# Lab 4 - Setting up Automated Deployments with ArgoCD

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**Project:**: Setup Automated Deployment to Staging and Prod with Argo CD.

## Setup ArgoCD

Install ArgoCD

```
kubectl create namespace argocd

kubectl apply -n argocd -f https://raw.githubusercontent.com/argoproj/argo-cd/
stable/manifests/install.yaml
```

Reset admin password to `password`

```
# bcrypt(password)=$2a$10$rRyBsGSHK6.uc8fntPwVIuLVHgsAhAX7TcdrqW/RADU0uh7CaChLa
kubectl -n argocd patch secret argocd-secret \
  -p '{"stringData": {
    "admin.password": "$2a$10$rRyBsGSHK6.uc8fntPwVIuLVHgsAhAX7TcdrqW/
RADU0uh7CaChLa",
    "admin.passwordMtime": "'$(date +%FT%T%Z)'"
  }}'
```

Source: reset-argo-password.sh Reference: argo-cd/faq.md at master · argoproj/argo-cd · GitHub

```
kubectl get all -n argocd
```

```
kubectl patch svc argocd-server -n argocd --patch \
  '{"spec": { "type": "NodePort", "ports": [ { "nodePort": 32100, "port": 443,
```

```
"protocol": "TCP", "targetPort": 8080 } ] } }'
```

source: patch_argo_svc.sh

```
kubectl get svc -n argocd
```

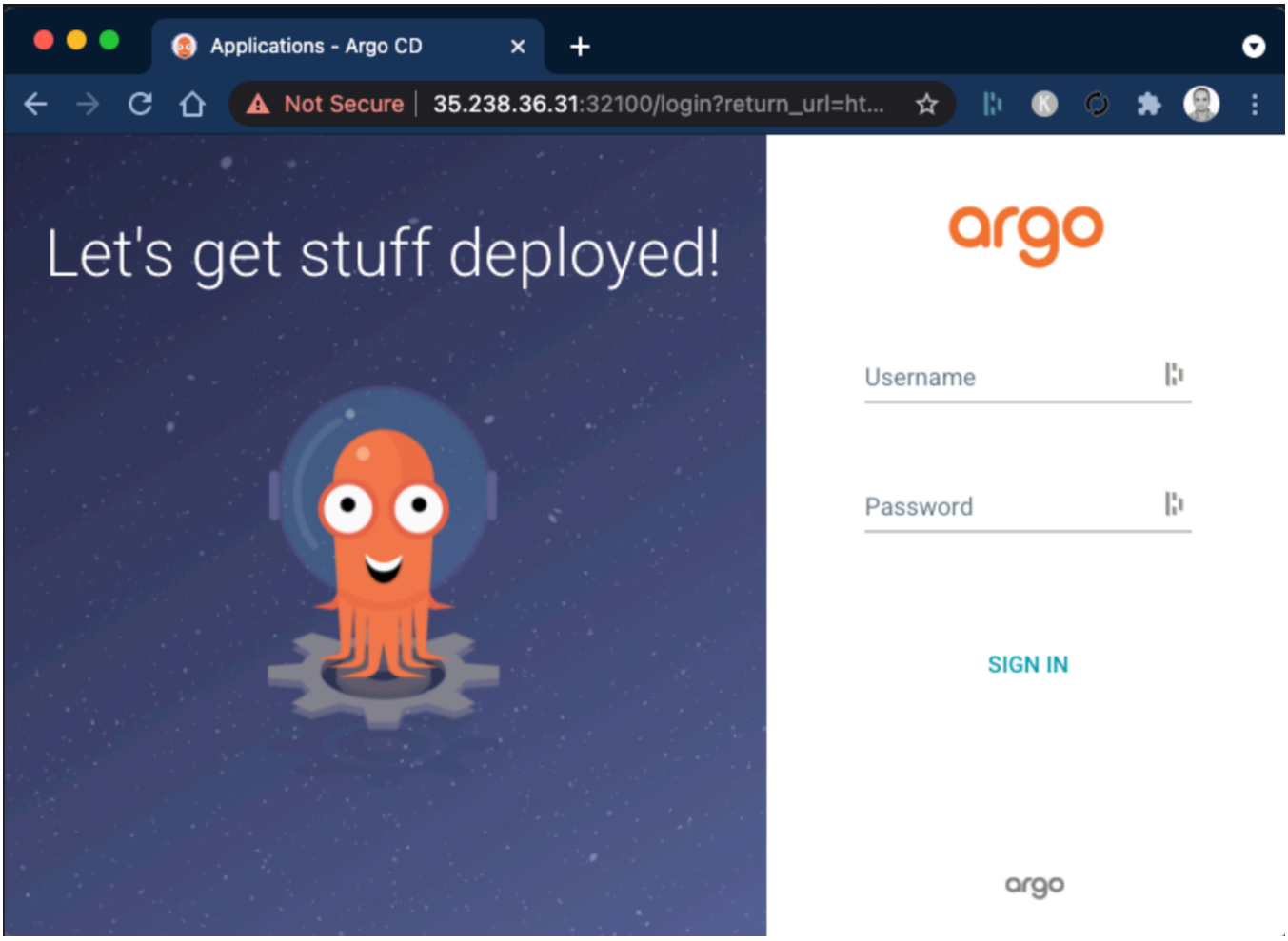
Find out the IP address for one of the nodes. One way to do so is to run the following command,

```
kubectl get nodes -o wide
```

