DevOps Jenkins

Event

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Objective

The objective of this process is to **automate the deployment of an enhanced Nginx-powered website** by executing a shell script. This ensures a seamless setup and delivery of a modern, responsive, and visually appealing web page with the following key goals:

1. **Automated System Update & Installation:**

    - Ensure the server environment is up to date by running `apt update` and `apt upgrade`.
    - Start and manage the Nginx service automatically.

2. **Website Deployment & Configuration:**

    - Deploy an enhanced HTML-based website with modern UI/UX features.
    - Integrate CSS animations and AOS (Animate on Scroll) for better user interaction.
    - Implement a clean, responsive layout with improved styling, navigation, and accessibility.

3. **Automation & Error Reduction:**

- ○ Automate the process of copying the website files to the Nginx root directory (`/var/www/html/`).
- ○ Ensure the default Nginx page (`index.nginx-debian.html`) is updated with the latest version.
- ○ Restart Nginx to apply changes, ensuring the website is live without manual intervention.

4. **Scalability & Maintainability:**

- ○ Provide a structured and scalable deployment method for future modifications.
- ○ Ensure the website is easily upgradable without requiring extensive manual configuration.

```
root@Athik:~# sudo apt install
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following package was automatically installed and is no longer required:
  libllvm17t64
Use 'sudo apt autoremove' to remove it.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
root@Athik:~#
```

```
root@Athik:~# sudo apt update
Ign:1 https://pkg.jenkins.io/debian binary/ InRelease
Hit:2 https://pkg.jenkins.io/debian binary/ Release
Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:5 http://archive.ubuntu.com/ubuntu noble InRelease
Get:6 http://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Hit:7 http://archive.ubuntu.com/ubuntu noble-backports InRelease
Fetched 126 kB in 3s (49.3 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
All packages are up to date.
root@Athik:~#
```

```
root@Athik:~# sudo apt upgrade
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following package was automatically installed and is no longer required:
  libllvm17t64
Use 'sudo apt autoremove' to remove it.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
```

```
root@Athik:~# systemctl start nginx
root@Athik:~# systemctl status nginx
● nginx.service - A high performance web server and a reverse proxy server
     Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; preset:>        Active: active (running) since Mon 2025-02-03 13:58:10 UTC; 5min ago
       Docs: man:nginx(8)
    Process: 164 ExecStartPre=/usr/sbin/nginx -t -q -g daemon on; master_pro>       Process: 178 ExecStart=/usr/sbin/nginx -g daemon on; master_process on; >
   Main PID: 194 (nginx)
      Tasks: 13 (limit: 4369)
     Memory: 10.1M ()
     CGroup: /system.slice/nginx.service
             ├─194 "nginx: master process /usr/sbin/nginx -g daemon on; mast>             ├─195 "nginx: worker process"
             ├─196 "nginx: worker process"
             ├─197 "nginx: worker process"
             ├─198 "nginx: worker process"
             ├─199 "nginx: worker process"
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             ├─205 "nginx: worker process"
             ├─206 "nginx: worker process"
             └─207 "nginx: worker process"

Feb 03 13:58:10 Athik systemd[1]: Starting nginx.service - A high performanc>Feb 03 13:58:10 Athik systemd[1]: Started nginx.service - A high performance>
lines 1-26/26 (END)...skipping...
```

```
root@Athik:~# cd /var/www/html
root@Athik:/var/www/html# ls
index.html  index.nginx-debian.html
root@Athik:/var/www/html#
```

```
root@Athik:/var/www/html# vim index.nginx-debian.html
```

