and requirements:

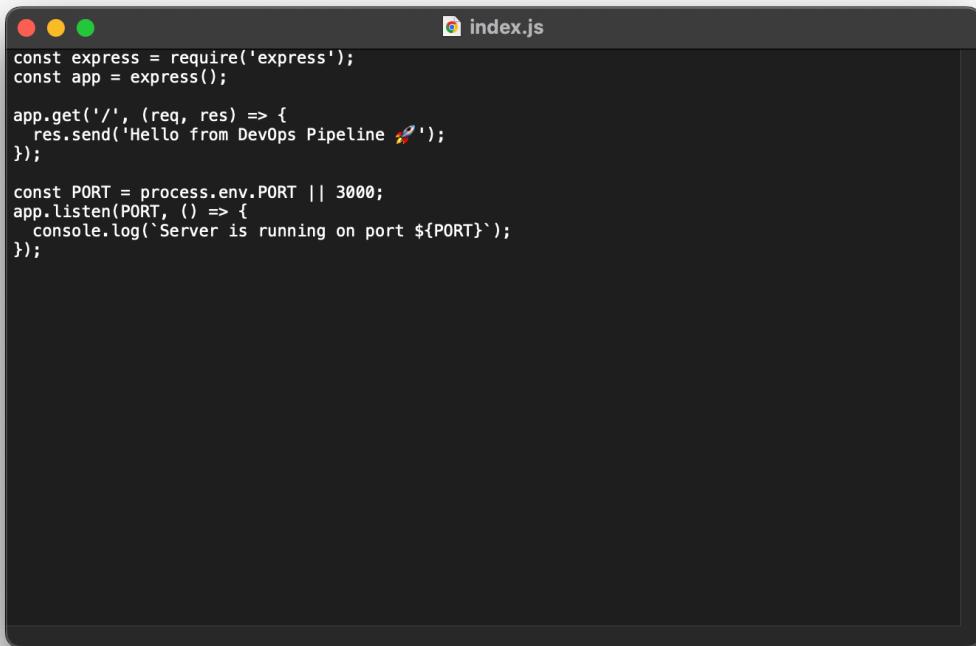
- Review required**: At least 1 approving review is required by reviewers with write access.
- Merging is blocked**: At least 1 approving review is required by reviewers with write access.
- Merge without waiting for requirements to be met (bypass rules)**: A button to merge the pull request immediately.

On the right side, there are sections for Reviewers, Assignees, Labels, Projects, Milestone, Development, and Notifications. The Notifications section includes an 'Unsubscribe' button.



PHASE 2

Node.js App (myapp/src/index.js)

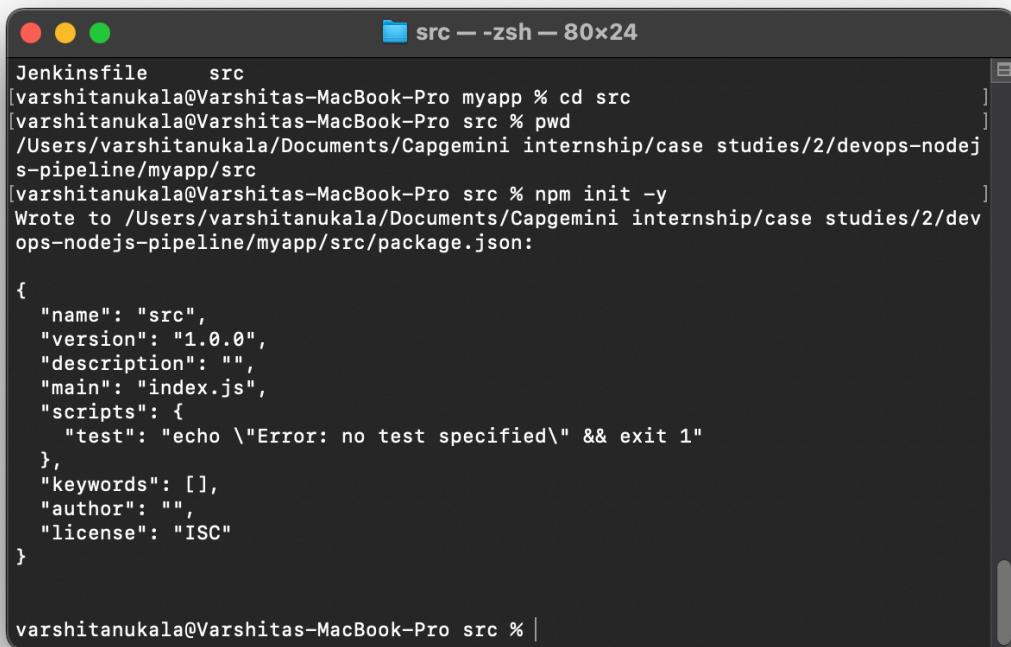


```
index.js
const express = require('express');
const app = express();

app.get('/', (req, res) => {
  res.send('Hello from DevOps Pipeline 🚀');
});

const PORT = process.env.PORT || 3000;
app.listen(PORT, () => {
  console.log(`Server is running on port ${PORT}`);
});
```

>> npm init -y — — — this will create a package.json file in src folder

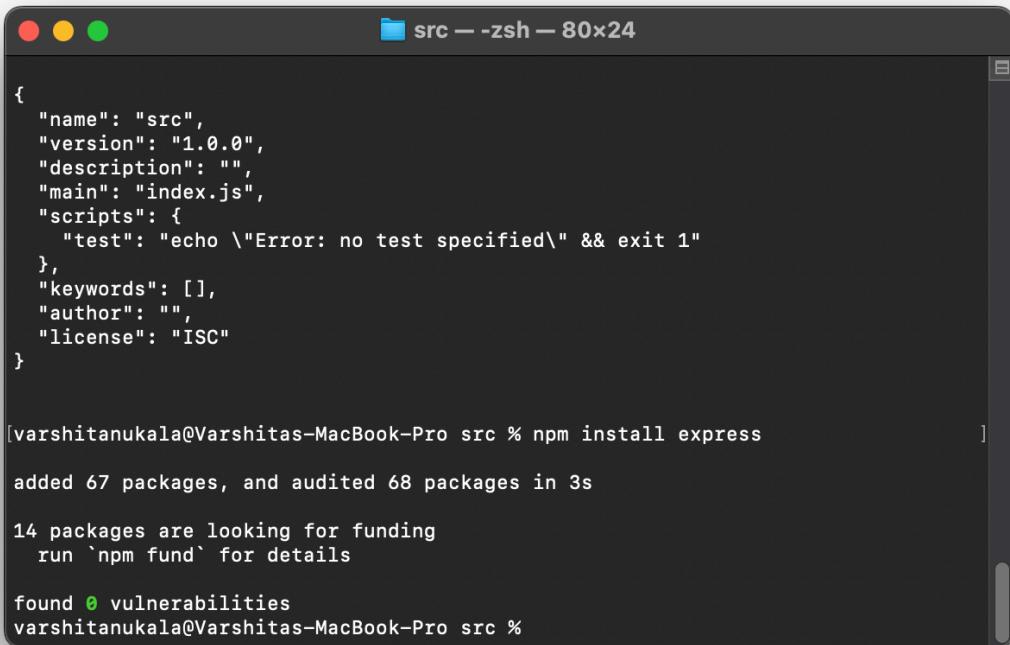


```
src -- zsh -- 80x24
Jenkinsfile      src
[varshitanukala@Varshitas-MacBook-Pro myapp % cd src
[varshitanukala@Varshitas-MacBook-Pro src % pwd
/Users/varshitanukala/Documents/Capgemini internship/case studies/2/devops-nodejs-pipeline/myapp/src
[varshitanukala@Varshitas-MacBook-Pro src % npm init -y
Wrote to /Users/varshitanukala/Documents/Capgemini internship/case studies/2/devops-nodejs-pipeline/myapp/src/package.json:

{
  "name": "src",
  "version": "1.0.0",
  "description": "",
  "main": "index.js",
  "scripts": {
    "test": "echo \\\"Error: no test specified\\\" && exit 1"
  },
  "keywords": [],
  "author": "",
  "license": "ISC"
}

varshitanukala@Varshitas-MacBook-Pro src % |
```

```
>> npm install express
```



A screenshot of a macOS terminal window titled "src — -zsh — 80x24". The window shows the command "npm install express" being run, along with its output: "added 67 packages, and audited 68 packages in 3s", "14 packages are looking for funding", "run `npm fund` for details", and "found 0 vulnerabilities". The terminal has a dark theme.

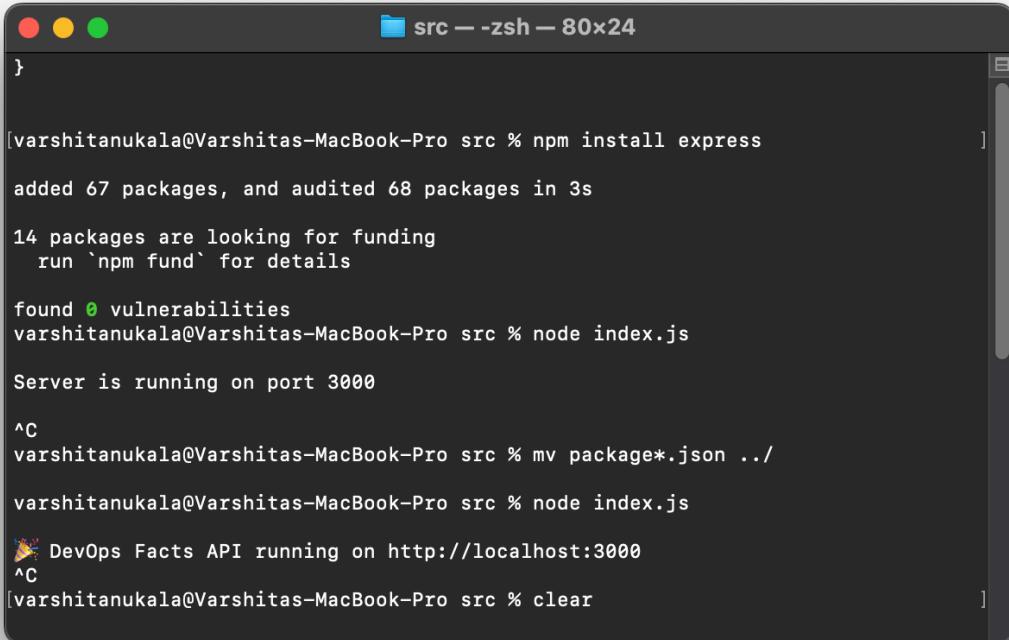
```
{
  "name": "src",
  "version": "1.0.0",
  "description": "",
  "main": "index.js",
  "scripts": {
    "test": "echo \\"$Error: no test specified\\" && exit 1"
  },
  "keywords": [],
  "author": "",
  "license": "ISC"
}

[varshitanukala@Varshitas-MacBook-Pro src % npm install express
added 67 packages, and audited 68 packages in 3s
14 packages are looking for funding
  run `npm fund` for details
found 0 vulnerabilities
varshitanukala@Varshitas-MacBook-Pro src %
```

```
>> node index.js      --- testing app locally
```



```
>> mv package*.json ../          ---Moving package.json and  
package-lock.json up one level into myapp/ so that Docker can install  
dependencies during build
```



