CAPSTONE PROJECT

Name: Z.MD SHARUF RAJ
Batch: D015
Project: Application Deployment (Deploy the given react application to a production ready state)

Solution:

1.Cloning into the below mentioned Repo and Deploying the Application in HTTP port 80:

https://github.com/sriram-R-krishnan/devops-build

```
ubuntu@ip-172-31-15-171:~$ git clone https://github.com/sriram-R-krishnan/devops-build
Cloning into 'devops-build'...
remote: Enumerating objects: 21, done.
remote: Counting objects: 100% (2/2), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 21 (delta 0), reused 0 (delta 0), pack-reused 19
Receiving objects: 100% (21/21), 720.09 KiB | 13.33 MiB/s, done.
ubuntu@ip-172-31-15-171:~$
```

2.Dockerizing the application by creating a dockerfile:

Installing Docker:

```
ubuntu@ip-172-31-15-171:~$ docker --version
Docker version 24.0.7, build 24.0.7-0ubuntu4
ubuntu@ip-172-31-15-171:~$
```

Creating Dockerfile, Docker Build and Docker Run:
Dockerfile:

```
ubuntu@ip-172-31-15-171:~/devops-build$ cat Dockerfile
FROM nginx:alpine
COPY build/ /usr/share/nginx/html
EXPOSE 80
CMD ["nginx","-g","daemon off;"]
ubuntu@ip-172-31-15-171:~/devops-build$
```

Docker Build:

```
ubuntu@ip-172-31-15-171:~/devops-build$ docker build -t app:v1 .
DEPRECATED: The legacy builder is deprecated and will be removed
            Install the buildx component to build images with Bui
            https://docs.docker.com/go/buildx/

Sending build context to Docker daemon   3.419MB
Step 1/4 : FROM nginx:alpine
alpine: Pulling from library/nginx
4abcf2066143: Pull complete
fc21a1d387f5: Pull complete
e6ef242c1570: Pull complete
13fcfbc94648: Pull complete
d4bca490e609: Pull complete
5406ed7b06d9: Pull complete
8a3742a9529d: Pull complete
0d0c16747d2c: Pull complete
Digest: sha256:516475cc129da42866742567714ddc681e5eed7b9ee0b9e9c0
Status: Downloaded newer image for nginx:alpine
 ---> 501d84f5d064
Step 2/4 : COPY build/ /usr/share/nginx/html
 ---> c4cf79556ab6
Step 3/4 : EXPOSE 80
 ---> Running in aea6aeda9629
Removing intermediate container aea6aeda9629
 ---> 35ced80b98de
Step 4/4 : CMD ["nginx","-g","daemon off;"]
 ---> Running in 181c7ccca2a3
Removing intermediate container 181c7ccca2a3
 ---> d1e377174fae
```

```
Step 4/4 : CMD ["nginx","-g","daemon off;"]
 ---> Running in 181c7ccca2a3
Removing intermediate container 181c7ccca2a3
 ---> d1e377174fae
Successfully built d1e377174fae
Successfully tagged app:v1
```

Docker Run:

```
ubuntu@ip-172-31-15-171:~/devops-build$ docker run -d -it -p 80:80 app:v1
d15f3ca969884b07b0c25fb2ac5f78b4de51a8ace139688dbdd6196ab83bb8d7
```

Docker image Name:

```
ubuntu@ip-172-31-15-171:~/devops-build$ docker images
REPOSITORY    TAG        IMAGE ID        CREATED          SIZE
app           v1         d1e377174fae    2 minutes ago    50.9MB
nginx         alpine     501d84f5d064    3 days ago       48.3MB
ubuntu@ip-172-31-15-171:~/devops-build$
```
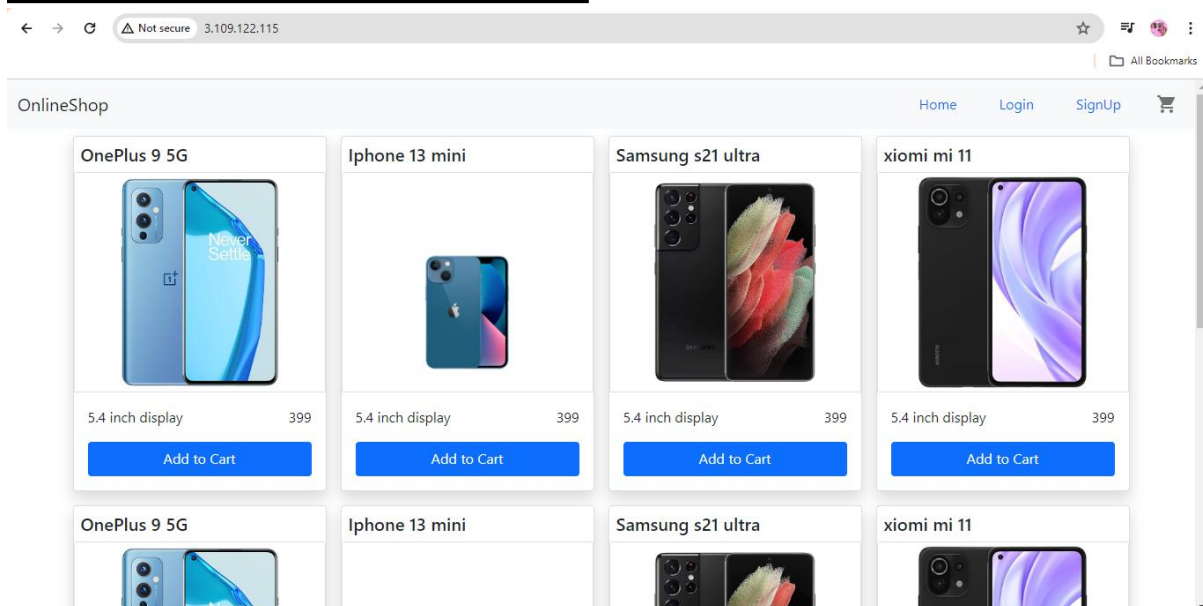
Running Docker Image in Port 80 HTTP:

React Application output in port 80 HTTP:

Creating docker-compose file for the above image:

```
ubuntu@ip-172-31-15-171:~/devops-build$ cat docker-compose.yml
version: '3'
services:
  app:
    image: app:v1
    ports:
      - "80:80"
    container_name: test
ubuntu@ip-172-31-15-171:~/devops-build$
```

3.Bash Scripts:
Build.sh for building docker images:

```
ubuntu@ip-172-31-15-171:~/devops-build$ vi build.sh
ubuntu@ip-172-31-15-171:~/devops-build$ chmod +X build.sh
ubuntu@ip-172-31-15-171:~/devops-build$ sh build.sh
DEPRECATED: The legacy builder is deprecated and will be re
            Install the buildx component to build images wi
            https://docs.docker.com/go/buildx/

Sending build context to Docker daemon   3.421MB
Step 1/4 : FROM nginx:alpine
 ---> 501d84f5d064
Step 2/4 : COPY build/ /usr/share/nginx/html
 ---> Using cache
 ---> c4cf79556ab6
Step 3/4 : EXPOSE 80
 ---> Using cache
 ---> 35ced80b98de
Step 4/4 : CMD ["nginx","-g","daemon off;"]
 ---> Using cache
 ---> d1e377174fae
Successfully built d1e377174fae
Successfully tagged app:v1
Docker image app:v1 built successfully.
ubuntu@ip-172-31-15-171:~/devops-build$
```

deploy.sh for deploying the image to the server:

```
ubuntu@ip-172-31-15-171:~/devops-build$ sh deploy.sh
The push refers to repository [docker.io/sharufdock/dev]
cfbec7f2b4f6: Pushed
ce495f7b0b7d: Mounted from library/nginx
9c70f446fbe2: Mounted from library/nginx
5be225e16e44: Mounted from library/nginx
3d04ead9b400: Mounted from library/nginx
af5598fef05f: Mounted from library/nginx
8fbd5a835e5e: Mounted from library/nginx
75061be64847: Mounted from library/nginx
d4fc045c9e3a: Mounted from library/nginx
appv1: digest: sha256:3970421ae44de84bdf5ba985f8d6ca8b30f31c8984fcf2a930d84aef806b9e02 size: 2199
The push refers to repository [docker.io/sharufdock/prod]
cfbec7f2b4f6: Mounted from sharufdock/dev
ce495f7b0b7d: Mounted from sharufdock/dev
9c70f446fbe2: Mounted from sharufdock/dev
5be225e16e44: Mounted from sharufdock/dev
3d04ead9b400: Mounted from sharufdock/dev
af5598fef05f: Mounted from sharufdock/dev
8fbd5a835e5e: Mounted from sharufdock/dev
75061be64847: Mounted from sharufdock/dev
d4fc045c9e3a: Mounted from sharufdock/dev
appv1: digest: sha256:3970421ae44de84bdf5ba985f8d6ca8b30f31c8984fcf2a930d84aef806b9e02 size: 2199
ubuntu@ip-172-31-15-171:~/devops-build$
```
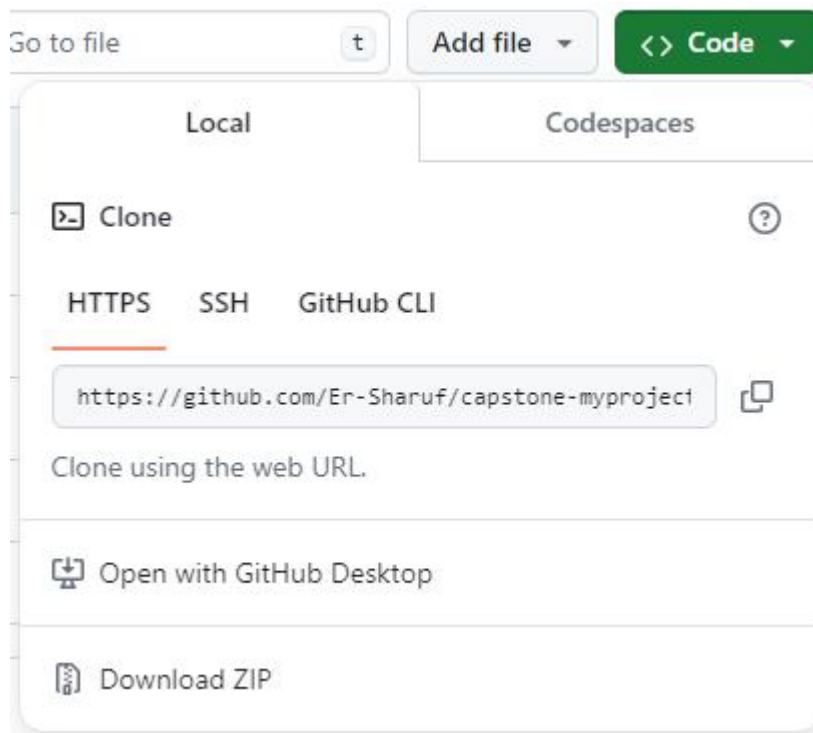
4.Version Control:
Creating a github repo and cloning the repo:

Find a repository...	Type ▾	Language ▾	Sort ▾	⊟ New

capstone-myproject Public   ☆ Star ▾

🔴 HTML   Updated 4 minutes ago

Copying the repo URL from github:

Preparing for Git Environment:

```
ubuntu@ip-172-31-15-171:~/capstone$ git init
hint: Using 'master' as the name for the initial branch. This default branch name
hint: is subject to change. To configure the initial branch name to use in all
hint: of your new repositories, which will suppress this warning, call:
hint:
hint:    git config --global init.defaultBranch <name>
hint:
hint: Names commonly chosen instead of 'master' are 'main', 'trunk' and
hint: 'development'. The just-created branch can be renamed via this command:
hint:
hint:    git branch -m <name>
```

```
ubuntu@ip-172-31-15-171:~/capstone$ git add .
ubuntu@ip-172-31-15-171:~/capstone$ git commit -m "commit"
[master (root-commit) 91e9edb] commit
 Committer: Ubuntu <ubuntu@ip-172-31-15-171.ap-south-1.compute.
Your name and email address were configured automatically based
on your username and hostname. Please check that they are accur
You can suppress this message by setting them explicitly. Run
following command and follow the instructions in your editor to
your configuration file:

    git config --global --edit

After doing this, you may fix the identity used for this commi

    git commit --amend --reset-author

 19 files changed, 209 insertions(+)
 create mode 100644 Dockerfile
 create mode 100644 build.sh
 create mode 100644 build/_redirects
 create mode 100644 build/asset-manifest.json
 create mode 100644 build/favicon.ico
 create mode 100644 build/index.html
 create mode 100644 build/logo192.png
 create mode 100644 build/logo512.png
 create mode 100644 build/manifest.json
 create mode 100644 build/robots.txt
 create mode 100644 build/static/css/main.cf5c13c5.css
 create mode 100644 build/static/css/main.cf5c13c5.css.map
```

```
 create mode 100644 build/robots.txt
 create mode 100644 build/static/css/main.cf5c13c5.css
 create mode 100644 build/static/css/main.cf5c13c5.css.map
 create mode 100644 build/static/js/787.2f5360e2.chunk.js
 create mode 100644 build/static/js/787.2f5360e2.chunk.js.map
 create mode 100644 build/static/js/main.f1c48542.js
 create mode 100644 build/static/js/main.f1c48542.js.LICENSE.txt
 create mode 100644 build/static/js/main.f1c48542.js.map
 create mode 100644 deploy.sh
 create mode 100644 docker-compose.yml
```

Adding the github repo URL and moving to dev branch:

```
ubuntu@ip-172-31-15-171:~/capstone$ git remote add origin https://github.com/Er-Sharuf/capstone-myproject.git
ubuntu@ip-172-31-15-171:~/capstone$ git checkout -b dev
Switched to a new branch 'dev'
```

Doing Git add, Git commit & Git push and pushing the code to Dev branch:

```
ubuntu@ip-172-31-15-171:~/capstone$ git add .
ubuntu@ip-172-31-15-171:~/capstone$ git commit -m "push the code"
On branch dev
nothing to commit, working tree clean
ubuntu@ip-172-31-15-171:~/capstone$ git push origin dev
Username for 'https://github.com': devopsguy
Password for 'https://devopsguy@github.com':
Enumerating objects: 25, done.
Counting objects: 100% (25/25), done.
Compressing objects: 100% (24/24), done.
Writing objects: 100% (25/25), 720.30 KiB | 4.59 MiB/s, done.
Total 25 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/Er-Sharuf/capstone-myproject.git
 * [new branch]      dev -> dev
```