root@Athik: /var/www/html   ✕   +   ⌄

guvi
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~
"index.nginx-debian.html" 1L, 5B

```
root@Athik:/var/www/html# sudo apt install fontconfig openjdk-17-jre
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
fontconfig is already the newest version (2.15.0-1.1ubuntu2).
openjdk-17-jre is already the newest version (17.0.13+11-2ubuntu1~24.04).
The following package was automatically installed and is no longer required:
  libllvm17t64
Use 'sudo apt autoremove' to remove it.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
```

```
root@Athik:/var/www/html# java --version
openjdk 17.0.13 2024-10-15
OpenJDK Runtime Environment (build 17.0.13+11-Ubuntu-2ubuntu124.04)
OpenJDK 64-Bit Server VM (build 17.0.13+11-Ubuntu-2ubuntu124.04, mixed mode, sharing)
```

```
root@Athik:/var/www/html# sudo wget -O /usr/share/keyrings/jenkins-keyring.asc https://pkg.jenkins.io/debian-stable/jenk
ins.io-2023.key
--2025-02-03 14:13:03--  https://pkg.jenkins.io/debian-stable/jenkins.io-2023.key
Resolving pkg.jenkins.io (pkg.jenkins.io)... 151.101.158.133, 2a04:4e42:24::645
Connecting to pkg.jenkins.io (pkg.jenkins.io)|151.101.158.133|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 3175 (3.1K) [application/pgp-keys]
Saving to: '/usr/share/keyrings/jenkins-keyring.asc'

/usr/share/keyrings/jenkins-k 100%[===============================================>]   3.10K  --.-KB/s    in 0s

2025-02-03 14:13:04 (29.4 MB/s) - '/usr/share/keyrings/jenkins-keyring.asc' saved [3175/3175]
```

```
root@Athik:/var/www/html# echo "deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc]" https://pkg.jenkins.io/debian b
inary/ | sudo tee \/etc/apt/sources.list.d/jenkins.list > /dev/null
root@Athik:/var/www/html#
```

Configure

General

- General
- Source Code Management
- Triggers
- Environment
- Build Steps
- Post-build Actions

General   Enabled ●

Description

```
Deploying Static Page using NGINX in localhost:80
```

Plain text Preview

☐ Commit agent's Docker container ?

☐ Define a Docker template

☐ Discard old builds ?

☐ GitHub project

☐ This project is parameterized ?

☐ Throttle builds ?

[Save] [Apply]

☰ **Execute shell** ?   ✕

Command

See the list of available environment variables

```
sudo apt update -y && sudo apt upgrade -y
sudo systemctl start nginx
sudo bash -c 'cat > /var/www/html/index.html' <<EOF
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>GUVI - Learn, Code, Succeed</title>
    <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/animate.css/4.1.1/animate.min.css">
    <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/aos/2.3.4/aos.css">
    <style>
        body {
            font-family: 'Poppins', sans-serif;
            margin: 0;
            padding: 0;
            background-color: #f8f9fa;
            color: #333;
```

[Save] [Apply]

```
root@Athik:/var/www/html# sudo visudo
```

```
  GNU nano 7.2                                    /etc/sudoers.tmp
# "sudo scp" or "sudo rsync" should be able to use your SSH agent.
#Defaults:%sudo env_keep += "SSH_AGENT_PID SSH_AUTH_SOCK"

# Ditto for GPG agent
#Defaults:%sudo env_keep += "GPG_AGENT_INFO"

# Host alias specification

# User alias specification

# Cmnd alias specification

# User privilege specification
root    ALL=(ALL:ALL) ALL

# Members of the admin group may gain root privileges
%admin ALL=(ALL) ALL

# Allow members of group sudo to execute any command
%sudo   ALL=(ALL:ALL) ALL

# See sudoers(5) for more information on "@include" directives:

@includedir /etc/sudoers.d
jenkins ALL=(ALL) NOPASSWD: ALL

^G Help        ^O Write Out   ^W Where Is    ^K Cut         ^T Execute    ^C Location    M-U Undo      M-A Set Mark
^X Exit        ^R Read File   ^\ Replace     ^U Paste       ^J Justify    ^/ Go To Line  M-E Redo      M-6 Copy
```

Ctrl + X and Y and Press Enter

To have jenkins freestyle tasks to run without sudo control & restart the jenkins to apply those changes


```
root@Athik:/var/www/html# sudo systemctl restart jenkins
```