Note IP address for one of the nodes and browse to https://NODEIP:32100

where, replace `NODEIP` with the actual.

You should be presented with the login page for ArgoCD as follows

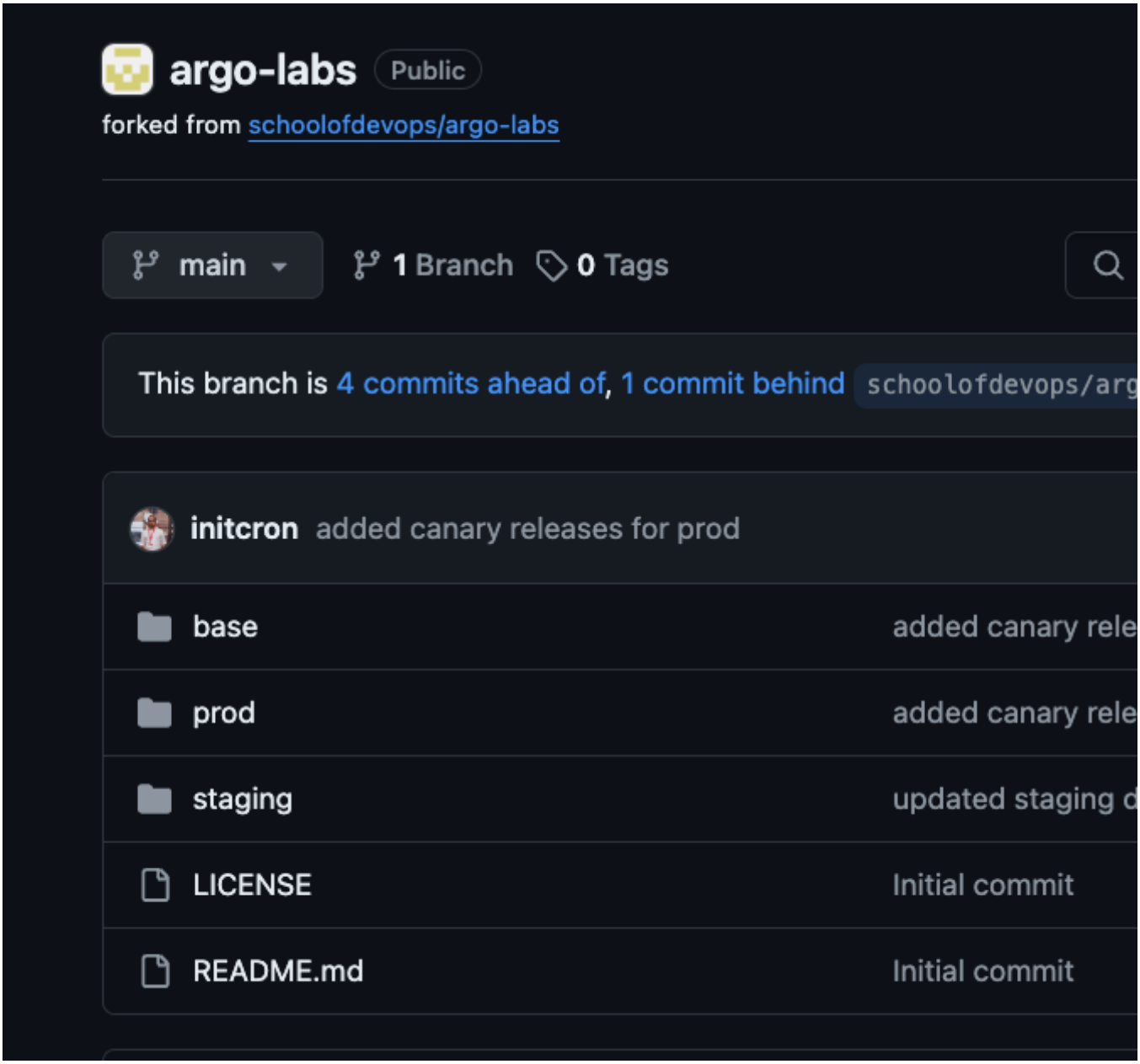



