

PROJECT - 2

TrendStore

ScreenShots

1] docker build

```
ubuntu@ip-172-31-65-63:~$ nano Dockerfile
ubuntu@ip-172-31-65-63:~$ docker build -t trend-app .
DEPRECATED: The legacy builder is deprecated and will be removed in a future release.
Install the buildx component to build images with BuildKit:
https://docs.docker.com/go/buildx/
Sending build context to Docker daemon 18.37MB
Step 1/5 : FROM nginx:alpine
alpine: Pulling from library/nginx
1074353eeec0d: Pulling fs layer
25f453064fd3: Pulling fs layer
567f84da6fbdb: Pulling fs layer
da7c973d8b92: Pulling fs layer
33f95a0f3229: Pulling fs layer
085c5e5aaa8e: Pulling fs layer
0abf9e567266: Pulling fs layer
de54cb821236: Pulling fs layer
da7c973d8b92: Waiting
33f95a0f3229: Waiting
085c5e5aaa8e: Waiting
0abf9e567266: Waiting
de54cb821236: Waiting
567f84da6fbdb: Verifying Checksum
567f84da6fbdb: Download complete
25f453064fd3: Verifying checksum
25f453064fd3: Download complete
1074353eeec0d: Download complete
da7c973d8b92: Verifying Checksum
da7c973d8b92: Download complete
33f95a0f3229: Verifying checksum
33f95a0f3229: Download complete
085c5e5aaa8e: Verifying checksum
085c5e5aaa8e: Download complete
0abf9e567266: Verifying Checksum
0abf9e567266: Download complete
```

2] docker run (container)

```
ubuntu@ip-172-31-65-63:~$ docker images
REPOSITORY      TAG      IMAGE ID      CREATED      SIZE
trend-app       latest   07ba7745460a  2 minutes ago  63MB
nginx           alpine   04da2b0513cd  2 weeks ago   53.7MB
ubuntu@ip-172-31-65-63:~$ docker ps
CONTAINER ID      IMAGE      COMMAND      CREATED      STATUS      PORTS      NAMES
efff1a0f09a0    trend-app   "/docker-entrypoint..."  43 seconds ago  Up 43 seconds  3000/tcp, 0.0.0.0:3000->80/tcp, [::]:3000->80/tcp   magical_merkle
ubuntu@ip-172-31-65-63:~$
```

3] docker login and image push

```
command 'docker' from deb podman-docker (4.9.3+ds1-lubuntu0.2)
See 'snap info <snapname>' for additional versions.
ubuntu@ip-172-31-65-63:~$ docker login

USING WEB-BASED LOGIN

Info → To sign in with credentials on the command line, use 'docker login -u <username>'

Your one-time device confirmation code is: ZCZQ-STCM
Press ENTER to open your browser or submit your device code here: https://login.docker.com/activate
Waiting for authentication in the browser...

WARNING! Your credentials are stored unencrypted in '/home/ubuntu/.docker/config.json'.
Configure a credential helper to remove this warning. See
https://docs.docker.com/go/credential-store/

Login Succeeded
ubuntu@ip-172-31-65-63:~$ docker tag trend-app sudharsanps115/trend-app:latest
ubuntu@ip-172-31-65-63:~$ docker push sudharsanps115/trend-app:latest
The push refers to repository [docker.io/sudharsanps115/trend-app]
f7c2f10b3a21: Pushed
6e7f657a235a: Pushed
e6fe1fa5b7f: Mounted from library/nginx
67ea0b046e7d: Mounted from library/nginx
ed5fa8595c7a: Mounted from library/nginx
8ae63eb1f31f: Mounted from library/nginx
b3e3d1bbb64d: Mounted from library/nginx
48078b7e3000: Mounted from library/nginx
fd1e40d7f74b: Mounted from library/nginx
7bb20cf5ef67: Mounted from library/nginx
latest: digest: sha256:c7008564f7e8e99c9291093b59cd5c89677b0bd9a86420059f51c4e308d56e5c size: 2407
ubuntu@ip-172-31-65-63:~$
```

4] docker repo dash

The screenshot shows the Docker Hub repository dashboard for the user 'sudharsanps115'. The repository name is 'trend-app'. Key details visible include:

- Last pushed: 1 minute ago
- Repository size: 30.5 MB
- Tags: latest
- Pushed: less than 1 day ago

On the right side, there are sections for Docker commands (with a command box for 'docker push sudharsanps115/trend-app:tagname'), Docker Build Cloud integration (with a 'Go to Docker Build Cloud' button), and a sidebar with various account and repository management links.

