



Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058,
India (Autonomous College Affiliated to University of Mumbai)

S.E Lab **Comps(T.E) - Batch- B** **Topic-Speedy Typing**

Name	Dhruvil Doshi
UID	2021300027

Experiment 07: Study DevOps and implement CI/CD pipeline.

Theory:

DevOps:

DevOps is the combination of cultural philosophies, practices, and tools that increases an organization's ability to deliver applications and services at high velocity: evolving and improving products at a faster pace than organizations using traditional software development and infrastructure management processes. This speed enables organizations to better serve their customers and compete more effectively in the market.

How DevOps Works:

Under a DevOps model, development and operations teams are no longer “siloeed.” Sometimes, these two teams are merged into a single team where the engineers work across the entire application lifecycle, from development and test to deployment to operations, and develop a range of skills not limited to a single function. In some DevOps models, quality assurance and security teams may also become more tightly integrated with development and operations and throughout the application lifecycle. When security is the focus of everyone on a DevOps team, this is sometimes referred to as DevSecOps. These teams use practices to automate processes that historically have been manual and slow. They use a technology stack and tooling which help them operate and evolve applications quickly and reliably. These tools also help engineers independently accomplish tasks (for example, deploying code or provisioning infrastructure) that normally would have required help from other teams, and this further increases a team's velocity.

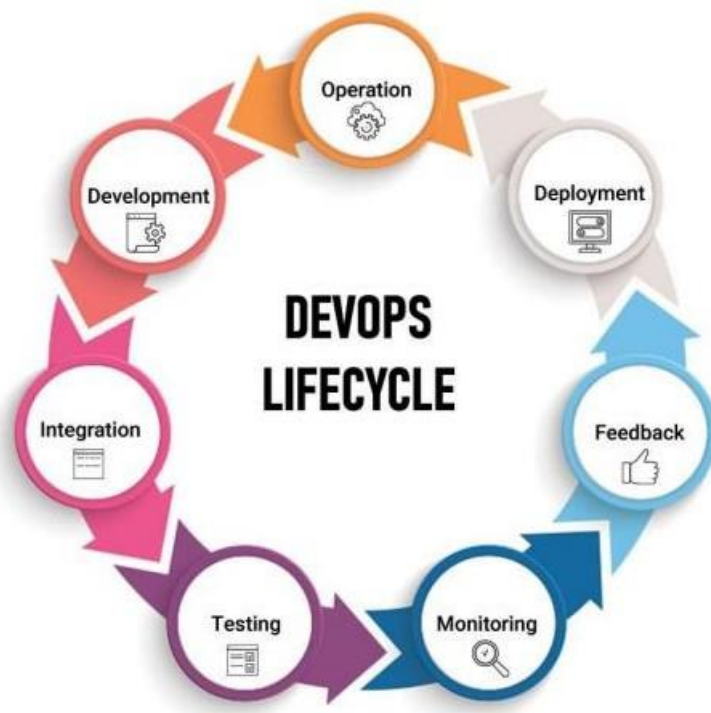


Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058,
India (Autonomous College Affiliated to University of Mumbai)

Benefits of DevOps:

- Speed
- Rapid Delivery
- Reliability
- Scale
- Improved Collaboration
- Security



CI/CD Pipeline:

A pipeline is a process that drives software development through a path of building, testing, and deploying code, also known as CI/CD. By automating the process, the objective is to minimize human error and maintain a consistent process for how software is released. Tools that are included in the pipeline could include compiling code, unit tests, code analysis, security, and binaries creation. CI/CD is the backbone of a DevOps methodology, bringing developers and IT operations teams together to deploy software. As custom applications become key to how companies differentiate, the rate at which code can be released has become a competitive differentiator.



Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058,
India (Autonomous College Affiliated to University of Mumbai)

Procedure:

1) Setup Netlify Account

2) Go to Settings => Application => Personal Access Token => Generate CI CD key

Create a new personal access token

Personal access tokens function like ordinary OAuth access tokens.

1. Generate token

2. Copy token

New token created

Copy the token below to your clipboard. For security reasons, after you navigate off this page, no one will be able to see the token again.

nfp_aLEeyj5gkzi8enGX7pSNxB6xzuvVxVsafd41



Done

This is the NETLIFY_AUTH_TOKEN



Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058,
India (Autonomous College Affiliated to University of Mumbai)

3) Create a new github repository and push your code to github repository.