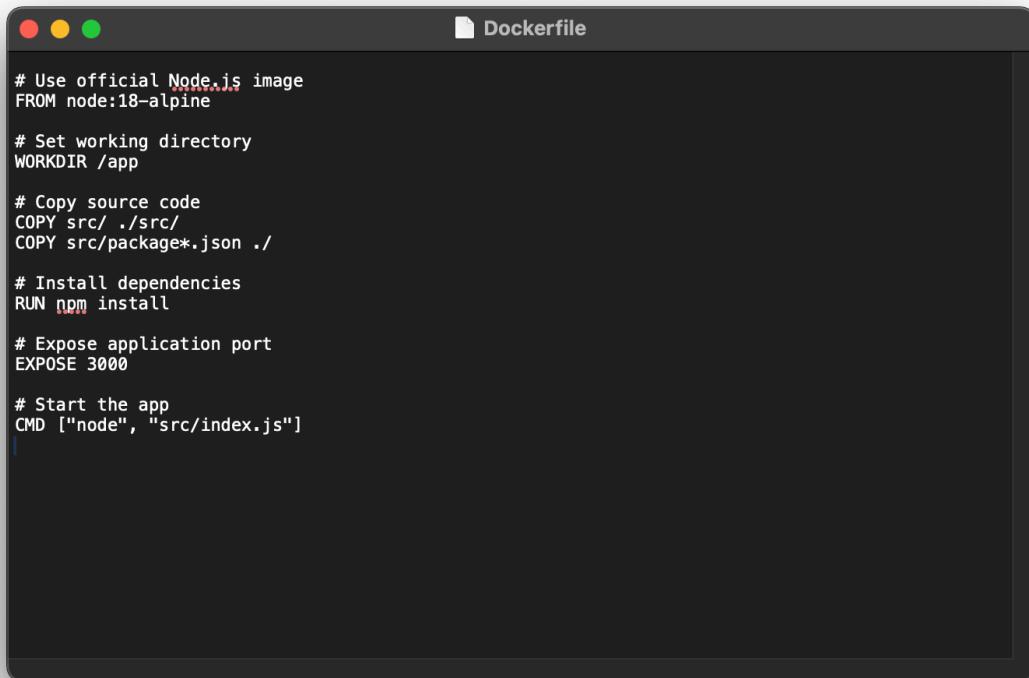
A terminal window titled 'src — -zsh — 80x24' showing the following command-line session:

```
[varshitanukala@Varshitas-MacBook-Pro src % npm install express
added 67 packages, and audited 68 packages in 3s
14 packages are looking for funding
  run `npm fund` for details
found 0 vulnerabilities
varshitanukala@Varshitas-MacBook-Pro src % node index.js
Server is running on port 3000
^C
varshitanukala@Varshitas-MacBook-Pro src % mv package*.json ../
varshitanukala@Varshitas-MacBook-Pro src % node index.js
⚡  DevOps Facts API running on http://localhost:3000
^C
[varshitanukala@Varshitas-MacBook-Pro src % clear]
```

PHASE 3

Dockerization

```
touch devops-nodejs-pipeline/myapp/Dockerfile
```



```
# Use official Node.js image
FROM node:18-alpine

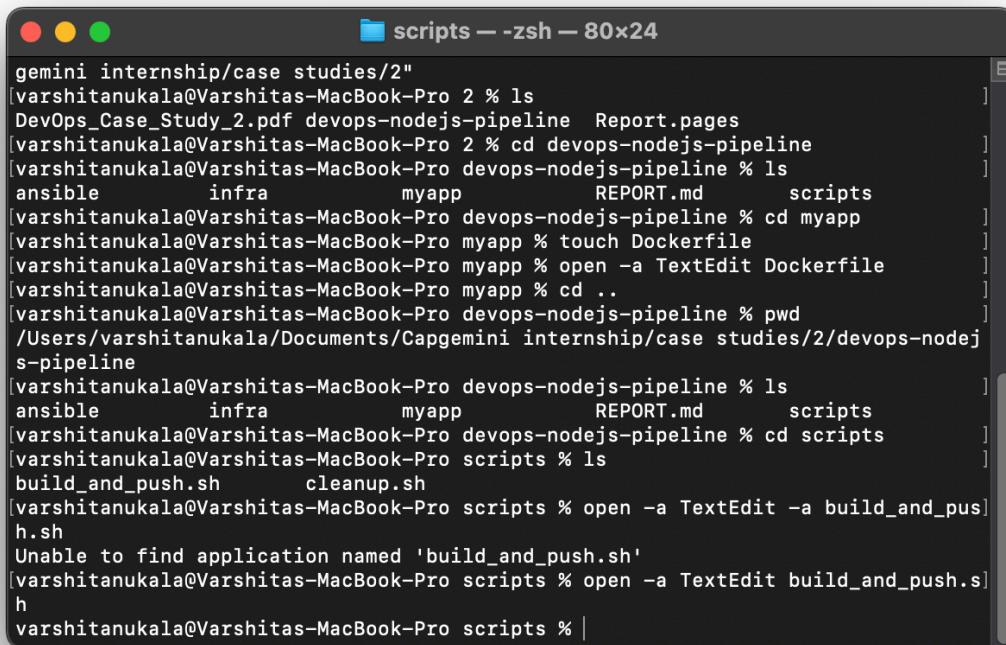
# Set working directory
WORKDIR /app

# Copy source code
COPY src/ ./src/
COPY src/package*.json .

# Install dependencies
RUN npm install

# Expose application port
EXPOSE 3000

# Start the app
CMD ["node", "src/index.js"]
```



```
gemini internship/case studies/2"
[varshitanukala@Varshitas-MacBook-Pro 2 % ls
DevOps_Case_Study_2.pdf devops-nodejs-pipeline Report.pages
[varshitanukala@Varshitas-MacBook-Pro 2 % cd devops-nodejs-pipeline
[varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline % ls
ansible      infra      myapp      REPORT.md      scripts
[varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline % cd myapp
[varshitanukala@Varshitas-MacBook-Pro myapp % touch Dockerfile
[varshitanukala@Varshitas-MacBook-Pro myapp % open -aTextEdit Dockerfile
[varshitanukala@Varshitas-MacBook-Pro myapp % cd ..
[varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline % pwd
/Users/varshitanukala/Documents/Capgemini/internship/case studies/2/devops-nodejs-pipeline
[varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline % ls
ansible      infra      myapp      REPORT.md      scripts
[varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline % cd scripts
[varshitanukala@Varshitas-MacBook-Pro scripts % ls
build_and_push.sh    cleanup.sh
[varshitanukala@Varshitas-MacBook-Pro scripts % open -aTextEdit -a build_and_push.sh
h.sh
Unable to find application named 'build_and_push.sh'
[varshitanukala@Varshitas-MacBook-Pro scripts % open -aTextEdit build_and_push.sh
h
varshitanukala@Varshitas-MacBook-Pro scripts % |
```

```
#!/usr/bin/env bash
set -euo pipefail

echo "⚡ Starting Docker build and push..."

# Replace with your DockerHub username
DOCKER_USER="varshitanukala"
APP_NAME="myapp"
GIT_COMMIT=$(git rev-parse --short HEAD)
IMAGE="$DOCKER_USER/$APP_NAME:$GIT_COMMIT"

echo "🏗️ Building Docker image: $IMAGE"
docker build -t $IMAGE ./myapp

echo "🚀 Pushing image to DockerHub..."
docker push $IMAGE

echo "✅ Build and push complete: $IMAGE"
```