5] terraform initialization

```
alternative configurations.

Error: Duplicate provider configuration
on main.tf line 6:
  6: provider "aws" {

A default (non-aliased) provider configuration for "aws" was already given at main.tf:1,1-15. If multiple configurations are required, set the "alias" argument for alternative configurations.

ubuntu@ip-172-31-65-63:~$ nano main.tf
ubuntu@ip-172-31-65-63:~$ terraform init
Initializing the backend...
Initializing provider plugins...
- Finding latest version of hashicorp/aws...
- Installing hashicorp/aws v6.27.0...
- Installed hashicorp/aws v6.27.0 (signed by HashiCorp)
Terraform has created a lock file .terraform.lock.hcl to record the provider selections it made above. Include this file in your version control repository so that Terraform can guarantee to make the same selections by default when you run "terraform init" in the future.

Terraform has been successfully initialized!

You may now begin working with Terraform. Try running "terraform plan" to see any changes that are required for your infrastructure. All Terraform commands should now work.

If you ever set or change modules or backend configuration for Terraform, rerun this command to reinitialize your working directory. If you forget, other commands will detect it and remind you to do so if necessary.
ubuntu@ip-172-31-65-63:~$ terraform plan
```

6] terraform plan

```
Error: failed to refresh cached credentials, no EC2 IMDS role found, operation error ec2imds: GetMetadata, http response error StatusCode: 404, request to EC2 IMDS failed

ubuntu@ip-172-31-65-63:~$ terraform plan
Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
+ create

Terraform will perform the following actions:

# aws_iam_instance_profile.profile will be created
+ resource "aws_iam_instance_profile" "profile" {
  + arn      = (known after apply)
  + create_date = (known after apply)
  + id       = (known after apply)
  + name     = (known after apply)
  + name_prefix = (known after apply)
  + path     = "/"
  + role      = "jenkins-role"
  + tags_all   = (known after apply)
  + unique_id  = (known after apply)
}

# aws_iam_role.role will be created
+ resource "aws_iam_role" "role" {
  + arn      = (known after apply)
  + assume_role_policy = jsonencode(
    {
      + Statement = [
        + {
          + Action      = "sts:AssumeRole"
          + Effect     = "Allow"
        }
      ]
    }
  )
}
```

7] terraform apply

```
ubuntu@ip-172-31-65-63:~$ terraform apply
aws_vpc.vpc: Refreshing state... [id=vpc-0288ca6c9a39da52f]
aws_iam_role.role: Refreshing state... [id=jenkins-role]
aws_iam_instance_profile.profile: Refreshing state... [id=terraform-20260102074717583600000001]
aws_internet_gateway.igw: Refreshing state... [id=igw-0f1894448e66a257c]
aws_subnet.subnet: Refreshing state... [id=subnet-0faafffd8e4239d6a9]
aws_security_group.sg: Refreshing state... [id=sg-04085f42fd2fe11e]
aws_route_table.rt: Refreshing state... [id=rtb-0e89fc786cdfe03ea]
aws_route_table_association.rta: Refreshing state... [id=rtbassoc-0195da14a56154a37]

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
+ create

Terraform will perform the following actions:

# aws_instance.jenkins will be created
+ resource "aws_instance" "jenkins" {
    + ami
    + arn
    + associate_public_ip_address
    + availability_zone
    + disable_api_stop
    + disable_api_termination
    + ebs_optimized
    + enable_primary_ipv6
    + force_destroy
    + get_password_data
    + host_id
    + host_resource_group_arn
    + iam_instance_profile
    + id
    + instance_initiated_shutdown_behavior
    + instance_lifecycle
}
```

