

Cloud Deployment — React App with Docker & GitHub Actions

This project demonstrates how to **containerize a React application with Docker** and configure a **CI/CD pipeline using GitHub Actions** to automatically test, build, and deploy the app to **GitHub Pages**.

Objective

- Dockerize a production-ready React application using **multi-stage builds**.
 - Automate testing and deployment using **GitHub Actions**.
 - Deploy the final build to **GitHub Pages**.
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Tech Stack

Component	Technology
Frontend	React
Containerization	Docker (Node + Nginx multi-stage)
CI/CD	GitHub Actions
Deployment	GitHub Pages

Project Structure

```
my-react-app/  
├──  
├── src/  
├── public/  
├── package.json  
├── Dockerfile  
├── .dockerignore  
└── .github/  
    ├── workflows/  
    └── main.yml
```

.dockerignore

```
node_modules
build
.git
.gitignore
Dockerfile
.dockerignore
```

Dockerfile (Multi-Stage Build)

```
# ---- Build Stage ----
FROM node:18-alpine AS build

WORKDIR /app

COPY package*.json ./
RUN npm install

COPY . .
RUN npm run build

# ---- Production Stage ----
FROM nginx:stable-alpine

COPY --from=build /app/build /usr/share/nginx/html

EXPOSE 80

CMD ["nginx", "-g", "daemon off;"]
```

CI/CD Workflow — `.github/workflows/main.yml`

```
name: CI/CD Pipeline with GitHub Pages Deployment

on:
  push:
    branches: ["main"]

jobs:
  deploy:
    runs-on: ubuntu-latest

    steps:
```

```
- name: Checkout Repository
  uses: actions/checkout@v3

- name: Setup Node
  uses: actions/setup-node@v3
  with:
    node-version: "18"

- name: Install Dependencies
  run: npm install

- name: Run Tests
  run: npm test --if-present

- name: Build Project
  run: npm run build

- name: Deploy to GitHub Pages
  uses: peaceiris/actions-gh-pages@v3
  with:
    github_token: ${ secrets.GITHUB_TOKEN }
    publish_dir: ./build
```

GitHub Pages Configuration

Add this to your `package.json`:

```
"homepage": "https://<your-username>.github.io/<your-repo-name>/"
```

Example:

```
"homepage": "https://deepti.github.io/cloud-deployment/"
```

Then go to:

```
GitHub → Repository → Settings → Pages → Source → GitHub Actions
```



How to Run Locally

```
npm install
npm start
```

Visit: `http://localhost:3000`



Run Using Docker

```
docker build -t react-app-prod .  
docker run -p 80:80 react-app-prod
```

Visit: `http://localhost`



Expected Output

- CI/CD pipeline runs automatically on every push.
 - React build output is deployed to **GitHub Pages**.
 - Docker image serves the same production build locally.
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Author

Deepti — Cloud Deployment Project 