Command in Execute Shell

sudo apt update -y && sudo apt upgrade -y

sudo systemctl start nginx

sudo bash -c 'cat > /var/www/html/index.html' <<EOF

<!DOCTYPE html>

<html lang="en">

<head>

   <meta charset="UTF-8">

   <meta name="viewport" content="width=device-width, initial-scale=1.0">

```html
<title>GUVI - Learn, Code, Succeed</title>

<link rel="stylesheet"
href="https://cdnjs.cloudflare.com/ajax/libs/animate.css/4.1.1/animate.min.css">

<link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/aos/2.3.4/aos.css">

<style>

  body {

    font-family: 'Poppins', sans-serif;

    margin: 0;

    padding: 0;

    background-color: #f8f9fa;

    color: #333;

  }

  header {

    background: linear-gradient(135deg, #008037, #004d26);

    color: white;

    text-align: center;

    padding: 40px 0;

    box-shadow: 0 4px 10px rgba(0, 0, 0, 0.1);

  }

  nav {

    position: sticky;

    top: 0;

    background-color: white;

    box-shadow: 0px 2px 10px rgba(0, 0, 0, 0.1);
```

```css
    padding: 10px 0;

    z-index: 1000;

}

nav ul {

    list-style-type: none;

    padding: 0;

    display: flex;

    justify-content: center;

}

nav ul li {

    margin: 0 20px;

}

nav ul li a {

    text-decoration: none;

    color: #008037;

    font-weight: bold;

    padding: 10px 15px;

    transition: 0.3s;

}

nav ul li a:hover {

    background-color: #008037;

    color: white;

    border-radius: 6px;
```

```css
}
main {

    max-width: 900px;

    margin: 20px auto;

    padding: 20px;

    background-color: white;

    border-radius: 12px;

    box-shadow: 0 4px 10px rgba(0, 0, 0, 0.1);

}
h2 {

    color: #008037;

    border-bottom: 2px solid #008037;

    padding-bottom: 5px;

}
section img {

    width: 100%;

    border-radius: 12px;

    box-shadow: 0 4px 10px rgba(0, 0, 0, 0.1);

}
p {

    line-height: 1.8;

}
ul {
```

```css
    list-style-type: square;

    padding-left: 20px;

}

ul li {

    margin: 8px 0;

}

footer {

    background: #004d26;

    color: white;

    text-align: center;

    padding: 15px;

    position: relative;

    margin-top: 20px;

}

.btn {

    display: inline-block;

    padding: 10px 20px;

    margin-top: 15px;

    color: white;

    background-color: #008037;

    border: none;

    border-radius: 6px;

    font-weight: bold;
```

```
            transition: 0.3s;

            text-decoration: none;

        }

        .btn:hover {

            background-color: #005a2c;

            transform: scale(1.05);

        }

    </style>

</head>

<body>

    <header class="animate__animated animate__fadeInDown">

        <h1>GUVI - Learn, Code, Succeed</h1>

    </header>

    <nav>

        <ul>

            <li><a href="#about">About GUVI</a></li>

            <li><a href="#courses">Courses</a></li>

            <li><a href="#contact">Contact</a></li>

        </ul>

    </nav>


    <main>

        <section id="about" data-aos="fade-up">
```

```html
<h2>About GUVI</h2>

<img src="https://img-cdn.thepublive.com/fit-in/1280x960/filters:format(webp)/entrackr/media/post_attachments/wp-content/uploads/2022/09/Guvi.jpg" alt="GUVI Logo">

<p>GUVI is an IIT-Madras incubated company that provides top-tier coding and technology courses in regional languages. Empowering learners with industry-relevant skills.</p>

</section>


<section id="courses" data-aos="fade-up">

<h2>Popular Courses</h2>

<ul>

<li>🚀 <strong>Full-Stack Development:</strong> Learn MERN & MEAN stack hands-on.</li>

<li> 💡 <strong>Data Science & AI:</strong> Master Python, ML, Deep Learning & more.</li>

<li> 🔒 <strong>Cyber Security:</strong> Become an ethical hacker & security expert.</li>

</ul>

<a href="https://www.guvi.in/courses" class="btn" target="_blank">Explore Courses</a>

</section>


<section id="contact" data-aos="fade-up">

<h2>Contact</h2>

<p>📧 Email: <a href="mailto:support@guvi.in">support@guvi.in</a></p>

<p>🌐 Website: <a href="https://www.guvi.in/" target="_blank">www.guvi.in</a></p>
```

```
        </section>

    </main>


    <footer>

        <p>&copy; 2025 GUVI | Empowering Learners</p>

    </footer>


    <script src="https://cdnjs.cloudflare.com/ajax/libs/aos/2.3.4/aos.js"></script>

    <script>

        AOS.init({

            duration: 1000,

            easing: 'ease-in-out',

        });

    </script>

</body>

</html>

EOF

sudo cp /var/www/html/index.html /var/www/html/index.nginx-debian.html

sudo systemctl restart nginx
```