New Branch dev using CLI created in github:

capstone-myproject Public   Pin   Unwatch 1

dev ▾   1 Branch   0 Tags   Go to file   t   Add file ▾   <> Code ▾

 Ubuntu commit   91e9edb · 26 minutes ago   1 Commits

build	commit	26 minutes ago
Dockerfile	commit	26 minutes ago
build.sh	commit	26 minutes ago
deploy.sh	commit	26 minutes ago
docker-compose.yml	commit	26 minutes ago

Code Files in Git Hub in dev branch:

capstone-myproject Public   Pin   Unwatch 1

dev ▾   1 Branch   0 Tags   Go to file   t   Add file ▾   <> Code ▾

 Ubuntu commit   91e9edb · 2 hours ago   1 Commits

build	commit	2 hours ago
Dockerfile	commit	2 hours ago
build.sh	commit	2 hours ago
deploy.sh	commit	2 hours ago
docker-compose.yml	commit	2 hours ago

Dockerfile

```
@@ -0,0 +1,4 @@
1 + FROM nginx:alpine
2 + COPY build/ /usr/share/nginx/html
3 + EXPOSE 80
4 + CMD ["nginx","-g","daemon off;"]
```

build.sh

```
@@ -0,0 +1,17 @@
1 + #!/bin/bash
2 +
3 + # Define variables
4 + DOCKER_IMAGE_NAME="app"
5 + DOCKER_IMAGE_TAG="v1"
6 +
7 + # Build the Docker image
8 + docker build -t "${DOCKER_IMAGE_NAME}:${DOCKER_IMAGE_TAG}" .
9 +
10 + # Check if the build was successful
11 + if [ $? -eq 0 ]; then
12 +   echo "Docker image ${DOCKER_IMAGE_NAME}:${DOCKER_IMAGE_TAG} built successfully."
13 + else
14 +   echo "Failed to build Docker image ${DOCKER_IMAGE_NAME}:${DOCKER_IMAGE_TAG}."
15 +   exit 1
16 + fi
17 +
```

build/_redirects

```
@@ -0,0 +1 @@
1  + /* /index.html 200
```

build/asset-manifest.json

```
@@ -0,0 +1,15 @@
1  + {
2  +   "files": {
3  +     "main.css": "/static/css/main.cf5c13c5.css",
4  +     "main.js": "/static/js/main.f1c48542.js",
5  +     "static/js/787.2f5360e2.chunk.js": "/static/js/787.2f5360e2.chunk.js",
6  +     "index.html": "/index.html",
7  +     "main.cf5c13c5.css.map": "/static/css/main.cf5c13c5.css.map",
8  +     "main.f1c48542.js.map": "/static/js/main.f1c48542.js.map",
9  +     "787.2f5360e2.chunk.js.map": "/static/js/787.2f5360e2.chunk.js.map"
10 +   },
11 +   "entrypoints": [
12 +     "static/css/main.cf5c13c5.css",
13 +     "static/js/main.f1c48542.js"
14 +   ]
15 + }
```

BIN +3.78 KB build/favicon.ico

Binary file not shown.