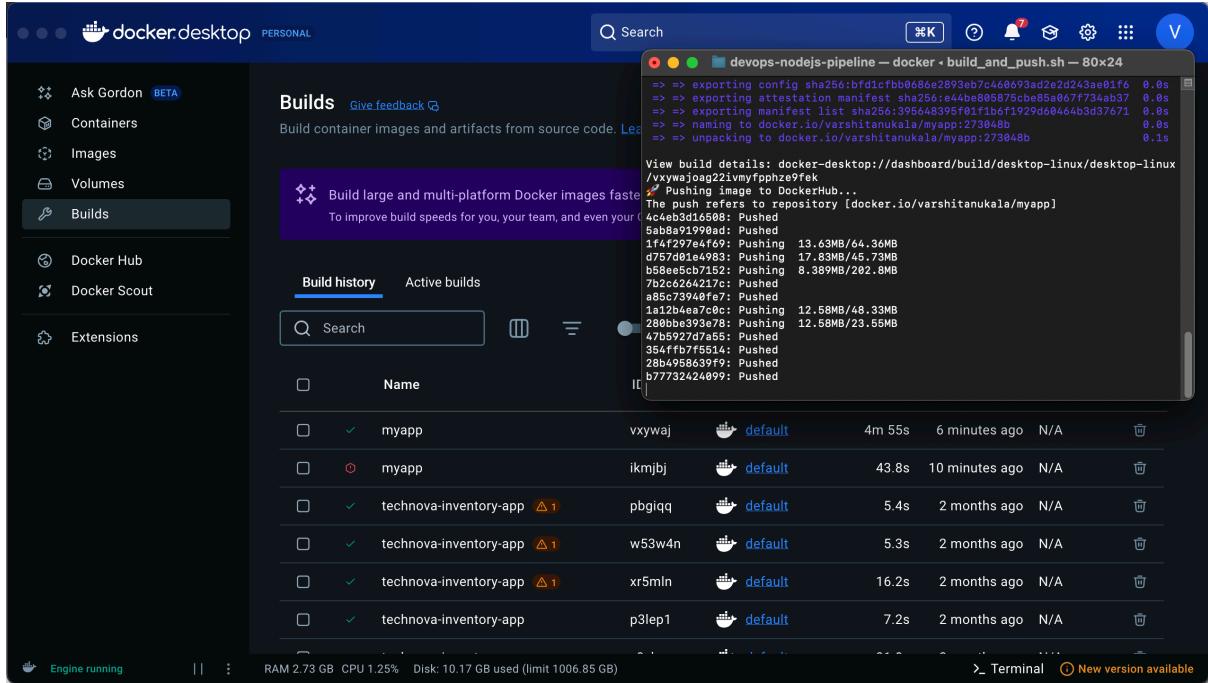
```
s-pipeline
[varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline % ls
ansible      infra      myapp      REPORT.md      scripts
[varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline % cd scripts
[varshitanukala@Varshitas-MacBook-Pro scripts % ls
build_and_push.sh    cleanup.sh
[varshitanukala@Varshitas-MacBook-Pro scripts % open -aTextEdit -a build_and_push.sh
Unable to find application named 'build_and_push.sh'
[varshitanukala@Varshitas-MacBook-Pro scripts % open -aTextEdit build_and_push.sh
varshitanukala@Varshitas-MacBook-Pro scripts % chmod +x scripts/build_and_push.sh

chmod: scripts/build_and_push.sh: No such file or directory
varshitanukala@Varshitas-MacBook-Pro scripts % chmod +x scripts/build_and_push.sh
chmod: scripts/build_and_push.sh: No such file or directory
[varshitanukala@Varshitas-MacBook-Pro scripts % cd ..
[varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline % ls
ansible      infra      myapp      REPORT.md      scripts
[varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline % chmod +x scripts/build_and_push.sh
varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline % |
```

```
[varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline % ls
ansible      infra      myapp      REPORT.md      scripts
[varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline % cd scripts
[varshitanukala@Varshitas-MacBook-Pro scripts % ls
build_and_push.sh      cleanup.sh
[varshitanukala@Varshitas-MacBook-Pro scripts % cd..
zsh: command not found: cd..
[varshitanukala@Varshitas-MacBook-Pro scripts % cd my
cd: no such file or directory: my
[varshitanukala@Varshitas-MacBook-Pro scripts % cd ..
[varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline % ls
ansible      infra      myapp      REPORT.md      scripts
[varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline % cd myapp
[varshitanukala@Varshitas-MacBook-Pro myapp % ls
Dockerfile      package-lock.json      src
Jenkinsfile      package.json
[varshitanukala@Varshitas-MacBook-Pro myapp % open -aTextEdit Dockerfile
varshitanukala@Varshitas-MacBook-Pro myapp % ./scripts/build_and_push.sh

zsh: no such file or directory: ./scripts/build_and_push.sh
[varshitanukala@Varshitas-MacBook-Pro myapp % cd ..
varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline % ./scripts/build_an
d_push.sh
```

```
Starting Docker build and push...
Building Docker image: varshitanukala/myapp:273048b
[+] Building 254.5s (5/10)
=> [internal] load build definition from Dockerfile               docker:desktop-linux
=> => transferring dockerfile: 446B                                0.0s
=> [internal] load metadata for docker.io/library/node:18          0.0s
=> [auth] library/node:pull token for registry-1.docker.io        4.6s
=> [internal] load .dockerrcignore                                0.0s
=> => transferring context: 2B                                    0.0s
=> [1/5] FROM docker.io/library/node:18@sha256:c6ae79e38498325db67193d  249.8s
=> => resolve docker.io/library/node:18@sha256:c6ae79e38498325db67193d39  0.0s
=> => sha256:354ffb7f5514f32472b48da285613641ab5a8407968 1.25MB / 1.25MB  1.6s
=> => sha256:d757d01e4983550a8a8861a19fe0a4356d8f3be 45.73MB / 45.73MB  126.5s
=> => sha256:28b4958639f99536cfbcb306d031319fd840236d205945a 447B / 447B  0.6s
=> => sha256:4c4eb3d16508b3a9f96749a2d76662a53ec4f171cfa 3.33kB / 3.33kB  1.3s
=> => sha256:b58ee5cb7152015437e4a9b306ae9e25a26a 164.63MB / 202.76MB  249.2s
=> => sha256:1f4f297e4f699ae0f384d5cc1ea42065f58a115 64.36MB / 64.36MB  151.3s
=> => sha256:280bbe393e788ced1dcbb033580604b24de083601 23.55MB / 23.55MB  45.2s
=> => sha256:1a12b4ea7c0ce04aa0e98be0a8c9942162bac71 48.33MB / 48.33MB  114.6s
=> => extracting sha256:1a12b4ea7c0ce04aa0e98be0a8c9942162bac71426f734fe  0.6s
=> => extracting sha256:280bbe393e788ced1dcbb033580604b24de083601624337be  0.2s
=> => extracting sha256:1f4f297e4f699ae0f384d5cc1ea42065f58a115aa0a634d4  1.1s
=> [internal] load build context                                0.1s
```



```
varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline % ./scripts/build_and_push.sh

Starting Docker build and push...
Building Docker image: varshitanukala/myapp:273048b
[+] Building 295.9s (11/11) FINISHED                                            docker:desktop-linux
=> [internal] load build definition from Dockerfile                         0.0s
=> => transferring dockerfile: 446B                                         0.0s
=> [internal] load metadata for docker.io/library/node:18                  4.6s
=> [auth] library/node:pull token for registry-1.docker.io                 0.0s
=> [internal] load .dockerrigignore                                         0.0s
=> => transferring context: 2B                                           0.0s
=> [1/5] FROM docker.io/library/node:18@sha256:c6ae79e38498325db67193d  284.7s
=> => resolve docker.io/library/node:18@sha256:c6ae79e38498325db67193d39  0.0s
=> => sha256:354ffb7f5514f32472b48da285613641ab5a8407968 1.25MB / 1.25MB 1.6s
=> => sha256:d757d01e4983550a8a8861a19fe0a4356d8f3be 45.73MB / 45.73MB 126.5s
=> => sha256:28b4958639f99536cfbcb306d031319fd840236d205945a 447B / 447B 0.6s
=> => sha256:4c4eb3d16508b3a9f96749a2d76662a53ec4f171cfa 3.33kB / 3.33kB 1.3s
=> => sha256:b58ee5cb7152015437e4a9b3066ae9e25a26a 202.76MB / 202.76MB 279.6s
=> => sha256:1f4f297e4f699ae0f384d5cc1ea42065f58a115 64.36MB / 64.36MB 151.3s
=> => sha256:280bbe393e788ced1dc033580604b24de083601 23.55MB / 23.55MB 45.2s
=> => sha256:1a12b4ea7c0ce04aa0e98be0a8c9942162bac71 48.33MB / 48.33MB 114.6s
=> => extracting sha256:1a12b4ea7c0ce04aa0e98be0a8c9942162bac71426f734fe 0.6s
=> => extracting sha256:280bbe393e788ced1dc033580604b24de083601624337be 0.2s
```

```

View build details: docker-desktop://dashboard/build/desktop-linux/desktop-linux
/vxywajoag22ivmyfpphzefek
🚀 Pushing image to DockerHub...
The push refers to repository [docker.io/varshitanukala/myapp]
4c4eb3d16508: Pushed
5ab8a91990ad: Pushed
1f4f297e4f69: Pushed
d757d01e4983: Pushed
b58ee5cb7152: Pushing 68.16MB/202.8MB
b58ee5cb7152: Pushed
a85c73940fe7: Pushed
1a12b4ea7c0c: Pushed
280bbe393e78: Pushed
47b5927d7a55: Pushed
354ffb7f5514: Pushed
28b4958639f9: Pushed
b77732424099: Pushed

273048b: digest: sha256:395648395f01f1b6f1929d60464b3d37671eb685dc927f780f8c4d5
4ad1faa9 size: 856
✓ Build and push complete: varshitanukala/myapp:273048b
varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline %
varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline %

```

Docker Desktop interface showing the Builds section. The sidebar on the left includes options like Ask Gordon (BETA), Containers, Images, Volumes, Builds (selected), Docker Hub, Docker Scout, and Extensions. The main area shows a list of builds under the 'Build history' tab. Each build entry includes the name, ID, builder (default), duration, creation time, and author (N/A). A purple banner at the top promotes Docker Build Cloud.

Name	ID	Builder	Duration	Created	Author
myapp	vxywaj	default	4m 55s	27 minutes ago	N/A
myapp	ikmjbj	default	43.8s	32 minutes ago	N/A
technova-inventory-app	pbgiqq	default	5.4s	2 months ago	N/A
technova-inventory-app	w53w4n	default	5.3s	2 months ago	N/A
technova-inventory-app	xr5mln	default	16.2s	2 months ago	N/A
technova-inventory-app	p3lep1	default	7.2s	2 months ago	N/A

Docker Desktop interface showing a detailed view of a build named 'myapp'. The sidebar on the left includes options like Ask Gordon (BETA), Containers, Images, Volumes, Builds (selected), Docker Hub, Docker Scout, and Extensions. The main area shows the build details for 'myapp'. It includes a summary card with status (Completed), duration (4m 55s), builder (desktop-linux), and author (N/A). Below this, there are tabs for Info, Source, Logs, and History. The 'Info' tab displays source details: File name (myapp), Remote source location (https://github.com/nukalavarshita/devops-nodejs-pipeline.git), and Revision (273048b). The 'Build timing' section provides a breakdown of execution time across four categories: Real time (4m 55.7s), Accumulated time (4m 55.8s), Cache usage (0/10), and Parallel execution. Resource usage at the bottom shows RAM (2.61 GB), CPU (0.00%), and Disk (10.17 GB used / limit 1006.85 GB).