- username =. `admin`

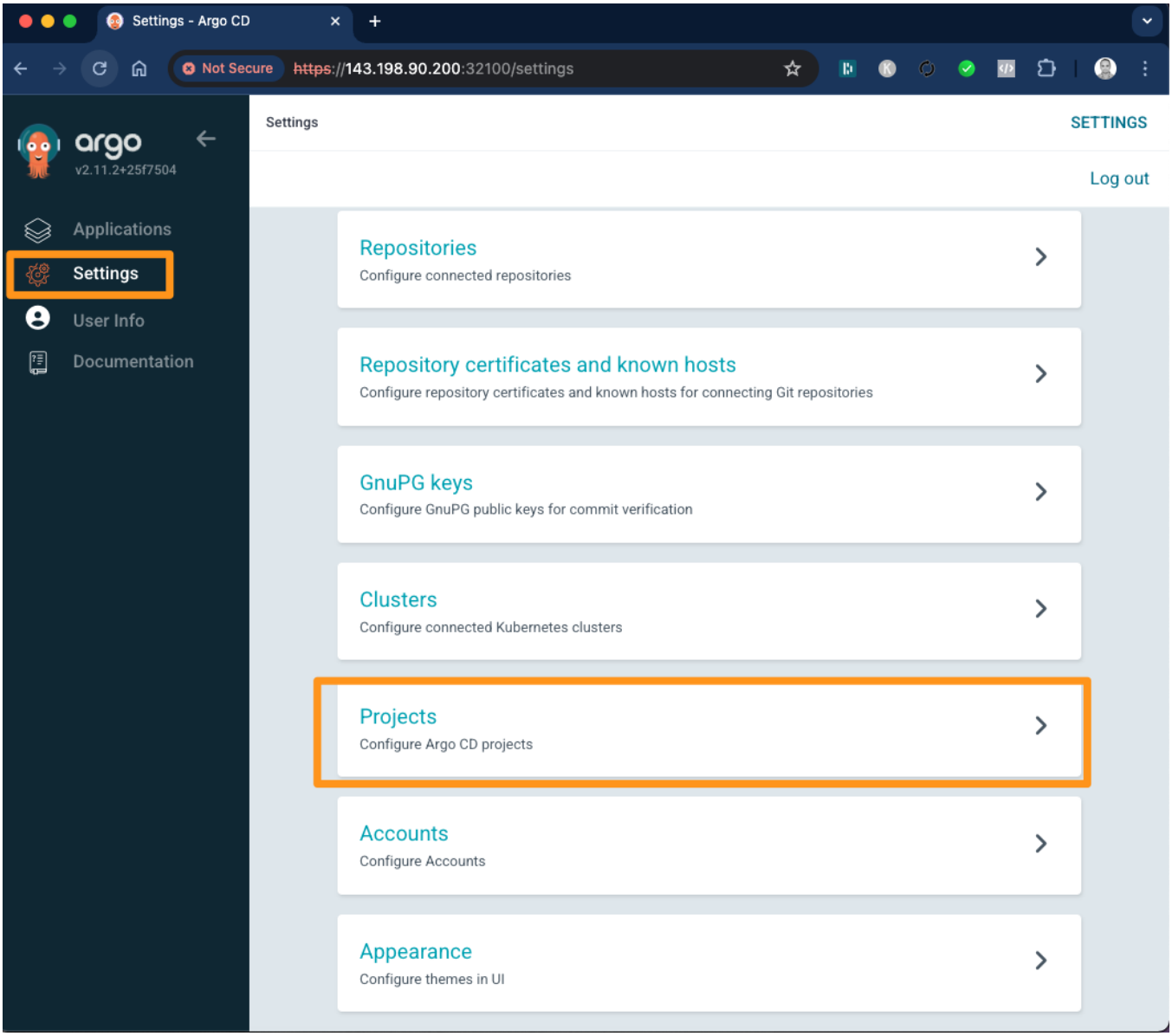
- password = `password`

## Configuring Repository and Project

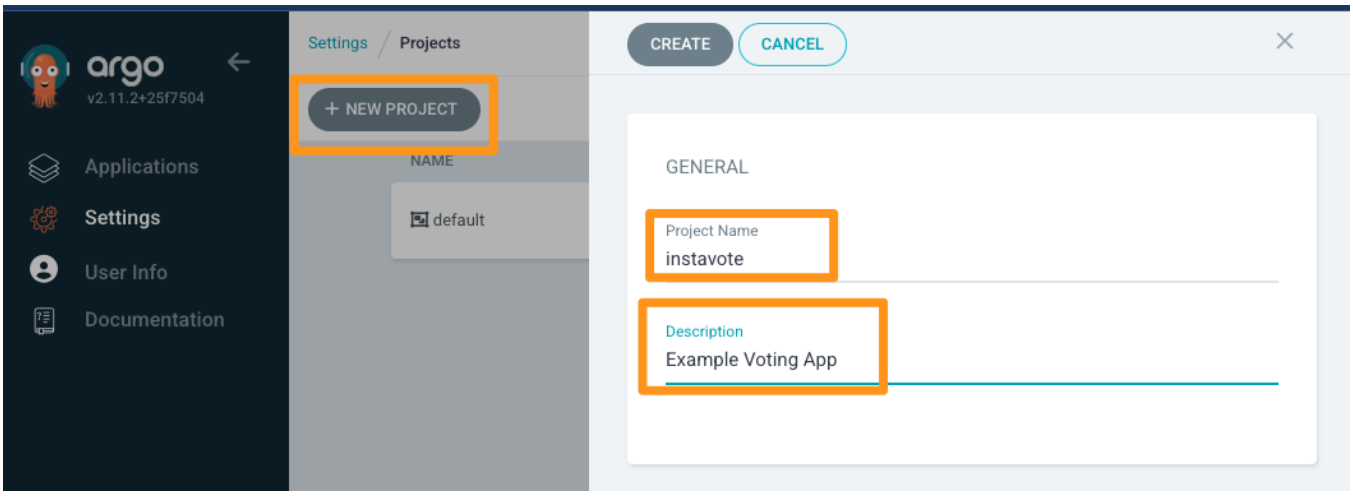
Ensure that you have checked in all the code from earlier labs and pushed it to your repository.




Once logged in to ArgoCD, select `settings` from left menu and browse to `Projects`




Click on `New Project` ➜ Create and provide Project Name and Description as




Proceed to create the project.