8] jenkins setup

```
Running kernel seems to be up-to-date.

No services need to be restarted.

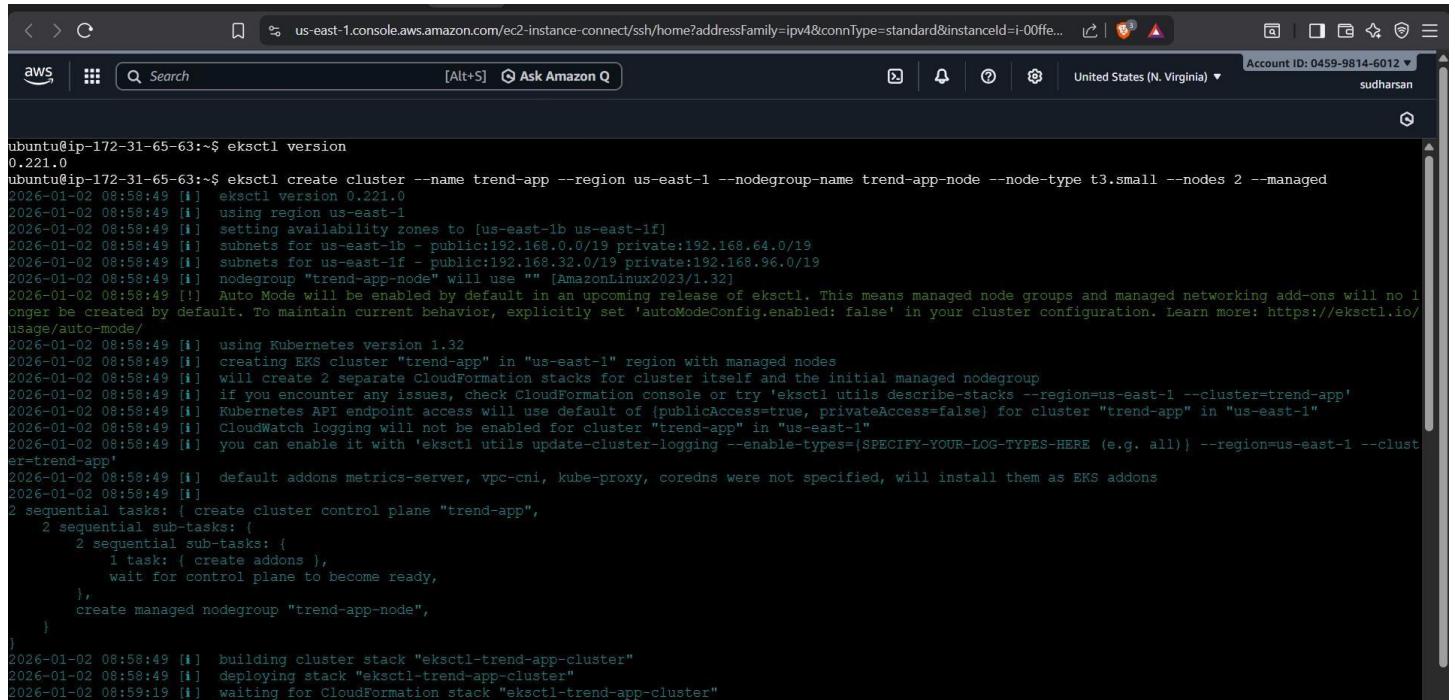
No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-10-0-1-12:~$ sudo systemctl status jenkins
sudo: systemctl: command not found
ubuntu@ip-10-0-1-12:~$ sudo systemctl status jenkins
● jenkins.service - Jenkins Continuous Integration Server
   Loaded: loaded (/usr/lib/systemd/system/jenkins.service; enabled; preset: enabled)
     Active: active (running) since Fri 2026-01-02 08:30:00 UTC; 32s ago
       Main PID: 2444 (java)
          Tasks: 49 (limit: 2213)
            Memory: 543.1M (peak: 561.2M)
              CPU: 22.12ms
            CGroup: /system.slice/jenkins.service
                └─2444 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.war --webroot=/var/cache/jenkins/war --httpPort=8080

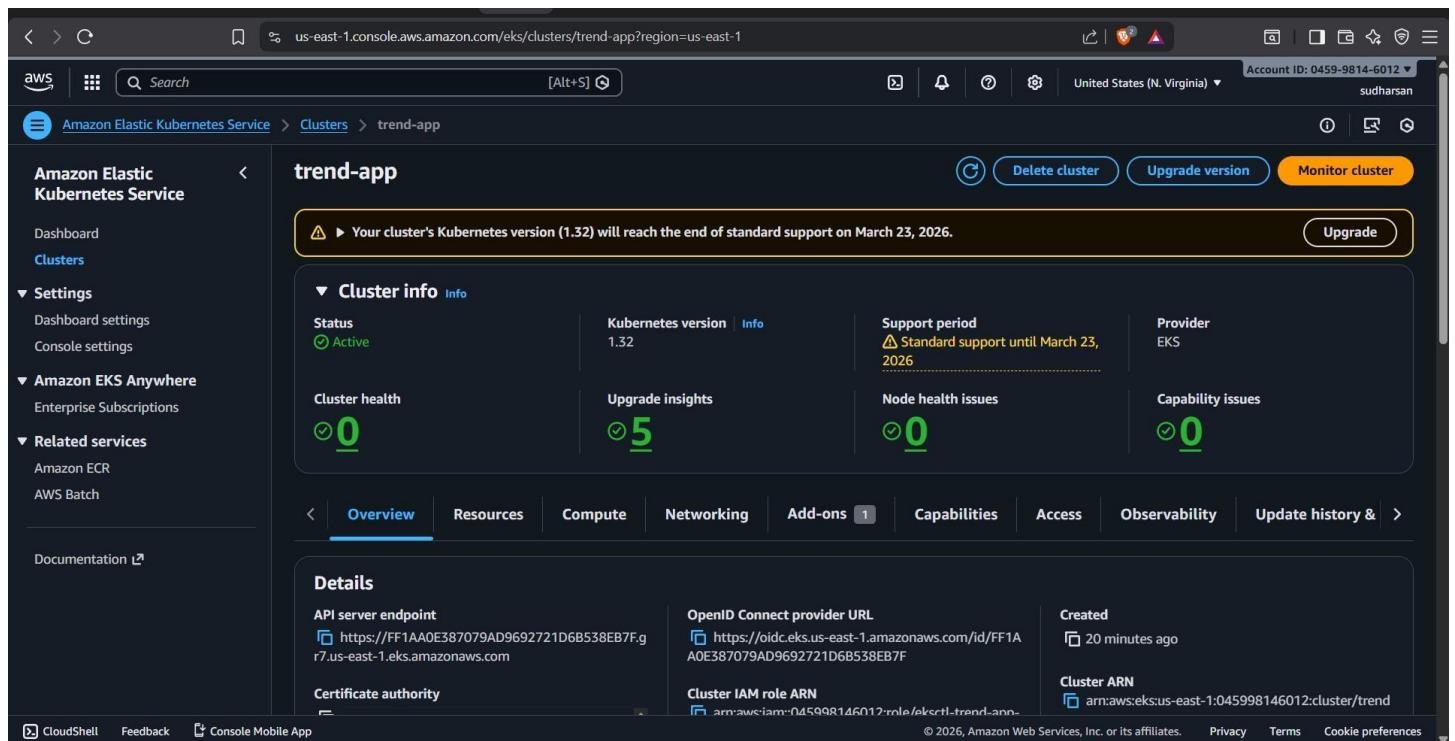
Jan 02 08:29:55 ip-10-0-1-12 jenkins[2444]: [LF]> This may also be found at: /var/lib/jenkins/secrets/initialAdminPassword