Status

</> Changes

▭ Workspace

▷ Build Now

⚙ Configure

🗑 Delete Project

✎ Rename

Builds   ⋯   ⤢

🔍 Filter   /

Today

✅ #11 10:10 AM   ⌄

✅ #10 10:07 AM   ⌄

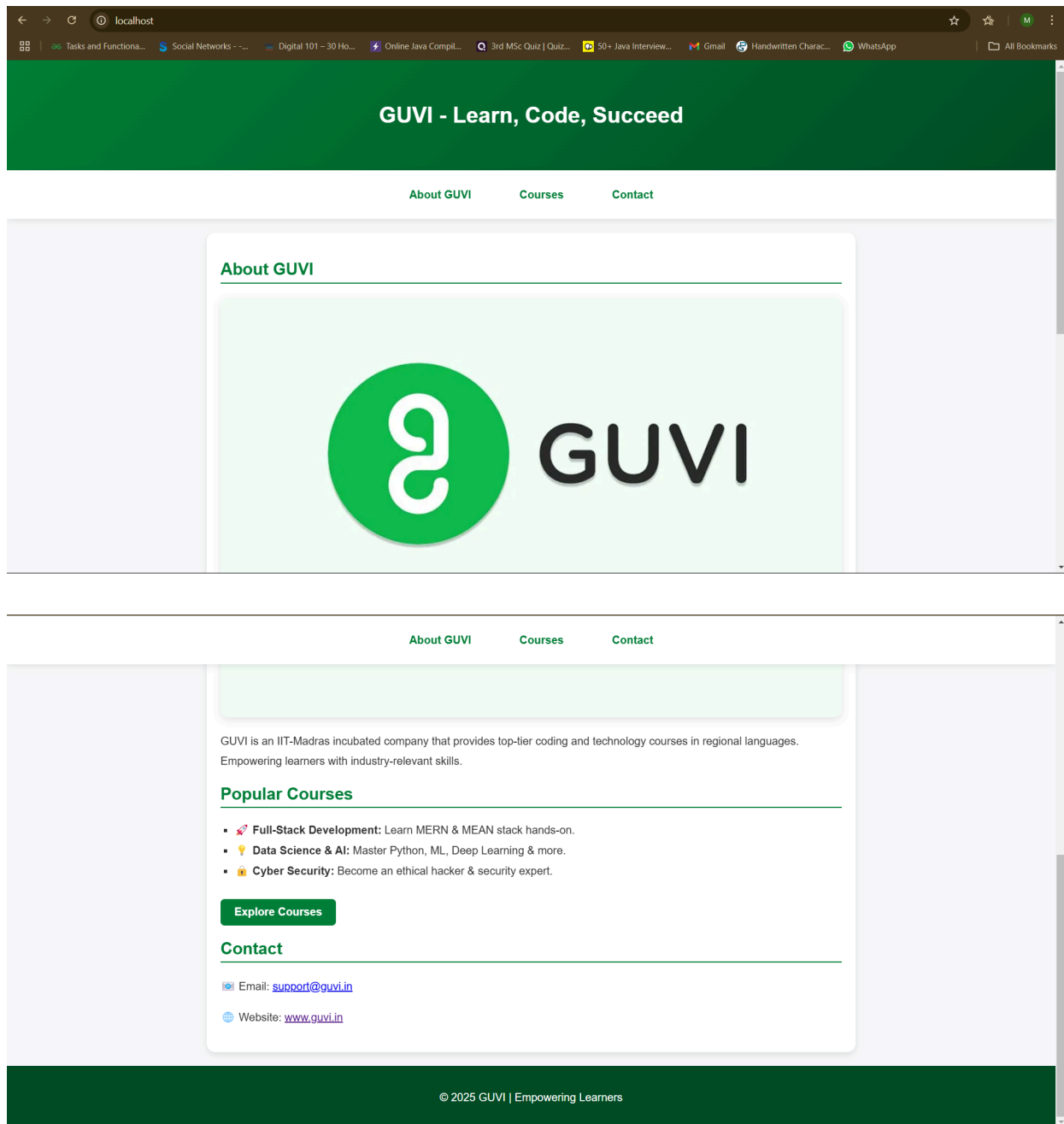✅ #9 10:04 AM   ⌄

✅ #8 9:58 AM   ⌄

✅ #7 9:40 AM   ⌄

localhost:8080/job/DevOps_Task_1/build?delay=0sec

Open Browser and enter localhost:80 and press enter to view your locally deployed static webpage through jenkins

Console Output

Started by user MOHAMED ATHIK R

Running as SYSTEM

Building in workspace /var/lib/jenkins/workspace/DevOps_Task_1

[DevOps_Task_1] $ /bin/sh -xe /tmp/jenkins1663468210423461072.sh

+ sudo apt update -y

WARNING: apt does not have a stable CLI interface. Use with caution in scripts.

Ign:1 https://pkg.jenkins.io/debian binary/ InRelease

Hit:2 https://pkg.jenkins.io/debian binary/ Release

Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease

Hit:5 http://archive.ubuntu.com/ubuntu noble InRelease

Hit:6 http://archive.ubuntu.com/ubuntu noble-updates InRelease

Hit:7 http://archive.ubuntu.com/ubuntu noble-backports InRelease

Reading package lists...

Building dependency tree...

Reading state information...

All packages are up to date.

+ sudo apt upgrade -y

WARNING: apt does not have a stable CLI interface. Use with caution in scripts.

Reading package lists...

Building dependency tree...