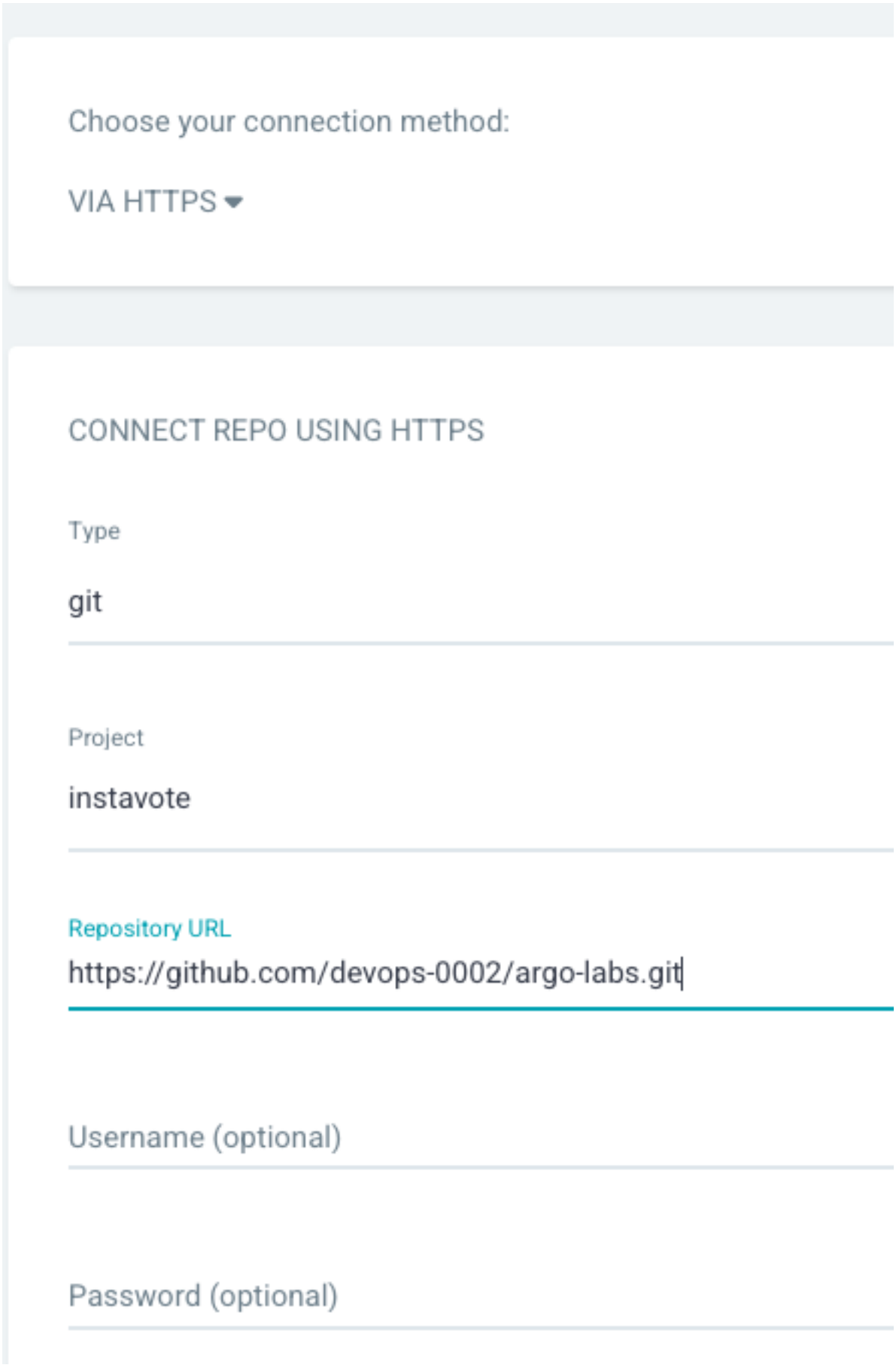
From Project Configuration page that you are redirected to, edit `DESTINATIONS`