Jan 02 08:29:55 ip-10-0-1-12 jenkins[2444]: [LF]>
Jan 02 08:29:55 ip-10-0-1-12 jenkins[2444]: [LF]> ****
Jan 02 08:29:55 ip-10-0-1-12 jenkins[2444]: [LF]> ****
Jan 02 08:29:55 ip-10-0-1-12 jenkins[2444]: [LF]> ****
Jan 02 08:30:00 ip-10-0-1-12 jenkins[2444]: 2026-01-02 08:30:00.431+0000 [id=38]      INFO      jenkins.InitReactorRunner$1#onAttained: Completed initialization
Jan 02 08:30:00 ip-10-0-1-12 jenkins[2444]: 2026-01-02 08:30:00.459+0000 [id=30]      INFO      hudson.lifecycle.Lifecycle#onReady: Jenkins is fully up and running
Jan 02 08:30:00 ip-10-0-1-12 systemd[1]: Started jenkins.service - Jenkins Continuous Integration Server.
Jan 02 08:30:00 ip-10-0-1-12 jenkins[2444]: 2026-01-02 08:30:00.740+0000 [id=56]      INFO      h.m.DownloadService$Downloadable#load: Obtained the updated data f...
Jan 02 08:30:00 ip-10-0-1-12 jenkins[2444]: 2026-01-02 08:30:00.742+0000 [id=56]      INFO      hudson.util.Retriger#start: Performed the action check updates serv...
lines 1-20/20 (END)
```