Phase 4:

Terraform Provisioning

infra/

```
variables.tf
variable "region" {
  default = "ap-south-1"
}

variable "instance_type" {
  default = "t2.micro"
}

main.tf
provider "aws" {
  region = "ap-south-1"
}

# Import key from your local machine
resource "aws_key_pair" "varshita" {
  key_name   = "varshita-key"
  public_key = file("~/ssh/varshita-key.pub")
}

# Create VPC
resource "aws_vpc" "main_vpc" {
  cidr_block = "10.0.0.0/16"
}

# Internet Gateway
resource "aws_internet_gateway" "gw" {
  vpc_id = aws_vpc.main_vpc.id
}

# Subnet in ap-south-1a
resource "aws_subnet" "main_subnet" {
  vpc_id           = aws_vpc.main_vpc.id
  cidr_block       = "10.0.1.0/24"
  availability_zone = "ap-south-1a"
  map_public_ip_on_launch = true
}

# Route Table for outbound internet access
resource "aws_route_table" "rt" {
  vpc_id = aws_vpc.main_vpc.id

  route {
    cidr_block = "0.0.0.0/0"
    gateway_id = aws_internet_gateway.gw.id
  }
}

# Associate route table with subnet
resource "aws_route_table_association" "a" {
  subnet_id   = aws_subnet.main_subnet.id
  route_table_id = aws_route_table.rt.id
}

# Security Group allowing SSH from anywhere
resource "aws_security_group" "ssh_sg" {
  name        = "allow_ssh"
  description = "Allow SSH inbound traffic"
  vpc_id      = aws_vpc.main_vpc.id
}
```

```
main.tf
```

```
}

# Security Group allowing SSH from anywhere
resource "aws_security_group" "ssh_sg" {
    name      = "allow_ssh"
    description = "Allow SSH inbound traffic"
    vpc_id    = aws_vpc.main_vpc.id

    ingress {
        description = "SSH access"
        from_port   = 22
        to_port     = 22
        protocol    = "tcp"
        cidr_blocks = ["0.0.0.0/0"] # Consider restricting this later
    }

    egress {
        from_port   = 0
        to_port     = 0
        protocol    = "-1"
        cidr_blocks = ["0.0.0.0/0"]
    }
}

# EC2 Instance with Node.js pre-installed
resource "aws_instance" "app_server" {
    ami           = "ami-0a0f1259dd1c90938" # Amazon Linux 2023 (ap-south-1)
    instance_type = "t2.micro"
    key_name      = aws_key_pair.varshita.key_name
    subnet_id     = aws_subnet.main_subnet.id
    vpc_security_group_ids = [aws_security_group.ssh_sg.id]
    associate_public_ip_address = true

    tags = {
        Name = "NodejsAppServer"
    }

    provisioner "remote-exec" {
        inline = [
            "sudo yum update -y",
            "sudo yum install -y nodejs npm"
        ]

        connection {
            type      = "ssh"
            user      = "ec2-user"
            private_key = file("~/ssh/varshita-key")
            host      = self.public_ip
            timeout    = "2m"
        }
    }
}
```

```
>> terraform init
```

```
.../devops-nodejs-pipeline/infra -- zsh
[...]
varshitanukala@Varshitas-MacBook-Pro infra % terraform init
Initializing the backend...
Initializing provider plugins...
- Reusing previous version of hashicorp/aws from the dependency lock file
- Using previously-installed hashicorp/aws v6.4.0

Terraform has been successfully initialized!

You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.

If you ever set or change modules or backend configuration for Terraform,
rerun this command to reinitialize your working directory. If you forget, other
commands will detect it and remind you to do so if necessary.
varshitanukala@Varshitas-MacBook-Pro infra %
```

```
>> ssh-keygen -t rsa -b 2048 -f ~/.ssh/id_rsa
```

```
>> terraform plan
```

```
.../devops-nodejs-pipeline/infra -- zsh
[...]
varshitanukala@Varshitas-MacBook-Pro infra % terraform plan
+ default_route_table_id          = (known after apply)
+ default_security_group_id       = (known after apply)
+ dhcp_options_id                = (known after apply)
+ enable_dns_hostnames           = true
+ enable_dns_support              = true
+ enable_network_address_usage_metrics = (known after apply)
+ id                             = (known after apply)
+ instance_tenancy                = "default"
+ ipv6_association_id             = (known after apply)
+ ipv6_cidr_block                 = (known after apply)
+ ipv6_cidr_block_network_border_group = (known after apply)
+ main_route_table_id              = (known after apply)
+ owner_id                        = (known after apply)
+ region                          = "ap-south-1"
+ tags_all                         = (known after apply)
}

Plan: 5 to add, 0 to change, 0 to destroy.

Note: You didn't use the -out option to save this plan, so Terraform can't
guarantee to take exactly these actions if you run "terraform apply" now.
varshitanukala@Varshitas-MacBook-Pro infra %
```

```
>> terraform apply
>> terraform apply -auto-approve
```

```
aws_instance.app_server (remote-exec):     Release notes:
aws_instance.app_server (remote-exec):     https://docs.aws.amazon.com/linux/al
2023/release-notes/relnotes-2023.8.20250721.html

aws_instance.app_server (remote-exec): =====

aws_instance.app_server (remote-exec): Installed:
aws_instance.app_server (remote-exec):   libbrotli-1.0.9-4.amzn2023.0.2.x86_64
aws_instance.app_server (remote-exec):   nodejs-1:18.18.2-1.amzn2023.0.1.x86_64
aws_instance.app_server (remote-exec):   nodejs-docs-1:18.18.2-1.amzn2023.0.1.no
arch
aws_instance.app_server (remote-exec):   nodejs-full-i18n-1:18.18.2-1.amzn2023.0
.1.x86_64
aws_instance.app_server (remote-exec):   nodejs-libs-1:18.18.2-1.amzn2023.0.1.x8
6_64
aws_instance.app_server (remote-exec):   nodejs-npm-1:9.8.1-1.18.18.2.1.amzn2023
.0.1.x86_64

aws_instance.app_server (remote-exec): Complete!
aws_instance.app_server: Still creating... [01m00s elapsed]
aws_instance.app_server: Creation complete after 1m0s [id=i-021017e00412d8f51]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.
varshitanukala@Varshitas-MacBook-Pro infra %
```

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
devops-nodejs...	i-0a66427e93789ed41	Terminated	t2.micro	-	View alarms +	ap-south-1a
NodejsAppSer...	i-021017e00412d8f51	Running	t2.micro	2/2 checks passed	View alarms +	ap-south-1a

Phase 5

Ansible Setup and App Deployment

The image shows two terminal windows side-by-side. The top window is titled 'hosts.ini' and contains the following configuration:

```
[app]
13.126.147.169 ansible_user=ec2-user ansible_ssh_private_key_file=~/ssh/varshita-key
```

The bottom window is titled 'deploy.yml' and contains the following Ansible playbook code:

```
---
- name: Deploy Node.js application
  hosts: app
  become: yes

  tasks:
    - name: Update system packages
      yum:
        name: '*'
        state: latest

    - name: Install required packages
      yum:
        name:
          - nodejs
          - npm
          - rsync
        state: present

    - name: Create app directory on EC2
      file:
        path: /home/ec2-user/myapp
        state: directory
        owner: ec2-user
        group: ec2-user
        mode: '0755'

    - name: Sync application files (excluding node_modules)
      synchronize:
        src: ../myapp/src/
        dest: /home/ec2-user/myapp/
        rsync_opts:
          - "--exclude=node_modules"
        delegate_to: localhost

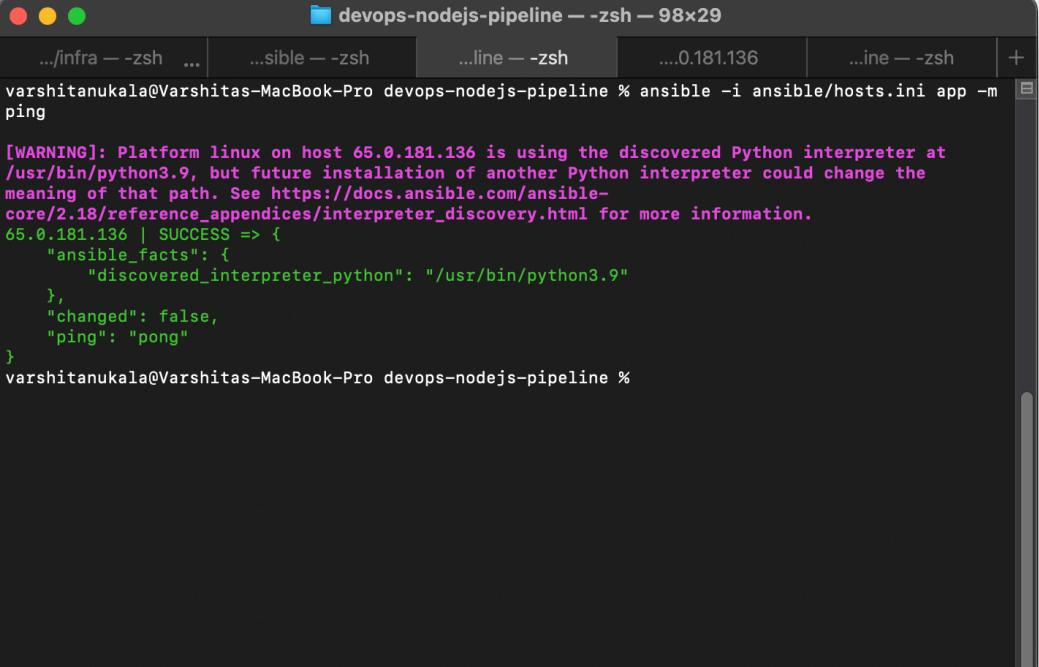
    - name: Install Node.js dependencies
      shell: npm install
      args:
        chdir: /home/ec2-user/myapp/

    - name: Start the Node.js app
      shell: nohup node index.js > output.log 2>&1 &
      args:
        chdir: /home/ec2-user/myapp/
```

```
>> ssh -i ~/Downloads/new-varshita-key.pem ec2-user@65.0.181.136
```