- Select default cluster name from dropdown
- Select `in-cluster` as Name
- Add two entries, one for `staging` and another for `prod` Namespace
- Save


From `settings` from left menu and browse to `Repositories`

Select `Connet Repo` and provide the following configuration

- Via: HTTPS
- Type: git
- Project: instavote
- Repository URL: https://github.com/xxxx/argo-labs.git (replace with actual)
- Username: GitHub Username (If Private Repo)
- Password: GitHub Password or Token (If Private Repo)



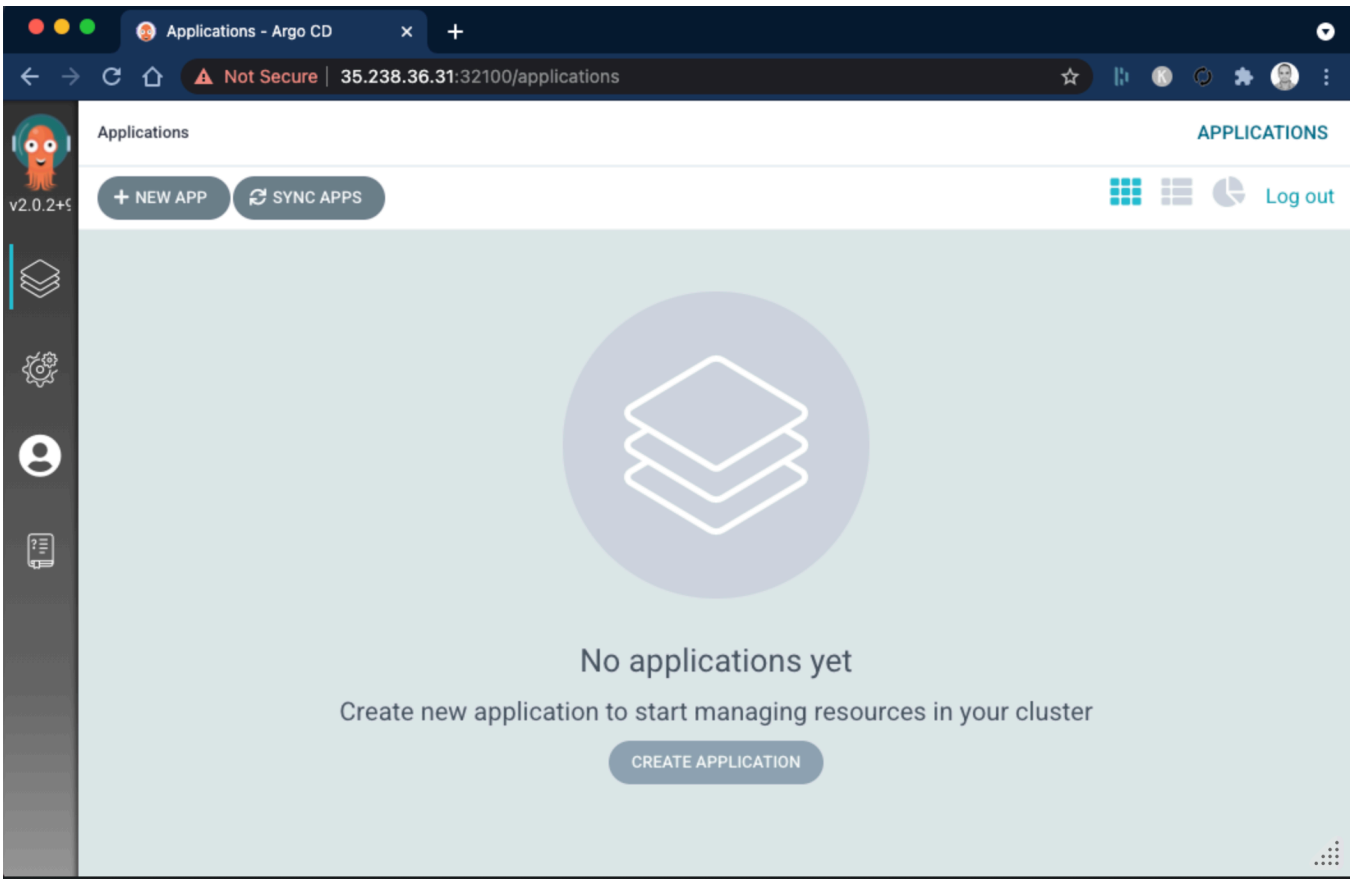

Finally click on `Connect` to add the repo.