9] eks cluster creation with 2 replica



```
ubuntu@ip-172-31-65-63:~$ eksctl version
0.221.0
ubuntu@ip-172-31-65-63:~$ eksctl create cluster --name trend-app --region us-east-1 --nodegroup-name trend-app-node --node-type t3.small --nodes 2 --managed
2026-01-02 08:58:49 [i] eksctl version 0.221.0
2026-01-02 08:58:49 [i] using region us-east-1
2026-01-02 08:58:49 [i] setting availability zones to [us-east-1b us-east-1f]
2026-01-02 08:58:49 [i] subnets for us-east-1b - public:192.168.0.0/19 private:192.168.64.0/19
2026-01-02 08:58:49 [i] subnets for us-east-1f - public:192.168.32.0/19 private:192.168.96.0/19
2026-01-02 08:58:49 [i] nodegroup "trend-app-node" will use "" [AmazonLinux2023/1.32]
2026-01-02 08:58:49 [i] Auto Mode will be enabled by default. To maintain current behavior, explicitly set 'autoModeConfig.enabled: false' in your cluster configuration. Learn more: https://eksctl.io/use/auto-mode/
2026-01-02 08:58:49 [i] using Kubernetes version 1.32
2026-01-02 08:58:49 [i] creating EKS cluster "trend-app" in "us-east-1" region with managed nodes
2026-01-02 08:58:49 [i] will create 2 separate CloudFormation stacks for cluster itself and the initial managed nodegroup
2026-01-02 08:58:49 [i] if you encounter any issues, check CloudFormation console or try 'eksctl utils describe-stacks --region=us-east-1 --cluster=trend-app'
2026-01-02 08:58:49 [i] Kubernetes API endpoint access will use default of (publicAccess=true, privateAccess=false) for cluster "trend-app" in "us-east-1"
2026-01-02 08:58:49 [i] CloudWatch logging will not be enabled for cluster "trend-app" in "us-east-1"
2026-01-02 08:58:49 [i] you can enable it with 'eksctl utils update-cluster-logging --enable-types=(SPECIFY-YOUR-LOG-TYPES-HERE (e.g. all)) --region=us-east-1 --cluster=trend-app'
2026-01-02 08:58:49 [i] default addons metrics-server, vpc-cni, kube-proxy, coredns were not specified, will install them as EKS addons
2026-01-02 08:58:49 [i]
2 sequential tasks: { create cluster control plane "trend-app",
  2 sequential sub-tasks: {
    2 sequential sub-tasks: {
      1 task: { create addons },
      wait for control plane to become ready,
    },
    create managed nodegroup "trend-app-node",
  }
}
2026-01-02 08:58:49 [i] building cluster stack "eksctl-trend-app-cluster"
2026-01-02 08:58:49 [i] deploying stack "eksctl-trend-app-cluster"
2026-01-02 08:59:19 [i] waiting for CloudFormation stack "eksctl-trend-app-cluster"
```

