**Simplified Project: Basic Web Application Deployment**

**1. Project Overview**

* **Objective**: Create a simple web application using Node.js and deploy it using a CI/CD pipeline with Jenkins and Docker.

**2. Setup Environment**

* **Linux Server**: Use a Linux server (e.g., Ubuntu).
* **Install Dependencies**:

*sudo apt update*

*sudo apt install git*

*sudo apt install docker.io*

*sudo systemctl start docker*

*sudo systemctl enable docker*

* **Install Jenkins**: Follow the instructions for installing Jenkins on your Linux server from the official Jenkins documentation.

#### 3. ****Create a Simple Node.js Application****

* **Set Up Your Project**:

*mkdir my-web-app*

*cd my-web-app*

*npm init -y*

*npm install express*

* **Create an Express Server**:

Create a file named index.js

*const express = require('express');*

*const app = express();*

*const PORT = 3000;*

*app.get('/', (req, res) => {*

*res.send('Hello, World!');*

*});*

*app.listen(PORT, () => {*

*console.log(`Server is running on http://localhost:${PORT}`);*

*});*

#### ****4. Version Control with Git****

* **Initialize Git Repository**:

*git init*

*git add .*

*git commit -m "Initial commit"*

* **Create a GitHub Repository** **and push the local repository:**

*git remote add origin https://github.com/username/my-web-app.git*

*git push -u origin master*

#### ****Dockerize the Application****

**Create a Dockerfile** in the project root:

*FROM node:14*

*WORKDIR /app*

*COPY package\*.json ./*

*RUN npm install*

*COPY . .*

*EXPOSE 3000*

*CMD ["node", "index.js"]*

**Build the Docker Image:**

*docker build -t my-web-app .*

#### ****5. Set Up Jenkins****

* **Access Jenkins**: Go to http://<your-server-ip>:8080 in your web browser.
* **Create a New Pipeline Job**:
  + Click on “New Item,” select “Pipeline,” and give it a name.
* **Configure the Pipeline**:
  + Under the pipeline configuration, enter the following pipeline script:

*pipeline {*

*agent any*

*stages {*

*stage('Clone') {*

*steps {*

*git 'https://github.com/username/my-web-app.git'*

*}*

*}*

*stage('Build') {*

*steps {*

*sh 'docker build -t my-web-app .'*

*}*

*}*

*stage('Run') {*

*steps {*

*sh 'docker run -d -p 3000:3000 my-web-app'*

*}*

*}*

*}*

*}*

#### ****Run the Pipeline****

* Save the configuration and run the pipeline. This will clone the repo, build the Docker image, and run the container.

#### 6. ****Test the Application****

* Access the application in your browser at http://<your-server-ip>:3000.

### Conclusion

This project gives you a straightforward approach to setting up a DevOps pipeline using Linux, Git, Jenkins, and Docker. You can expand it later by adding features like automated tests or more advanced configurations as you become more comfortable with the tools.