build/index.html

```
@@ -0,0 +1 @@
1  + <!doctype html><html lang="en"><head><meta charset="utf-8"/><link rel="icon" href="/favicon.ico"/><meta name="viewport"
     content="width=device-width,initial-scale=1"/><meta name="theme-color" content="#000000"/><meta name="description" content="Web
     site created using create-react-app"/><link rel="apple-touch-icon" href="/logo192.png"/><link rel="manifest"
     href="/manifest.json"/><link href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css" rel="stylesheet"
     integrity="sha384-1BmE4kWBq78iYhFldvKuhfTAU6auU8tT94WrHftjDbrCEXSU1oBoqy12QvZ6jIW3" crossorigin="anonymous"><link
     rel="stylesheet" href="https://cdn.jsdelivr.net/npm/bootstrap-icons@1.10.5/font/bootstrap-icons.css"><title>React App</title>
     <script defer="defer" src="/static/js/main.f1c48542.js"></script><link href="/static/css/main.cf5c13c5.css" rel="stylesheet">
     </head><body><noscript>You need to enable JavaScript to run this app.</noscript><div id="root"></div></body></html>
```
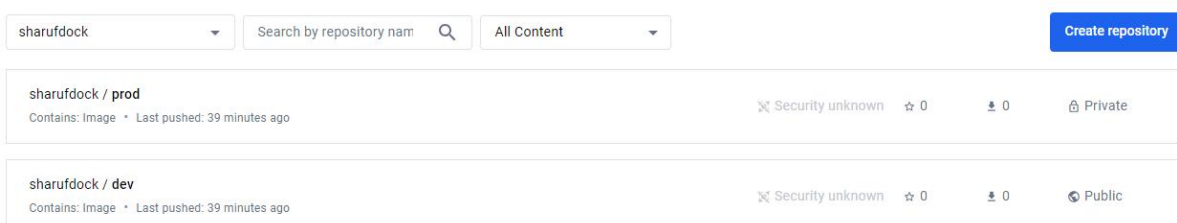
```
∨ BIN +5.22 KB build/logo192.png ⧉
```
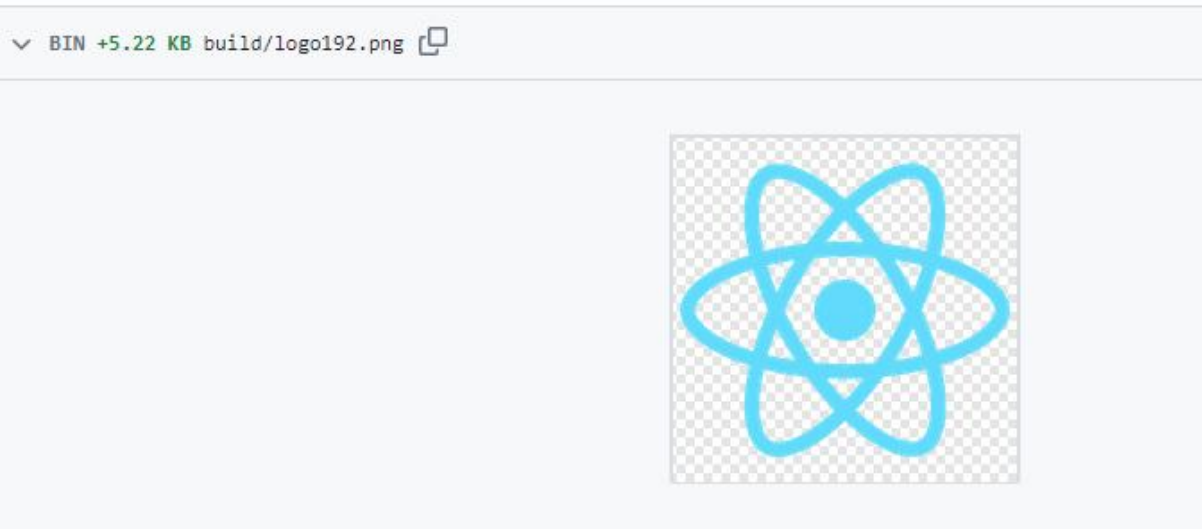


```
∨ 5 ▪▪▪▪▪ deploy.sh ⧉
 ...    ...     @@ -0,0 +1,5 @@
         1  + docker tag app:v1 sharufdock/dev:appv1
         2  + docker tag app:v1 sharufdock/prod:appv1
         3  + docker push sharufdock/dev:appv1
         4  + docker push sharufdock/prod:appv1
         5  +
```

```
∨ 7 ▪▪▪▪▪ docker-compose.yml ⧉
 ...    ...     @@ -0,0 +1,7 @@
         1  + version: '3'
         2  + services:
         3  +   app:
         4  +     image: app:v1
         5  +     ports:
         6  +       - "80:80"
         7  +     container_name: test
```

5.Docker Hub:
Creating 2 repos Prod as private and Dev as public in dockerhub:

sharufdock ▾	Search by repository nam 🔍	All Content ▾				Create repository

sharufdock / prod Contains: Image · Last pushed: 39 minutes ago	✂ Security unknown	☆ 0	⬇ 0	🔒 Private
sharufdock / dev Contains: Image · Last pushed: 39 minutes ago	✂ Security unknown	☆ 0	⬇ 0	🌐 Public

6.Jenkins:
Installation Jenkins and opening the official page for jenkins:

```
ubuntu@ip-172-31-15-171:~$ java --version
openjdk 11.0.23 2024-04-16
OpenJDK Runtime Environment (build 11.0.23+9-post-Ubuntu-1ubuntu1)
OpenJDK 64-Bit Server VM (build 11.0.23+9-post-Ubuntu-1ubuntu1, mixed mode, sharing)
ubuntu@ip-172-31-15-171:~$ jenkins --version
2.456
ubuntu@ip-172-31-15-171:~$
```

Official Page of Jenkins using the ip address:

⚠ Not secure 3.109.122.115:8080/login?from=%2F

Getting Started

Unlock Jenkins

To ensure Jenkins is securely set up by the administrator, a password has been written to the log (**not sure where to find it?**) and this file on the server:

`/var/lib/jenkins/secrets/initialAdminPassword`

Please copy the password from either location and paste it below.

Administrator password

[   ]

Continue

Setting up Jenkins:

Getting Started

✓ Folders	✓ OWASP Markup Formatter	✓ Build Timeout	○ Credentials Binding	Folders OWASP Markup Formatter ** ASM API ** JSON Path API ** Structs ** Pipeline: Step API ** Token Macro Build Timeout
○ Timestamper	↻ Workspace Cleanup	↻ Ant	↻ Gradle	
↻ Pipeline	↻ GitHub Branch Source	↻ Pipeline: GitHub Groovy Libraries	↻ Pipeline Graph View	
○ Git	↻ SSH Build Agents	↻ Matrix Authorization Strategy	○ PAM Authentication	
○ LDAP	↻ Email Extension	○ Mailer	○ Dark Theme	

** - required dependency

Jenkins 2.456

⚠ Not secure 3.109.122.115:8080

Getting Started

Jenkins is ready!