10] eks dashboard



The screenshot shows the EKS Cluster Overview page for the 'trend-app' cluster. The left sidebar includes navigation links for 'Clusters' (selected), 'Settings', 'Amazon EKS Anywhere', and 'Related services'. The main content area displays cluster details:

- Cluster info:** Status: Active, Kubernetes version: 1.32, Support period: Standard support until March 23, 2026, Provider: EKS.
- Cluster health:** Upgrade insights: 5, Node health issues: 0, Capability issues: 0.
- Details:** API server endpoint: https://FF1AA0E387079AD9692721D6B538EB7F.g7.us-east-1.eks.amazonaws.com, OpenID Connect provider URL: https://oidc.eks.us-east-1.amazonaws.com/id/FF1AA0E387079AD9692721D6B538EB7F, Cluster IAM role ARN: arn:aws:iam::045998146012:role/eksctl-trend-app-node.
- Created:** 20 minutes ago.
- Cluster ARN:** arn:aws:eks:us-east-1:045998146012:cluster/trend-app.

Below the main content, there are links for 'CloudShell', 'Feedback', and 'Console Mobile App'.

11] eks deployment and servoice(LB)

```
2026-01-02 09:10:23 [+] waiting for CloudFormation stack "eksctl-trend-app-nodegroup-trend-app-node"
2026-01-02 09:11:01 [+] waiting for CloudFormation stack "eksctl-trend-app-nodegroup-trend-app-node"
2026-01-02 09:12:16 [+] waiting for CloudFormation stack "eksctl-trend-app-nodegroup-trend-app-node"
2026-01-02 09:14:15 [+] waiting for CloudFormation stack "eksctl-trend-app-nodegroup-trend-app-node"
2026-01-02 09:14:15 [+] waiting for the control plane to become ready
2026-01-02 09:14:17 [✓] saved kubeconfig as "/home/ubuntu/.kube/config"
2026-01-02 09:14:17 [+] no tasks
2026-01-02 09:14:17 [✓] all EKS cluster resources for "trend-app" have been created
2026-01-02 09:14:17 [+] nodegroup "trend-app-node" has 2 node(s)
2026-01-02 09:14:17 [+] node "ip-192-168-18-58.ec2.internal" is ready
2026-01-02 09:14:17 [+] node "ip-192-168-55-127.ec2.internal" is ready
2026-01-02 09:14:17 [+] waiting for at least 2 node(s) to become ready in "trend-app-node"
2026-01-02 09:14:17 [+] nodegroup "trend-app-node" has 2 node(s)
2026-01-02 09:14:17 [+] node "ip-192-168-18-58.ec2.internal" is ready
2026-01-02 09:14:17 [+] node "ip-192-168-55-127.ec2.internal" is ready
2026-01-02 09:14:17 [✓] created 1 managed nodegroup(s) in cluster "trend-app"
2026-01-02 09:14:17 [+] creating addon: metrics-server
2026-01-02 09:14:18 [+] successfully created addon: metrics-server
2026-01-02 09:14:21 [+] kubectl command should work with "/home/ubuntu/.kube/config", try 'kubectl get nodes'
2026-01-02 09:14:21 [✓] EKS cluster "trend-app" in "us-east-1" region is ready
ubuntu@ip-172-31-65-63:~$ nano Deployment.yaml
ubuntu@ip-172-31-65-63:~$ kubectl apply -f Deployment.yaml
deployment.apps/trend-deployment created
ubuntu@ip-172-31-65-63:~$ nano Service.yaml
ubuntu@ip-172-31-65-63:~$ kubectl apply -f Service.yaml
service/trend-service created
ubuntu@ip-172-31-65-63:~$ kubectl get deployment
NAME           READY   UP-TO-DATE   AVAILABLE   AGE
trend-deployment   2/2     2          2          3m14s
ubuntu@ip-172-31-65-63:~$ kubectl get service
NAME            TYPE      CLUSTER-IP    EXTERNAL-IP   PORT(S)        AGE
kubernetes       ClusterIP   10.100.0.1   <none>        443/TCP       14m
trend-service    LoadBalancer 10.100.1.7   a94af6df62d69453f99b84f089f39faf-1384366194.us-east-1.elb.amazonaws.com  80:31708/TCP   2m1s
ubuntu@ip-172-31-65-63:~$
```

12] jenkins console output

The Jenkins pipeline job 'trend-store' is running on build #13. The 'Console Output' tab is selected, showing the following log:

```
Started by user sud
Obtained TrendStore/Jenkinsfile from git https://github.com/sudharsanps115/FINAL-PROJECT.git
[Pipeline] Start of Pipeline
[Pipeline] node
Running on Jenkins in /var/lib/jenkins/workspace/trend-store
[Pipeline]
[Pipeline] stage
[Pipeline] { (Declarative: Checkout SCM)
[Pipeline] checkout
The recommended git tool is: git
No credentials specified
> git rev-parse --resolve-git-dir /var/lib/jenkins/workspace/trend-store/.git # timeout=10
Fetching changes from the remote Git repository
> git config remote.origin.url https://github.com/sudharsanps115/FINAL-PROJECT.git # timeout=10
Fetching upstream changes from https://github.com/sudharsanps115/FINAL-PROJECT.git
> git --version # timeout=10
> git --version # 'git version 2.43.0'
> git fetch --tags --force --progress -- https://github.com/sudharsanps115/FINAL-PROJECT.git +refs/heads/*\:refs/remotes/origin/* # timeout=10
> git rev-parse refs/remotes/origin/main^{commit} # timeout=10
Checking out Revision f2e4b868727e8333f7c60dd98ed41ac24e9f0145 (refs/remotes/origin/main)
> git config core.sparsecheckout # timeout=10
> git checkout -f f2e4b868727e8333f7c60dd98ed41ac24e9f0145 # timeout=10
Commit message: "Update Jenkinsfile"
> git rev-list --no-walk f2e4b868727e8333f7c60dd98ed41ac24e9f0145 # timeout=10
[Pipeline]
```