Root --->

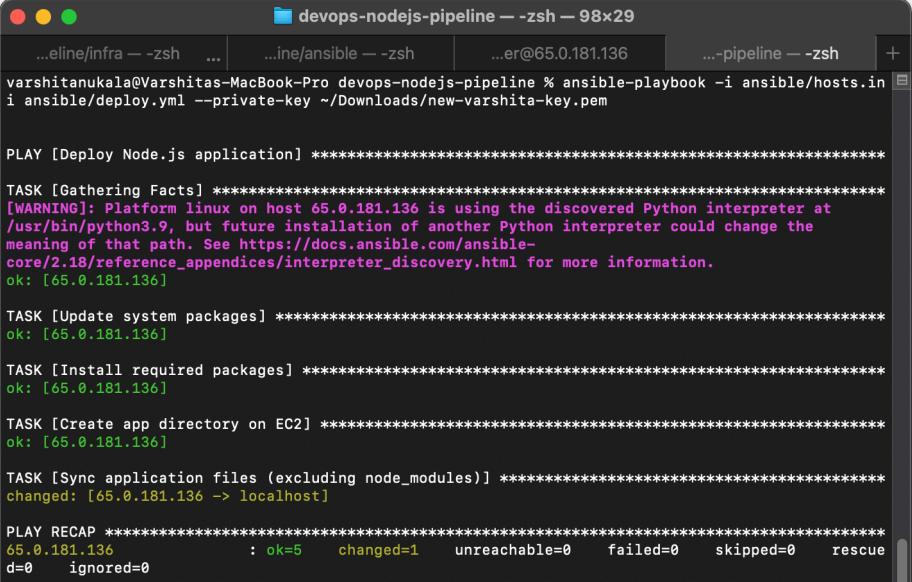
```
>> testing
```



```
devops-nodejs-pipeline -- zsh - 98x29
varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline % ansible -i ansible/hosts.ini app -m ping
[WARNING]: Platform linux on host 65.0.181.136 is using the discovered Python interpreter at /usr/bin/python3.9, but future installation of another Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.18/reference_appendices/interpreter_discovery.html for more information.
65.0.181.136 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.9"
    },
    "changed": false,
    "ping": "pong"
}
varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline %
```

```
>> ansible-playbook -i ansible/hosts.ini ansible/deploy.yml
```

OR >>ansible-playbook -i ansible/hosts.ini ansible/deploy.yml --private-key ~/Downloads/new-varshita-key.pem



```
devops-nodejs-pipeline -- zsh - 98x29
varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline % ansible-playbook -i ansible/hosts.ini ansible/deploy.yml --private-key ~/Downloads/new-varshita-key.pem
PLAY [Deploy Node.js application] ****
TASK [Gathering Facts] ****
[WARNING]: Platform linux on host 65.0.181.136 is using the discovered Python interpreter at /usr/bin/python3.9, but future installation of another Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.18/reference_appendices/interpreter_discovery.html for more information.
ok: [65.0.181.136]

TASK [Update system packages] ****
ok: [65.0.181.136]

TASK [Install required packages] ****
ok: [65.0.181.136]

TASK [Create app directory on EC2] ****
ok: [65.0.181.136]

TASK [Sync application files (excluding node_modules)] ****
changed: [65.0.181.136 -> localhost]

PLAY RECAP ****
65.0.181.136 : ok=5    changed=1    unreachable=0    failed=0    skipped=0    rescue
d=0      ignored=0
```

```

...se studies/2/devops-nodejs-pipeline/infra --zsh ... ...studies/2/devops-nodejs-pipeline/ansible --zsh ... .../case studies/2/devops-nodejs-pipeline --zsh .../new-varshita-key.pem ec2-user@65.0.181.136 +
Last login: Fri Jul 26 09:15:27 on ttys003
varshitanukale@Varshita-MacBook-Pro:~$ ssh -i ~/Downloads/new-varshita-key.pem ec2-user@65.0.181.136
      _#
     /###_      Amazon Linux 2023
    /#\|_
   /#| |
  /#| https://aws.amazon.com/linux/amazon-linux-2023
 /#| V-->_
 /#|   /
 /#|   /_
 /#|   /_/
 /#|   /_/
Last login: Fri Jul 26 04:10:24 2025 from 223.233.86.38
[ec2-user@ip-172-31-4-27 ~]$ pm2 status
pm2 logs myapp
-----
```
 A decorative logo consisting of a grid of vertical and diagonal lines forming a stylized 'M' shape.
```
Runtime Edition

PM2 is a Production Process Manager for Node.js applications
with a built-in Load Balancer.

Start and Daemonize any application:
$ pm2 start app.js

Load Balance 4 instances of api.js:
$ pm2 start api.js -i 4

Monitor in production:
$ pm2 monitor

Make pm2 auto-boot at server restart:
$ pm2 startup

To go further checkout:
http://pm2.io/
-----```
[PM2] Spawning PM2 daemon with pm2_home=/home/ec2-user/.pm2
[PM2] PM2 Successfully daemonized


| id                                                                                         | name | mode | u | status | cpu | memory |
|--------------------------------------------------------------------------------------------|------|------|---|--------|-----|--------|
| [TAILING] Tailing last 15 lines for [myapp] process (change the value with --lines option) |      |      |   |        |     |        |


^C
[ec2-user@ip-172-31-4-27 ~]$ pm2 startup
-----```

```

```

...se studies/2/devops-nodejs-pipeline/infra --zsh ... ...studies/2/devops-nodejs-pipeline/ansible --zsh ... .../case studies/2/devops-nodejs-pipeline --zsh ... .../new-varshita-key.pem ec2-user@65.0.181.136 +
-----```
[PM2] Spawning PM2 daemon with pm2_home=/home/ec2-user/.pm2
[PM2] PM2 Successfully daemonized


| id                                                                                         | name | mode | u | status | cpu | memory |
|--------------------------------------------------------------------------------------------|------|------|---|--------|-----|--------|
| [TAILING] Tailing last 15 lines for [myapp] process (change the value with --lines option) |      |      |   |        |     |        |


^C
[ec2-user@ip-172-31-4-27 ~]$ pm2 startup
[PM2] Init System found: system
[PM2] To setup the Startup Script, copy/paste the following command:
sudo env PATH=$PATH:/usr/bin /usr/lib/nodejs18/lib/node_modules/pm2/bin/pm2 startup systemd -u ec2-user --hp /home/ec2-user
[ec2-user@ip-172-31-4-27 ~]$ pm2 save
[PM2] Saving current process list...
[PM2] [WARN] PM2 is not managing any process, skipping save...
[PM2] [WARN] To force saving use: pm2 save --force
[ec2-user@ip-172-31-4-27 ~]$ pm2 status
pm2 logs myapp


| id                                                                                         | name | mode | u | status | cpu | memory |
|--------------------------------------------------------------------------------------------|------|------|---|--------|-----|--------|
| [TAILING] Tailing last 15 lines for [myapp] process (change the value with --lines option) |      |      |   |        |     |        |


^C
[ec2-user@ip-172-31-4-27 ~]$ pm2 startup
[PM2] Init System found: system
[PM2] To setup the Startup Script, copy/paste the following command:
sudo env PATH=$PATH:/usr/bin /usr/lib/nodejs18/lib/node_modules/pm2/bin/pm2 startup systemd -u ec2-user --hp /home/ec2-user
[ec2-user@ip-172-31-4-27 ~]$ sudo env PATH=$PATH:/usr/bin /usr/lib/nodejs18/lib/node_modules/pm2/bin/pm2 startup systemd -u ec2-user --hp /home/ec2-user
[PM2] Init System found: systemd
[Platform: systemd]
[Template]
[Unit]
Description=PM2 process manager
Documentation=https://pm2.keymetrics.io/
After=network.target

[Service]
Type=forking
User=ec2-user
LimitNOFILE=infinity
LimitFSIZE=infinity
LimitCORE=infinity
Environment=PATH=/home/ec2-user/.local/bin:/home/ec2-user/bin:/usr/local/bin:/usr/bin:/usr/local/sbin:/usr/bin:/bin:/usr/local/sbin:/usr/bin:/usr/bin
Environment=PM2_HOME=/home/ec2-user/.pm2
PIDFile=/home/ec2-user/.pm2/pm2.pid
Restart=on-failure

ExecStart=/usr/lib/nodejs18/lib/node_modules/pm2/bin/pm2 resurrect
ExecReload=/usr/lib/nodejs18/lib/node_modules/pm2/bin/pm2 reload all
ExecStop=/usr/lib/nodejs18/lib/node_modules/pm2/bin/pm2 kill

[Install]
WantedBy=multi-user.target

[Target path
/etc/systemd/system/pm2-ec2-user.service
Command list
[ 'systemctl enable pm2-ec2-user' ]
[PM2] Writing init configuration in /etc/systemd/system/pm2-ec2-user.service
[PM2] Making script booting at startup..```

```

```
>> # SSH into the server  
ssh -i ~/Downloads/new-varshita-key.pem ec2-user@<EC2-IP>
```

```
# Move to app directory  
cd /home/ec2-user/myapp
```

```
# Install dependencies  
npm install
```