Your Jenkins setup is complete.

Start using Jenkins

Setting a new project:

New Item

Enter an item name

myprojectcapstone

Select an item type

Freestyle project
Classic, general-purpose job type that checks out from up to one SCM, executes build steps serially, followed by post-build steps like archiving artifacts and sending email notifications.

Pipeline
Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.

Multi-configuration project

OK

Adding Github repo URL and linking with jenkins:

Source Code Management

○ None

● Git ?

Repositories ?

Repository URL ?

https://github.com/Er-Sharuf/capstone-myproject.git

Credentials ?

- none -

+ Add ▼

Branches to build ?

Branch Specifier (blank for 'any') ?

*/master and */dev

Auto build trigger through Poll SCM:

Build Triggers

☐ Trigger builds remotely (e.g., from scripts) ?

☐ Build after other projects are built ?

☐ Build periodically ?

☑ GitHub hook trigger for GITScm polling ?

☐ Poll SCM ?

Adding WebHook in GitHub Repository:

Webhooks / Add webhook

We'll send a POST request to the URL below with details of any subscribed events. You can also specify which data format you'd like to receive (JSON, x-www-form-urlencoded, etc). More information can be found in our developer documentation.

Payload URL *

http://3.109.122.115:8080/job/myprojectcapstone

Content type

application/json

Secret

Which events would you like to trigger this webhook?

● Just the push event.

○ Send me everything.

Checking the console output in jenkins:

✓ Console Output

```
Started by an SCM change
Running as SYSTEM
Building in workspace /var/lib/jenkins/workspace/myprojectcapstone
The recommended git tool is: NONE
No credentials specified
 > git rev-parse --resolve-git-dir /var/lib/jenkins/workspace/myprojectcapstone/.git # timeout=10
Fetching changes from the remote Git repository
 > git config remote.origin.url https://github.com/Er-Sharuf/capstone-myproject.git # timeout=10
Fetching upstream changes from https://github.com/Er-Sharuf/capstone-myproject.git
 > git --version # timeout=10
 > git --version # 'git version 2.43.0'
 > git fetch --tags --force --progress -- https://github.com/Er-Sharuf/capstone-myproject.git
+refs/heads/*:refs/remotes/origin/* # timeout=10
Seen branch in repository origin/dev
Seen 1 remote branch
 > git show-ref --tags -d # timeout=10
Checking out Revision 52b97f080def1181eb502f62d3536746ba834781 (origin/dev)
 > git config core.sparsecheckout # timeout=10
 > git checkout -f 52b97f080def1181eb502f62d3536746ba834781 # timeout=10
Commit message: "Create code push"
 > git rev-list --no-walk 91e9edbc6ecd142eb6f51fc1f74a0a59bd89d13f # timeout=10
Finished: SUCCESS
```

Pushing the image to the Docker hub Repo:

sharufdock / Repositories / prod / Tags

General   **Tags**   Builds   Collaborators   Webhooks   Settings

☐   Sort by   Newest ▾   Filter Tags 🔍   Delete

TAG
● appv1
Last pushed 15 hours ago by sharufdock

☐

Digest	OS/ARCH
3970421ae44d	linux/amd64

sharufdock / Repositories / dev / Tags

General   **Tags**   Builds   Collaborators   Webhooks   Settings

☐   Sort by   Newest ▾   Filter Tags 🔍   Delete

TAG
● appv1
Last pushed 15 hours ago by sharufdock

☐

Digest	OS/ARCH
3970421ae44d	linux/amd64

AWS Security Group Configuration:

Inbound rules Info

Security group rule ID	Type Info	Protocol Info	Port range Info	Source Info		Description - optional Info	
sgr-0e592f2c6580f601f	Custom TCP ▼	TCP	9090	Cust... ▼	🔍 0.0.0.0/0 ✕		Delete
sgr-0b2d42648d2412654	SSH ▼	TCP	22	Cust... ▼	🔍 0.0.0.0/0 ✕		Delete
sgr-08768ebc4c82f2c25	All traffic ▼	All	All	Cust... ▼	🔍 0.0.0.0/0 ✕		Delete
sgr-0232e92d89fa61eac	HTTP ▼	TCP	80	Cust... ▼	🔍 0.0.0.0/0 ✕		Delete

Setup a monitoring system to check the health status of the application. (open-source):

Installing Prometheus:

Create a Prometheus user, required directories, and make Prometheus the user as the owner of those directories:

Copy prometheus and promtool binary from prometheus-files folder to /usr/local/bin and change the ownership to prometheus user:

Move the consoles and console_libraries directories from prometheus-files to /etc/prometheus folder and change the ownership to prometheus user:

```
ubuntu@ip-172-31-15-171:~/capstone$ sudo cp -r prometheus-files/consoles /etc/prometheus
ubuntu@ip-172-31-15-171:~/capstone$ sudo cp -r prometheus-files/console_libraries /etc/prometheus
ubuntu@ip-172-31-15-171:~/capstone$ sudo chown -R prometheus:prometheus /etc/prometheus/consoles
ubuntu@ip-172-31-15-171:~/capstone$ sudo chown -R prometheus:prometheus /etc/prometheus/console_libraries
ubuntu@ip-172-31-15-171:~/capstone$
```

Setup Prometheus Configuration:

Creating the prometheus.yml file:

```
ubuntu@ip-172-31-15-171:~/capstone$ touch prometheus.yml
ubuntu@ip-172-31-15-171:~/capstone$ ls
Dockerfile  build  build.sh  deploy.sh  docker-compose.yml  prometheus-2.22.0.linux-amd64.tar.gz  prometheus-files  prometheus.yml
ubuntu@ip-172-31-15-171:~/capstone$
```

```
global:
  scrape_interval: 10s

scrape_configs:
  - job_name: 'prometheus'
    scrape_interval: 5s
    static_configs:
      - targets: ['localhost:9090']

~
```

Changing the ownership of the file to prometheus user:

```
ubuntu@ip-172-31-15-171:~/capstone$ sudo chown prometheus:prometheus /etc/prometheus/prometheus.yml
ubuntu@ip-172-31-15-171:~/capstone$ ls -l /etc/prometheus/prometheus.yml
-rw-r--r-- 1 prometheus prometheus 156 May  8 06:14 /etc/prometheus/prometheus.yml
ubuntu@ip-172-31-15-171:~/capstone$
```

Setting up Prometheus Service File:

Creating a prometheus service file:

```
[Unit]
Description=Prometheus
Wants=network-online.target
After=network-online.target

[Service]
User=prometheus
Group=prometheus
Type=simple
ExecStart=/usr/local/bin/prometheus \
    --config.file /etc/prometheus/prometheus.yml \
    --storage.tsdb.path /var/lib/prometheus/ \
    --web.console.templates=/etc/prometheus/consoles \
    --web.console.libraries=/etc/prometheus/console_libraries

[Install]
WantedBy=multi-user.target


~
~
~
```

Reload the systemd service to register the prometheus service and start the prometheus service:

```
ubuntu@ip-172-31-15-171:~/capstone$ sudo systemctl start prometheus
ubuntu@ip-172-31-15-171:~/capstone$
```

Check the prometheus service status using the following command:

```
ubuntu@ip-172-31-15-171:~/capstone$ sudo systemctl status prometheus
● prometheus.service - Prometheus
     Loaded: loaded (/etc/systemd/system/prometheus.service; disabled; preset: enabled)
     Active: active (running) since Wed 2024-05-08 07:06:51 UTC; 1min 50s ago
   Main PID: 2589 (prometheus)
      Tasks: 6 (limit: 1130)
     Memory: 67.2M (peak: 67.4M)
        CPU: 228ms
     CGroup: /system.slice/prometheus.service
             └─2589 /usr/local/bin/prometheus --config.file /etc/prometheus/prometheus.yml -

May 08 07:06:51 ip-172-31-15-171 prometheus[2589]: level=info ts=2024-05-08T07:06:51.573Z ca
May 08 07:06:51 ip-172-31-15-171 prometheus[2589]: level=info ts=2024-05-08T07:06:51.573Z ca
May 08 07:06:51 ip-172-31-15-171 prometheus[2589]: level=info ts=2024-05-08T07:06:51.574Z ca
May 08 07:06:51 ip-172-31-15-171 prometheus[2589]: level=info ts=2024-05-08T07:06:51.577Z ca
May 08 07:06:51 ip-172-31-15-171 prometheus[2589]: level=info ts=2024-05-08T07:06:51.577Z ca
May 08 07:06:51 ip-172-31-15-171 prometheus[2589]: level=info ts=2024-05-08T07:06:51.579Z ca
May 08 07:06:51 ip-172-31-15-171 prometheus[2589]: level=info ts=2024-05-08T07:06:51.579Z ca
May 08 07:06:51 ip-172-31-15-171 prometheus[2589]: level=info ts=2024-05-08T07:06:51.579Z ca
May 08 07:06:51 ip-172-31-15-171 prometheus[2589]: level=info ts=2024-05-08T07:06:51.585Z ca
May 08 07:06:51 ip-172-31-15-171 prometheus[2589]: level=info ts=2024-05-08T07:06:51.585Z ca
lines 1-20/20 (END)
```

Launching the Prometheus page using Port 9090:

Edit inbound rules Info

Inbound rules control the incoming traffic that's allowed to reach the instance.