13] jenkins pipeline overview

The screenshot shows the Jenkins Pipeline Overview for job 'trend-store' run #13. The pipeline stages are: Start, Checkout SCM, Checkout Code, Build Docker Image, Login & Push Image to DockerHub, Deploy to Kubernetes, and Post Actions. All stages are marked as successful (green checkmarks). The pipeline took 7.2 seconds. Below the graph, a summary table shows the duration for each step: Checkout SCM (0.26s), Checkout Code (70ms), Build Docker Image (0.32s), Login & Push Image to DockerHub, Deploy to Kubernetes (3.0s), and Post Actions (61ms). A note indicates the CI/CD Pipeline completed successfully.

Step	Duration
Checkout SCM	0.26s
Checkout Code	70ms
Build Docker Image	0.32s
Login & Push Image to DockerHub	
Deploy to Kubernetes	3.0s
Post Actions	61ms

14] webhook setup

The screenshot shows the GitHub Webhooks / Manage webhook settings page for repository 'github.com/sudharsanps115/FINAL-PROJECT'. The left sidebar shows navigation options like General, Access, Collaborators, Moderation options, Branches, Tags, Rules, Actions, Models, Webhooks (which is selected and highlighted in blue), Copilot, Environments, Codespaces, Pages, Security, Advanced Security, Deploy keys, Secrets and variables, and Integrations. The main right panel is titled 'Webhooks / Manage webhook' and contains fields for 'Payload URL *' (set to `http://54.89.214.76:8080/github-webhook/`), 'Content type *' (set to `application/json`), and 'Secret' (an empty text input field). Under 'SSL verification', it says 'By default, we verify SSL certificates when delivering payloads.' with two radio button options: 'Enable SSL verification' (selected) and 'Disable (not recommended)'. At the bottom, it asks 'Which events would you like to trigger this webhook?' with three radio button options: 'Just the push event.' (selected), 'Send me everything.', and 'Let me select individual events.'

15] prometheus setup

```
If you understand and want to proceed repeat the command including --classic.
ubuntu@ip-172-31-65-63:~$ sudo snap install helm --classic
helm 4.0.4 from Snapcrafters installed
ubuntu@ip-172-31-65-63:~$ helm repo add prometheus-community https://prometheus-community.github.io/helm-charts
"prometheus-community" has been added to your repositories
ubuntu@ip-172-31-65-63:~$ helm repo add grafana https://grafana.github.io/helm-charts
"grafana" has been added to your repositories
ubuntu@ip-172-31-65-63:~$ helm repo update
Hang tight while we grab the latest from your chart repositories...
...Successfully got an update from the "grafana" chart repository
...Successfully got an update from the "prometheus-community" chart repository
Update Complete. *Happy Helm-ing!*
ubuntu@ip-172-31-65-63:~$ helm install prometheus prometheus-community/kube-prometheus-stack
NAME: prometheus
LAST DEPLOYED: Fri Jan 2 11:35:41 2026
NAMESPACE: default
STATUS: deployed
REVISION: 1
DESCRIPTION: Install complete
NOTES:
kube-prometheus-stack has been installed. Check its status by running:
  kubectl --namespace default get pods -l "release=prometheus"

Get Grafana 'admin' user password by running:

  kubectl --namespace default get secrets prometheus-grafana -o jsonpath="{.data.admin-password}" | base64 -d ; echo

Access Grafana local instance:

  export POD_NAME=$(kubectl --namespace default get pod -l "app.kubernetes.io/name=grafana,app.kubernetes.io/instance=prometheus" -oname)
  kubectl --namespace default port-forward $POD_NAME 3000

Get your grafana admin user password by running:
```

16] grafana setup

17] monitoring using prometheus and grafana