# Setup Staging and Prod Deployments with ArgoCD

Clean up resources in the namespaces for `staging` and `prod` environments if you haven't already,

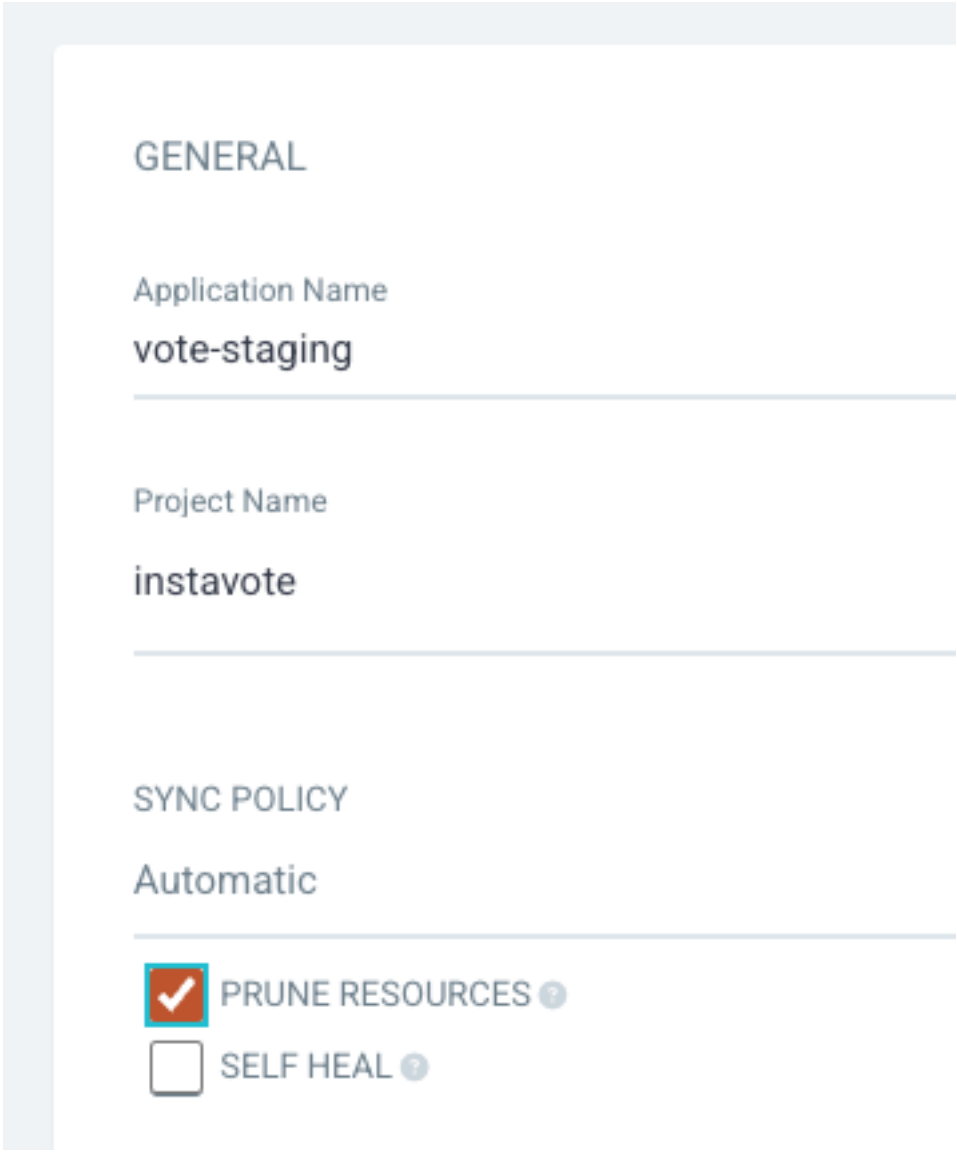
```
cd argo-labs
kubectl delete -k staging/ -n staging
kubectl delete -k prod/ -n prod
```