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

```
# Start app with PM2  
pm2 start index.js --name myapp
```

```
# Setup PM2 to auto-start on reboot  
pm2 startup  
pm2 save
```

```

...se studies/2/devops-nodejs-pipeline/infra --zsh ... ...studies/2/devops-nodejs-pipeline/ansible --zsh ... .../case studies/2/devops-nodejs-pipeline --zsh ... /new-varshita-key.pem ec2-user@65.0.181.136 + 
. ....CORE infi
Environment=PATH=/home/ec2-user/.local/bin:/home/ec2-user/bin:/usr/local/bin:/usr/bin:/usr/local/sbin:/usr/sbin:/usr/bin:/bin:/usr/local/bin:/usr/sbin:/usr/bin
Environment=PM2_HOME=/home/ec2-user/.pm2
PIDFILE=/home/ec2-user/.pm2/pm2.pid
Restart=on-failure

ExecStart=/usr/lib/nodejs18/lib/node_modules/pm2/bin/pm2 resurrect
ExecReload=/usr/lib/nodejs18/lib/node_modules/pm2/bin/pm2 reload all
ExecStop=/usr/lib/nodejs18/lib/node_modules/pm2/bin/pm2 kill

[Install]
WantedBy=multi-user.target

[Target path
/etc/systemd/system/pm2-ec2-user.service
Command list
[PM2] Enabling pm2-ec2-user...
[PM2] Writing init configuration in /etc/systemd/system/pm2-ec2-user.service
[PM2] Making script hunting at startup...
[PM2] [-] Executing: systemctl enable pm2-ec2-user...
Created symlink /etc/systemd/system/multi-user.target.wants/pm2-ec2-user.service → /etc/systemd/system/pm2-ec2-user.service.
[PM2] [v] Command successfully executed.

[PM2] Freeze a process list on reboot via:
$ pm2 save

[PM2] Remove init script via:
$ pm2 unstartup system
[ec2-user@ip-172-31-4-27 ~]$ pm2 save
[PM2] Saving current process list...
[PM2] [WARN] PM2 is not managing any process, skipping save...
[PM2] [WARN] To force saving use: pm2 save --force
[ec2-user@ip-172-31-4-27 ~]$ pm2 start index.js --name myapp
[PM2] [ERROR] Script not found: /home/ec2-user/index.js
[ec2-user@ip-172-31-4-27 ~]$ [ec2-user@ip-172-31-4-27 ~]$ pm2 start index.js --name myapp
[PM2] [ERROR] Script not found: /home/ec2-user/index.js
[bash]: [ec2-user@ip-172-31-4-27: command not found
[bash]: [PM2] [ERROR]: command not found
[ec2-user@ip-172-31-4-27 ~]$ cd /home/ec2-user/myapp
[ec2-user@ip-172-31-4-27 myapp]$ pm2 start index.js --name myapp
[PM2] Starting /home/ec2-user/myapp/index.js in fork_mode (1 instance)
[PM2] Done.

[ec2-user@ip-172-31-4-27 myapp]$ pm2 status
[PM2] Saving current process list...
[PM2] Successfully saved in /home/ec2-user/.pm2/dump.pm2
[ec2-user@ip-172-31-4-27 myapp]$ pm2 startup
[PM2] Init System found: systemd
[PM2] To setup the Startup Script, copy/paste the following command:
sudo env PATH=$PATH:/usr/bin /usr/lib/nodejs18/lib/node_modules/pm2/bin/pm2 startup systemd -u ec2-user --hp /home/ec2-user
[ec2-user@ip-172-31-4-27 myapp]$
```



Phase 6

```
cleanup.sh
```

```
cleanup > No Selection
```

```
1 #!/usr/bin/env bash
2 set -euo pipefail
3
4 echo "⚡ Starting Docker cleanup..."
5
6 echo "🗑 Removing dangling Docker images..."
7 docker image prune -f
8
9 echo "➕ Pruning unused containers and networks..."
10 docker system prune --volumes -f
11
12 echo "✅ Docker cleanup completed successfully!"
```

Line: 13 Col: 1

```
scripts — zsh — 98x29
```

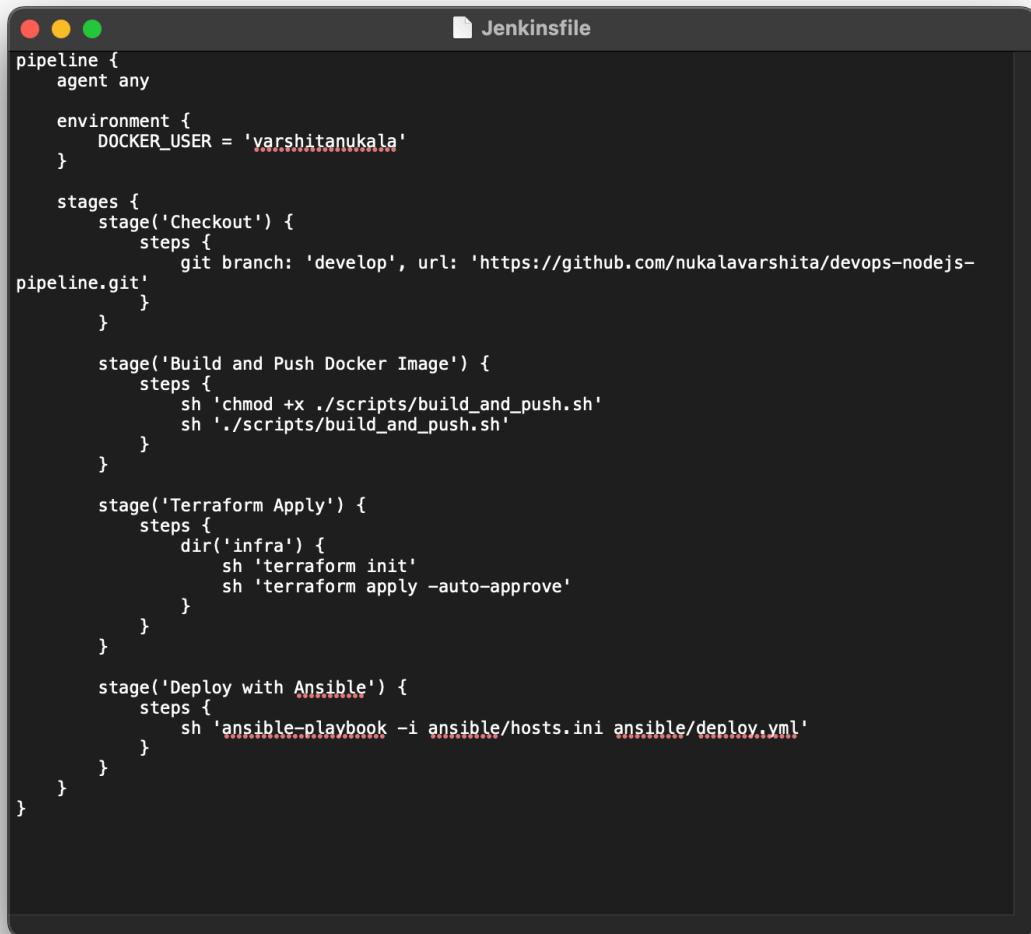
```
.../infra -- zsh ... | ...sible -- zsh | ...line -- zsh | ....0.181.136 | ...ts -- zsh | +
```

```
368zoo39rw5tqjs1s7oa28b6f
rtq942y7hpvnj9pu2wagmtzy
xaalw88qssjhmmzxamkz5wyx
6ciz8x7867i8v2ybb6anu2d79
ahcwhdk8dhngot2stv3jclma6f
e6u8phgr6pvbzgaz1w2msijcz
r1e8e7evwyhw2ay2dp16otf8
1wc9eewxrkqtp8lys63o7id9y
xqnuqe5d8uy8i34bt3138ci0
fn1syek27bkg3m4uepy8jgfa
wxpgn0gestcb848glzd78iaan
hccper0baznic3x24fh149uo7
n7eyncwao9rdsn02ssabr23c5
20vpo56149v51bdg217qnh26
ytn9mxfszw515emhru39mkcl
k8jqwk48cl2kg9qcz7pudz6e0
fhojbq56mjmcjk93gk8qrp037
z39rbypm68p3yy2tf6d0kmq1f
vhftyff38o9x6qttn62csjswl
k1mmm2xtn9o78gzpv27lysz4
xeitfujisse9p3apmbzm3ihrr
8f9xjayjq9a24vv0zf1qvcd4l
3d12eh2ipt8zy4u10unxr99y1
6eo713shbt362ymkmfwyxhhq
azdzdn5gpq5d0a839hkgzsyy
```

```
Total reclaimed space: 913.5MB
✅ Docker cleanup completed successfully!
```

```
varshitanukala@Varshitas-MacBook-Pro scripts % |
```

```
>> ./cleanup.sh
```



```
pipeline {
    agent any

    environment {
        DOCKER_USER = 'varshitanukala'
    }

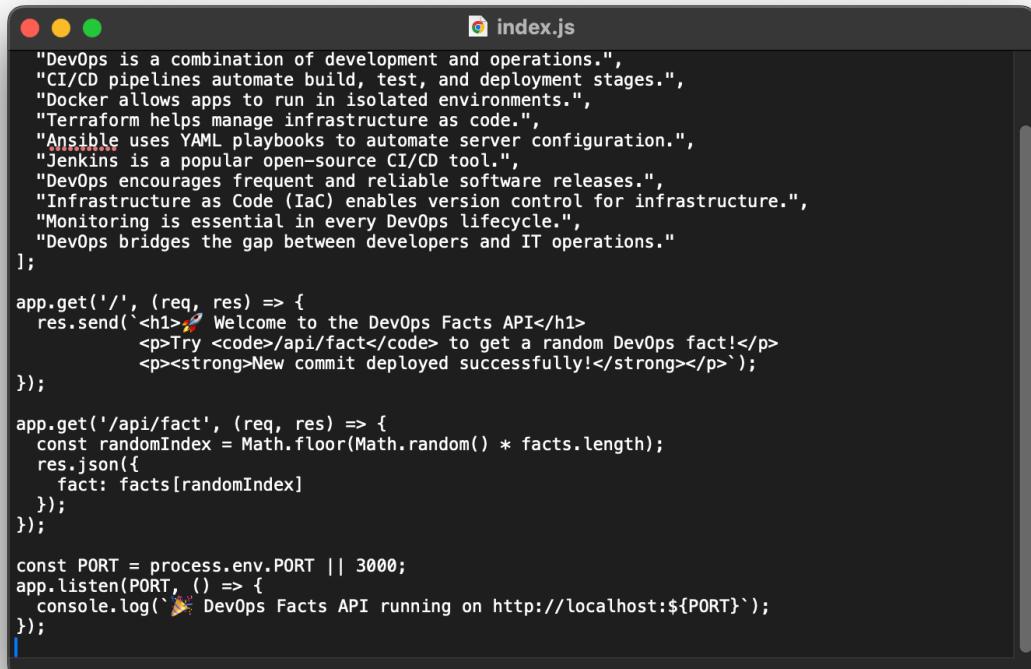
    stages {
        stage('Checkout') {
            steps {
                git branch: 'develop', url: 'https://github.com/nukalavarshita/devops-nodejs-pipeline.git'
            }
        }

        stage('Build and Push Docker Image') {
            steps {
                sh 'chmod +x ./scripts/build_and_push.sh'
                sh './scripts/build_and_push.sh'
            }
        }

        stage('Terraform Apply') {
            steps {
                dir('infra') {
                    sh 'terraform init'
                    sh 'terraform apply --auto-approve'
                }
            }
        }

        stage('Deploy with Ansible') {
            steps {
                sh 'ansible-playbook -i ansible/hosts.ini ansible/deploy.yml'
            }
        }
    }
}
```