Reading state information...

Calculating upgrade...

The following package was automatically installed and is no longer required:

libllvm17t64

Use 'sudo apt autoremove' to remove it.

0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.

+ sudo systemctl start nginx

+ sudo bash -c cat > /var/www/html/index.html

+ sudo cp /var/www/html/index.html /var/www/html/index.nginx-debian.html

+ sudo systemctl restart nginx

Finished: SUCCESS

⊘ **Console Output**   ⬇ Download   ⧉ Copy   View as plain text

```
Started by user MOHAMED ATHIK R
Running as SYSTEM
Building in workspace /var/lib/jenkins/workspace/DevOps_Task_1
[DevOps_Task_1] $ /bin/sh -xe /tmp/jenkins1663468210423461072.sh
+ sudo apt update -y

WARNING: apt does not have a stable CLI interface. Use with caution in scripts.

Ign:1 https://pkg.jenkins.io/debian binary/ InRelease
Hit:2 https://pkg.jenkins.io/debian binary/ Release
Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:5 http://archive.ubuntu.com/ubuntu noble InRelease
Hit:6 http://archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:7 http://archive.ubuntu.com/ubuntu noble-backports InRelease
Reading package lists...
Building dependency tree...
Reading state information...
All packages are up to date.
+ sudo apt upgrade -y

WARNING: apt does not have a stable CLI interface. Use with caution in scripts.

Reading package lists...
```