Dhruvil03 / Devops

Q Type to search

>

+

<> Code

Issues

Pull requests

Actions

Projects

Wiki

Security

Insights

Settings

Devops

Public

Pin

Unwatch 1

Fork 0

Star 0

main

1 branch

0 tags

Go to file

Add file

<> Code

About

Dhruvil03 Add files via upload

174f2b0 3 days ago 2 commits

.gitignore	Add files via upload	3 days ago
README.md	Add files via upload	3 days ago
netlify.toml	Add files via upload	3 days ago
package-lock.json	Add files via upload	3 days ago
package.json	Add files via upload	3 days ago
webpack.config.js	Add files via upload	3 days ago

No description, website, or topics provided.

Readme

Activity

0 stars

1 watching

0 forks

Releases

No releases published



Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058,
India (Autonomous College Affiliated to University of Mumbai)

Repository Link: [Dhruvill03/Devops \(github.com\)](https://github.com/Dhruvill03/Devops)

4) Now drag drop the build folder into netlify to host your project

dhruvil-cicd-devops


- <https://dhruvil-cicd-devops.netlify.app>

Manual deploys.

Published on Nov 27.

Site configuration

Favorite site



Set up your site

1

Your site is deployed ✓

Try a test build and deploy, directly from your Git repository or a folder.

2

[Set up a custom domain →](#)

Buy a new domain or set up a domain you already own.

3

Secure your site with HTTPS

Your site is secured automatically with a Let's Encrypt certificate.

5) Go to site configuration and note down site ID

General

Site details

Status badges

Site members

Danger zone

Build & deploy

Environment variables

Notifications

Identity

Access & security **New**

Site details

General information about your site

Site information

Site name: dhruvil-cicd-devops


Owner: Dhruvil Doshi

Site ID: 363f6abd-8024-411d-8f33-f19a8ede899d 

Created: Nov 27 at 4:07 PM

Last update: Nov 27 at 4:10 PM

Change site name

Transfer site 



Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058,
India (Autonomous College Affiliated to University of Mumbai)

6) Now go back to the repository and in Repository Settings => Secrets and Variables => Actions, Add NETLIFY_AUTH_ID and NELIFY_SITE_ID

Secrets

Variables

Environment secrets

Manage environment secrets

Name	Environment	Last updated
NETLIFY_AUTH_TOKEN	ENV - Production	4 hours ago
NETLIFY_SITE_ID	ENV - Production	4 hours ago

Repository secrets

New repository secret

Name	Last updated
NETLIFY_AUTH_TOKEN	4 hours ago
NETLIFY_SITE_ID	4 hours ago



Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058,
India (Autonomous College Affiliated to University of Mumbai)

7) In your source code, create folder `.github/workspace`, in which create `fileproduction.yml`

```
name: Node.js CI

on
:
  push:
    branches: [main]
  pull_request:
    branches: [main]

jobs:
  build:
    runs-on: ubuntu-latest

    steps:
      - uses: actions/checkout@v2
      - name: Setup Node.js
        uses: actions/setup-node@v1
        with:
          node-version: "16.x"
      - run: npm install
      - run: npm run build
      - uses: actions/upload-artifact@v2
        with:
          name: build
          path: build/

  test:
    needs: build
    runs-on: ubuntu-latest

    steps:
      - uses: actions/checkout@v2
      - name: Setup Node.js
        uses: actions/setup-node@v1
        with:
          node-version: "16.x"
      - run: npm install
      - uses: actions/download-artifact@v2
        with:
          name: build
          path: build
      - run: npm run test
```

deploy:



Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058,
India (Autonomous College Affiliated to University of Mumbai)

```
needs: test
runs-on: ubuntu-latest
if: github.ref == 'refs/heads/main'

steps:
  - name: Checkout Repository
    uses: actions/checkout@v2

  - name: Setup Node.js
    uses: actions/setup-node@v1
    with:
      node-version: "16.x"

  - name: Download Build Artifacts
    uses: actions/download-artifact@v2
    with:
      name: build
      path: build

  - name: Install Netlify CLI
    run: npm install -g netlify-cli

  - name: Deploy to Netlify
    run: npx netlify deploy --dir=build --site ${{ secrets.NETLIFY_SITE_ID }} --auth ${{ secrets.NETLIFY_AUTH_TOKEN }} --prod
```

8) Push your code onto github again, then go to your repository => Actions

The screenshot shows the GitHub Actions interface for a repository named 'string-tejas / cicd-demo'. The 'Actions' tab is selected, displaying a list of workflow runs. The interface includes a sidebar with navigation options like Code, Issues, Pull requests, Actions, Projects, Wiki, Security, Insights, and Settings. The main area shows 'All workflows' with a search bar and a list of workflow runs. Two runs are visible, both with a green status icon, indicating successful completion. The first run is titled 'Update production workflow to use main branch' and the second is 'Update production workflow to use main branch'. Both runs show the commit hash and the actor 'string-tejas'.