--New commit



```
index.js
"DevOps is a combination of development and operations.",
"CI/CD pipelines automate build, test, and deployment stages.",
"Docker allows apps to run in isolated environments.",
"Terraform helps manage infrastructure as code.",
"Ansible uses YAML playbooks to automate server configuration.",
"Jenkins is a popular open-source CI/CD tool.",
"DevOps encourages frequent and reliable software releases.",
"Infrastructure as Code (IaC) enables version control for infrastructure.",
"Monitoring is essential in every DevOps lifecycle.",
"DevOps bridges the gap between developers and IT operations."
];

app.get('/', (req, res) => {
    res.send(`Welcome to the DevOps Facts API</h1>
    <p>Try <a href="/api/fact">/api/fact</a> to get a random DevOps fact!</p>
    <p><strong>New commit deployed successfully!</strong></p>`);
});

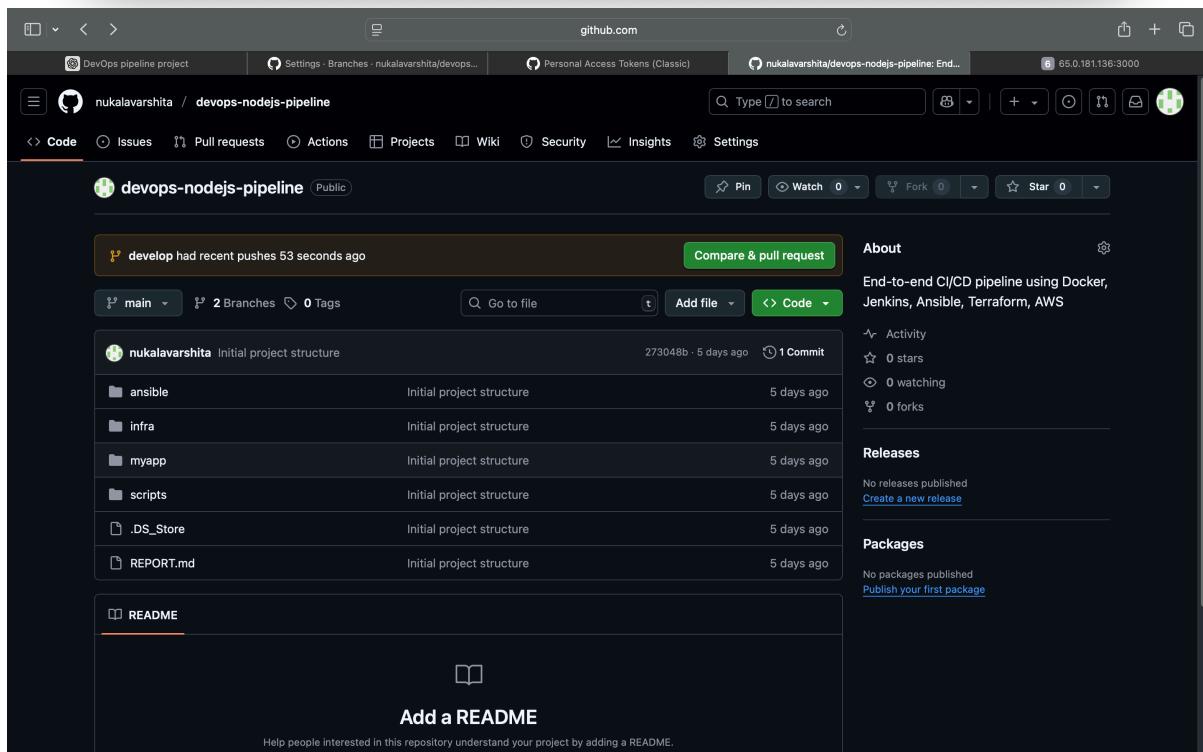
app.get('/api/fact', (req, res) => {
    const randomIndex = Math.floor(Math.random() * facts.length);
    res.json({
        fact: facts[randomIndex]
    });
});

const PORT = process.env.PORT || 3000;
app.listen(PORT, () => {
    console.log(`DevOps Facts API running on http://localhost:${PORT}`);
});
```

```
>> git add myapp/src/index.js
git commit -m "Update homepage message to include new commit confirmation"
git push origin develop
```

```
Last login: Fri Jul 25 09:58:09 on ttys001
[varshitanukala@Varshitas-MacBook-Pro ~] % cd ..
[varshitanukala@Varshitas-MacBook-Pro myapp % cd ..
[varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline % git add myapp/src/index.js
git commit -m "Update homepage message to include new commit confirmation"
git push origin develop

[develop 6de03f8] Update homepage message to include new commit confirmation
 1 file changed, 2 insertions(+), 1 deletion(-)
Enumerating objects: 9, done.
Counting objects: 100% (9/9), done.
Delta compression using up to 8 threads
Compressing objects: 100% (5/5), done.
Writing objects: 100% (5/5), 572 bytes | 572.00 KiB/s, done.
Total 5 (delta 2), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (2/2), completed with 2 local objects.
To https://github.com/nukalavarshita/devops-nodejs-pipeline.git
  b300400..6de03f8  develop -> develop
varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline % |
```

