Automated Deployment of WordPress with Nginx Using GitHub Actions

This repository contains the setup and configuration files to automate the deployment of a WordPress website on an AWS EC2 instance using the **LEMP stack** (Linux, Nginx, MySQL, PHP) and **GitHub Actions** for CI/CD.

Project Overview

- **Server:** AWS EC2 with Ubuntu 22.04 LTS
- **Web Server:** Nginx
- **Database:** MySQL/MariaDB
- **Scripting Language:** PHP
- **CI/CD Tool:** GitHub Actions
- **SSL:** Let's Encrypt for HTTPS

The setup ensures secure, automated deployments following best practices for performance and security.

Features

- Automated deployment of WordPress to a VPS using GitHub Actions.
- Optimized Nginx configuration for performance (gzip compression, caching).
- Secure MySQL database setup.
- Automatic SSL certificate provisioning with Let's Encrypt.

Pre-Requisites

Ensure you have the following:

1. An AWS account with access to EC2.
2. A domain name (e.g., `your-domain.com`).
3. GitHub account to push code and trigger CI/CD workflows.
4. **SSH Key Pair** for secure server access.

Steps to Deploy

1. Server Setup

1. Launch an **EC2 Instance** with Ubuntu 22.04 LTS:
   - Enable ports: **22** (SSH), **80** (HTTP), **443** (HTTPS).
2. SSH into the server:

   ```
   ssh -i /path/to/key.pem ubuntu@<EC2-PUBLIC-IP>
   ```

3. Install LEMP Stack:
   ```
   sudo apt update && sudo apt upgrade -y
   ```

```
sudo apt install nginx mysql-server php-fpm php-mysql -y
```

4. Configure MySQL:

```
sudo mysql -u root -p
CREATE DATABASE wordpress;
CREATE USER 'wp_user'@'localhost' IDENTIFIED BY 'your-password';
GRANT ALL PRIVILEGES ON wordpress.* TO 'wp_user'@'localhost';
FLUSH PRIVILEGES;
EXIT;
```

5. Install WordPress:

```
cd /var/www/
sudo wget https://wordpress.org/latest.tar.gz
sudo tar -xvzf latest.tar.gz
sudo mv wordpress /var/www/html/
sudo chown -R www-data:www-data /var/www/html/wordpress
```

6. Install Let's Encrypt SSL:

```
sudo apt install certbot python3-certbot-nginx -y
sudo certbot --nginx -d your-domain.com
```

2. GitHub Actions Workflow

1. **Set Up the Repository**:
   o Clone the repository:

   ```
   git clone https://github.com/your-username/wordpress-cicd.git
   cd wordpress-cicd
   ```

2. **Add GitHub Actions Workflow**:
   o Place this file in `.github/workflows/deploy.yml`
3. **Add GitHub Secrets**:

- Go to **Settings > Secrets** in your GitHub repository.
- Add the following:
   o `SERVER_IP`: Public IP of the EC2 instance.
   o `SERVER_USER`: ubuntu
   o `SSH_KEY`: Content of your `.pem` file.

4. **Push Changes**:

```
git add .
git commit -m "Add deployment workflow"
git push origin main
```

3. Trigger Deployment

- Push any changes to the `main` branch to trigger the GitHub Actions workflow.
- The workflow will:
    1. Upload WordPress files to your server.
    2. Restart Nginx to apply changes.

4. Access the Website

Visit your domain (or public IP) to view the deployed WordPress site:

```
https://your-domain.com
```

Folder Structure

```
├── .github/
│   └── workflows/
│       └── deploy.yml        # GitHub Actions Workflow
├── README.md                 # Project Documentation
└── wordpress/                # WordPress Source Files
```

Troubleshooting

- **Permission Errors:** Ensure correct ownership for WordPress files:

```
sudo chown -R www-data:www-data /var/www/html/wordpress
```

- **Nginx Errors:** Check Nginx configuration:

```
sudo nginx -t
sudo systemctl restart nginx
```

- **SSL Issues:** Verify the Let's Encrypt certificate:

```
sudo certbot renew --dry-run
```