Workflow Run	Status	Branch	Actor
Update production workflow to use main branch	Success	main	string-tejas
Update production workflow to use main branch	Success	main	string-tejas



Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058,
India (Autonomous College Affiliated to University of Mumbai)

A new workflow is created.

9) All jobs executed correctly

The screenshot shows a GitHub Actions workflow run for the repository 'string-tejas / cisd-demo'. The workflow is titled 'Update production workflow to use 'main' branch #2' and was triggered by a push to the 'main' branch. The status is 'Success' with a total duration of 1m 27s and 1 artifact. The workflow consists of three jobs: 'build' (12s), 'test' (13s), and 'deploy' (37s). The 'production.yml' file is shown, and the workflow file is also visible. The 'Annotations' section shows 3 warnings.

Site has been automatically built, tested and deployed.

Check out the URL

The screenshot shows the 'deploy' job of the workflow, which succeeded 3 hours ago in 37s. The job steps are: 'Setup Nodejs' (6s), 'Download Build Artifacts' (0s), 'Install Netlify CLI' (21s), and 'Deploy to Netlify' (7s). The 'Deploy to Netlify' step is expanded, showing the following logs:

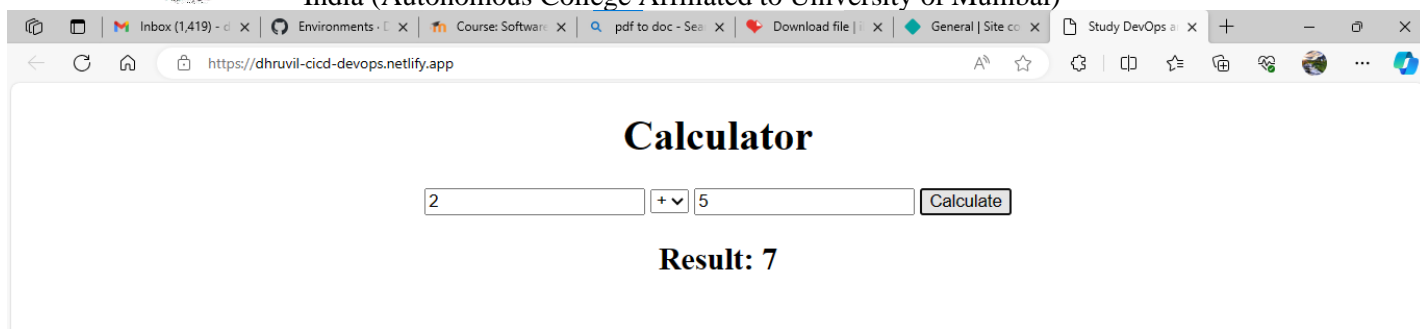
```
1 ▶ Run npx netlify deploy --dir=build --site *** --auth *** --prod
4 Deploy path: /home/runner/work/cisd-demo/cisd-demo/build
5 Configuration path: /home/runner/work/cisd-demo/cisd-demo/netlify.toml
6 Deploying to main site URL...
7 - Hashing files...
8 ✓ Finished hashing
9 - CDN diffing files...
10 ✓ CDN requesting 1 files
11 - Uploading 1 files
12 ✓ Finished uploading 1 assets
13 - Waiting for deploy to go live...
14 ✓ Deploy is live!
15
16 Build logs: https://app.netlify.com/sites/tj-calc/deployments/6562d07fc9c6ba3d2884104
17 Function logs: https://app.netlify.com/sites/tj-calc/functions
18 Unique deploy URL: https://6562d07fc9c6ba3d2884104--tj-calc.netlify.app
19 Website URL: https://tj-calc.netlify.app
```

The 'Post Checkout Repository' and 'Complete job' steps are also shown, both with a duration of 0s.



Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058,
India (Autonomous College Affiliated to University of Mumbai)



Site URL: [Study DevOps and implement CI/CD pipeline \(dhruvil-cicd-devops.netlify.app\)](https://dhruvil-cicd-devops.netlify.app)

Conclusion:

After conducting this experiment, I have learnt to make use of devops to automate the task of building, testing and deploying the application using the CI/CD approach. I have successfully created a CI/CD pipeline using Github Actions.