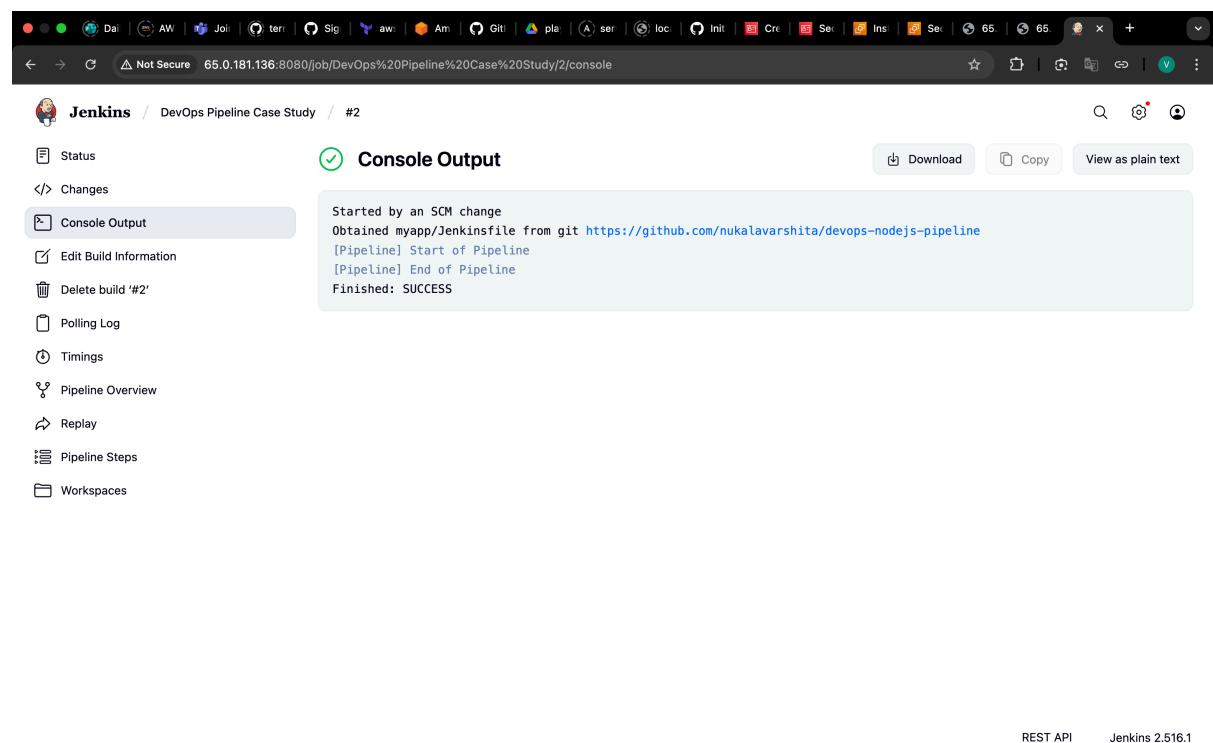


Jenkins setup on instance

```
devops-nodejs-pipeline — ec2-user@ip-172-31-4-27:~$ ssh -i ~/Downloads/new-varshita-key....  
...— -zsh | ...— -zsh | ...— -zsh | ...181.136 | ~/Docume... | ...— -zsh | +  
jenkins-2.516.1-1.1.noarch  
  
Complete!  
Created symlink /etc/systemd/system/multi-user.target.wants/jenkins.service → /usr/lib/systemd/sys  
tem/jenkins.service.  
● jenkins.service - Jenkins Continuous Integration Server  
    Loaded: loaded (/usr/lib/systemd/system/jenkins.service; enabled; preset: disabled)  
    Active: active (running) since Fri 2025-07-25 04:59:00 UTC; 344ms ago  
      Main PID: 48421 (java)  
        Tasks: 41 (limit: 1111)  
       Memory: 376.5M  
         CPU: 16.461s  
        CGroup: /system.slice/jenkins.service  
                └─48421 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.war --we  
  
Jul 25 04:58:50 ip-172-31-4-27.ap-south-1.compute.internal jenkins[48421]: Jenkins initial setup >  
Jul 25 04:58:50 ip-172-31-4-27.ap-south-1.compute.internal jenkins[48421]: Please use the followin>  
Jul 25 04:58:50 ip-172-31-4-27.ap-south-1.compute.internal jenkins[48421]: d84678727c7249e49a4438>  
Jul 25 04:58:50 ip-172-31-4-27.ap-south-1.compute.internal jenkins[48421]: This may also be found >  
Jul 25 04:58:50 ip-172-31-4-27.ap-south-1.compute.internal jenkins[48421]: ****<*****<*****<*****<  
Jul 25 04:58:50 ip-172-31-4-27.ap-south-1.compute.internal jenkins[48421]: ****<*****<*****<*****<  
Jul 25 04:58:50 ip-172-31-4-27.ap-south-1.compute.internal jenkins[48421]: ****<*****<*****<*****<  
Jul 25 04:59:00 ip-172-31-4-27.ap-south-1.compute.internal jenkins[48421]: 2025-07-25 04:59:00.25>  
Jul 25 04:59:00 ip-172-31-4-27.ap-south-1.compute.internal jenkins[48421]: 2025-07-25 04:59:00.30>  
Jul 25 04:59:00 ip-172-31-4-27.ap-south-1.compute.internal systemd[1]: Started jenkins.service ->  
[  
[ec2-user@ip-172-31-4-27 ~]$ sudo cat /var/lib/jenkins/secrets/initialAdminPassword  
d84678727c7249e49a44389ee3666d0a  
[ec2-user@ip-172-31-4-27 ~]$
```

<http://65.0.181.136:8080/>

>>> H/2 * * * *



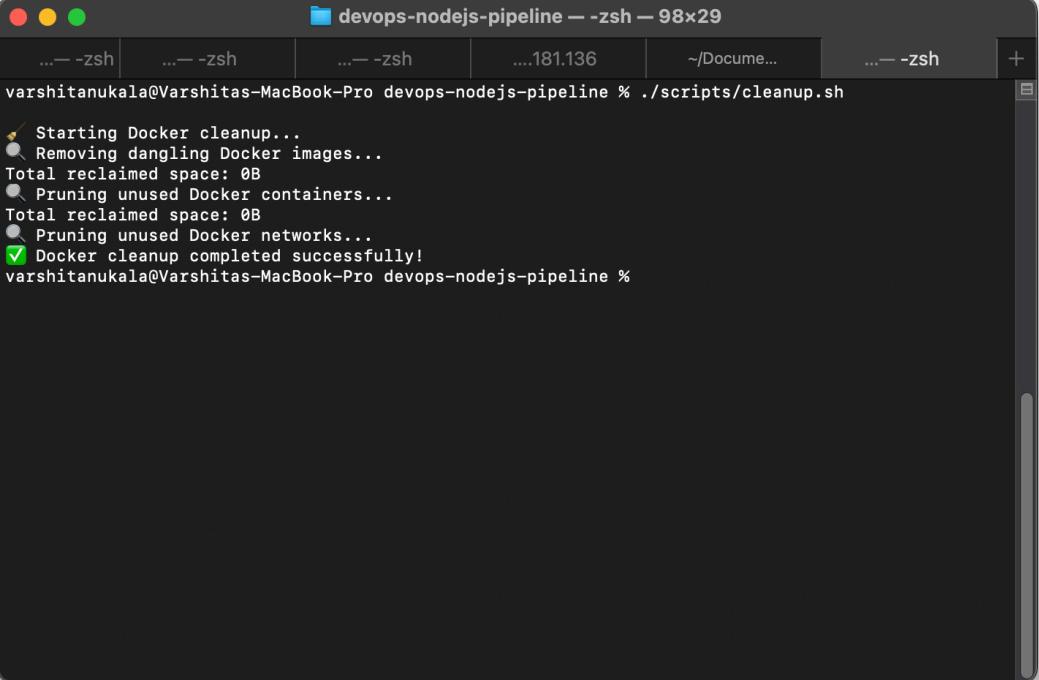
The screenshot shows a browser window with the Jenkins URL <http://65.0.181.136:8080/job/DevOps%20Pipeline%20Case%20Study/2/console>. The page displays the Jenkins interface with the following details:

- Job Information:** DevOps Pipeline Case Study / #2
- Console Output:** Shows the log output:

```
Started by an SCM change
Obtained myapp/Jenkinsfile from git https://github.com/nukalavarshita/devops-nodejs-pipeline
[Pipeline] Start of Pipeline
[Pipeline] End of Pipeline
Finished: SUCCESS
```
- Build History:** A sidebar on the left lists other builds: Status, Changes, Console Output (highlighted), Edit Build Information, Delete build '#2', Polling Log, Timings, Pipeline Overview, Replay, Pipeline Steps, and Workspaces.
- Page Footer:** REST API and Jenkins 2.516.1

```
>> chmod +x scripts/cleanup.sh
```

```
>> ./scripts/cleanup.sh
```

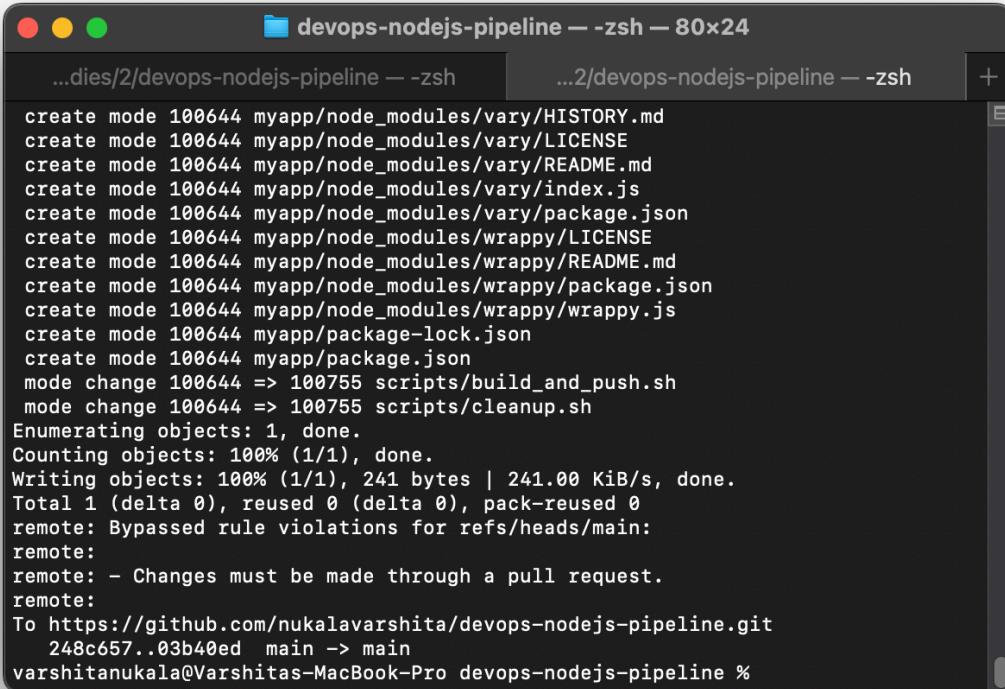


The screenshot shows a terminal window with the following details:

- Title Bar:** devops-nodejs-pipeline — zsh — 98x29
- User and Hostname:** varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline %
- Command Run:** ./scripts/cleanup.sh
- Output Log:**
 - Starting Docker cleanup...
 - ✖ Removing dangling Docker images...
 - Total reclaimed space: 0B
 - ✖ Pruning unused Docker containers...
 - Total reclaimed space: 0B
 - ✖ Pruning unused Docker networks...
 - ✓ Docker cleanup completed successfully!

Syncing Both Main n Develop

```
git checkout main  
git pull origin main  
git merge develop  
git push origin main
```



The screenshot shows a terminal window with two tabs. The active tab is titled "...dies/2/devops-nodejs-pipeline — zsh — 80x24". The terminal output is as follows:

```
create mode 100644 myapp/node_modules/vary/HISTORY.md  
create mode 100644 myapp/node_modules/vary/LICENSE  
create mode 100644 myapp/node_modules/vary/README.md  
create mode 100644 myapp/node_modules/vary/index.js  
create mode 100644 myapp/node_modules/vary/package.json  
create mode 100644 myapp/node_modules/wrappy/LICENSE  
create mode 100644 myapp/node_modules/wrappy/README.md  
create mode 100644 myapp/node_modules/wrappy/package.json  
create mode 100644 myapp/node_modules/wrappy/wrappy.js  
create mode 100644 myapp/package-lock.json  
create mode 100644 myapp/package.json  
mode change 100644 => 100755 scripts/build_and_push.sh  
mode change 100644 => 100755 scripts/cleanup.sh  
Enumerating objects: 1, done.  
Counting objects: 100% (1/1), done.  
Writing objects: 100% (1/1), 241 bytes | 241.00 KiB/s, done.  
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0  
remote: Bypassed rule violations for refs/heads/main:  
remote:  
remote: - Changes must be made through a pull request.  
remote:  
To https://github.com/nukalavarshita/devops-nodejs-pipeline.git  
 248c657..03b40ed main -> main  
varshitanukala@Varshitas-MacBook-Pro devops-nodejs-pipeline %
```