Inbound rules Info

Security group rule ID	Type Info	Protocol Info	Port range Info	Source Info		Description - optional Info	
sgr-03e2a0237ccb5dd24	Custom TCP ▼	TCP	9090	Cust... ▼	🔍		Delete
					0.0.0.0/0 ✕		
sgr-0b2d42648d2412654	SSH ▼	TCP	22	Cust... ▼	🔍		Delete
					0.0.0.0/0 ✕		

← → C ⚠ Not secure 15.207.112.49:9090/graph

Prometheus   Alerts Graph Status ▾ Help

☐ Enable query history

Expression (press Shift+Enter for newlines)

Execute   - insert metric at cursor - ⬍

Graph | Console

⏪ | Moment | ⏩

Element

no data

Add Graph

Installing Grafana:

Adding the Grafana Repository:

```
ubuntu@ip-172-31-15-171:~/capstone$ sudo apt install -y apt-transport-https
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  apt-transport-https
0 upgraded, 1 newly installed, 0 to remove and 14 not upgraded.
Need to get 3974 B of archives.
After this operation, 35.8 kB of additional disk space will be used.
Get:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 apt-t
Fetched 3974 B in 0s (152 kB/s)
Selecting previously unselected package apt-transport-https.
(Reading database ... 74231 files and directories currently installed.)
Preparing to unpack .../apt-transport-https_2.7.14build2_all.deb ...
Unpacking apt-transport-https (2.7.14build2) ...
Setting up apt-transport-https (2.7.14build2) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-15-171:~/capstone$
```

```
ubuntu@ip-172-31-15-171:~/capstone$ wget -q -O - https://packages.grafana.com/gpg.key | sudo apt-key add -
echo "deb https://packages.grafana.com/oss/deb stable main" | sudo tee /etc/apt/sources.list.d/grafana.list
Warning: apt-key is deprecated. Manage keyring files in trusted.gpg.d instead (see apt-key(8)).
OK
deb https://packages.grafana.com/oss/deb stable main
ubuntu@ip-172-31-15-171:~/capstone$
```

Update the package list and install Grafana with the following commands:

```
ubuntu@ip-172-31-15-171:~/capstone$ sudo apt update && sudo apt install grafana -y
Warning: The unit file, source configuration file or drop-ins of apt-news.service changed
Warning: The unit file, source configuration file or drop-ins of esm-cache.service changed
.
Hit:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 https://packages.grafana.com/oss/deb stable InRelease
Ign:5 https://pkg.jenkins.io/debian binary/ InRelease
Hit:6 https://pkg.jenkins.io/debian binary/ Release
Hit:7 http://security.ubuntu.com/ubuntu noble-security InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
14 packages can be upgraded. Run 'apt list --upgradable' to see them.
W: https://packages.grafana.com/oss/deb/dists/stable/InRelease: Key is stored in legacy t
CATION section in apt-key(8) for details.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  musl
The following NEW packages will be installed:
  grafana musl
0 upgraded, 2 newly installed, 0 to remove and 14 not upgraded.
Need to get 115 MB of archives.
```

Enable and start the Grafana service:

```
ubuntu@ip-172-31-15-171:~/capstone$ sudo systemctl enable --now grafana-server
Synchronizing state of grafana-server.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable grafana-server
Created symlink /etc/systemd/system/multi-user.target.wants/grafana-server.service → /usr/lib/systemd/system/grafana-server.service.
ubuntu@ip-172-31-15-171:~/capstone$
```

Grafana Service Running:

```
ubuntu@ip-172-31-15-171:~/capstone$ sudo systemctl enable --now grafana-server
Synchronizing state of grafana-server.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable grafana-server
ubuntu@ip-172-31-15-171:~/capstone$ sudo systemctl start grafana-server
ubuntu@ip-172-31-15-171:~/capstone$ systemctl status grafana-server
● grafana-server.service - Grafana instance
     Loaded: loaded (/usr/lib/systemd/system/grafana-server.service; enabled; preset: enabled)
     Active: active (running) since Wed 2024-05-08 08:24:50 UTC; 50s ago
       Docs: http://docs.grafana.org
   Main PID: 8373 (grafana)
      Tasks: 7 (limit: 1130)
     Memory: 118.9M (peak: 119.1M)
        CPU: 1.579s
     CGroup: /system.slice/grafana-server.service
             └─8373 /usr/share/grafana/bin/grafana server --config=/etc/grafana/grafana.ini --pidfile=/run/grafana/gr
```

Enabling Port 3000 and opening Grafana Dashboard:

Inbound rules Info

Security group rule ID	Type Info	Protocol Info	Port range Info	Source Info		Description - optional Info	
sgr-03e2a0237ccb5dd24	Custom TCP ▼	TCP	9090	Cust... ▼	🔍		Delete
					0.0.0.0/0 ✕		
sgr-0b2d42648d2412654	SSH ▼	TCP	22	Cust... ▼	🔍		Delete
					0.0.0.0/0 ✕		
–	Custom TCP ▼	TCP	3000	Any... ▼	🔍 0.0.0.0/0		Delete
					0.0.0.0/0 ✕		

Add rule