

LAB 3

Title: Introduction to Deployment Tools

Objective: To understand the basics of web application deployment and gain hands-on experience using common deployment tools such as **Docker**, **Netlify**, **Vercel**, and **GitHub Pages**.

Theory:

What is Deployment?

- Deployment means making your web application live so that anyone on the internet can access it. Deployment tools help automate this process, often linking with Git repositories to enable continuous integration and deployment (CI/CD).

Overview of Deployment Tools:

1. Docker
 - Packages your app and all its dependencies into a container.
 - Runs the same way on any system with Docker installed.
 - Perfect for backend services and complex applications.
 - Widely used in professional and production environments.
2. Netlify
 - Ideal for deploying static websites.
 - Automatically builds and deploys from Git repos.
 - Supports serverless functions and easy drag-and-drop deployment.
3. Vercel
 - Optimized for frontend frameworks like React and Next.js.
 - Supports instant deployment from GitHub, GitLab, or Bitbucket.
 - Uses an edge network to deliver fast website loading.
4. GitHub Pages
 - Best suited for static sites hosted directly from GitHub repositories.
 - Simple setup with free hosting and custom domain support.
 - Only supports static content, no backend code.

Procedure: Deploying Using Docker

1. Write a Dockerfile in the root directory of your project:

```
FROM node:22
WORKDIR /app
COPY . .
RUN npm install
RUN npm run build
CMD ["npm", "start"]
EXPOSE 3000
```

2. Build your Docker image

```
docker build -t my-app
```

3. Run the Docker container and map the port:

```
docker run -p 3000:3000 my-app
```

4. App is running at : <http://localhost:3000>

Conclusion:

This lab introduced key deployment concepts and tools. Docker containers help package your app and environment into a portable unit. Netlify, Vercel, and GitHub Pages simplify deploying static and frontend apps with tight Git integration. Gaining familiarity with these tools equips you to deploy various types of web applications confidently and efficiently.