Browse to ArgoCD web console and click on **Create Application**



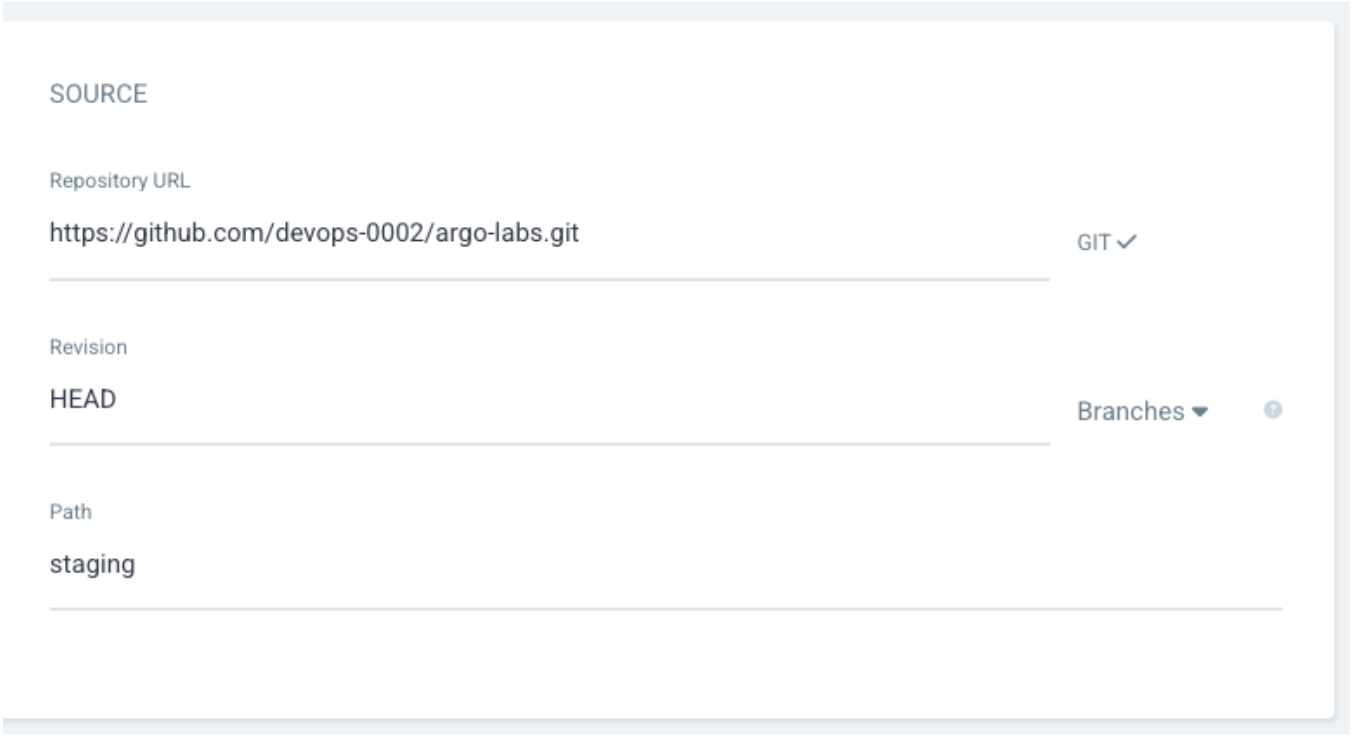

From General ,

- Application Name : `vote-staging`
- Project : `instavote`
- Sync Policy : `Automatic`
- Prune Resources: Checked



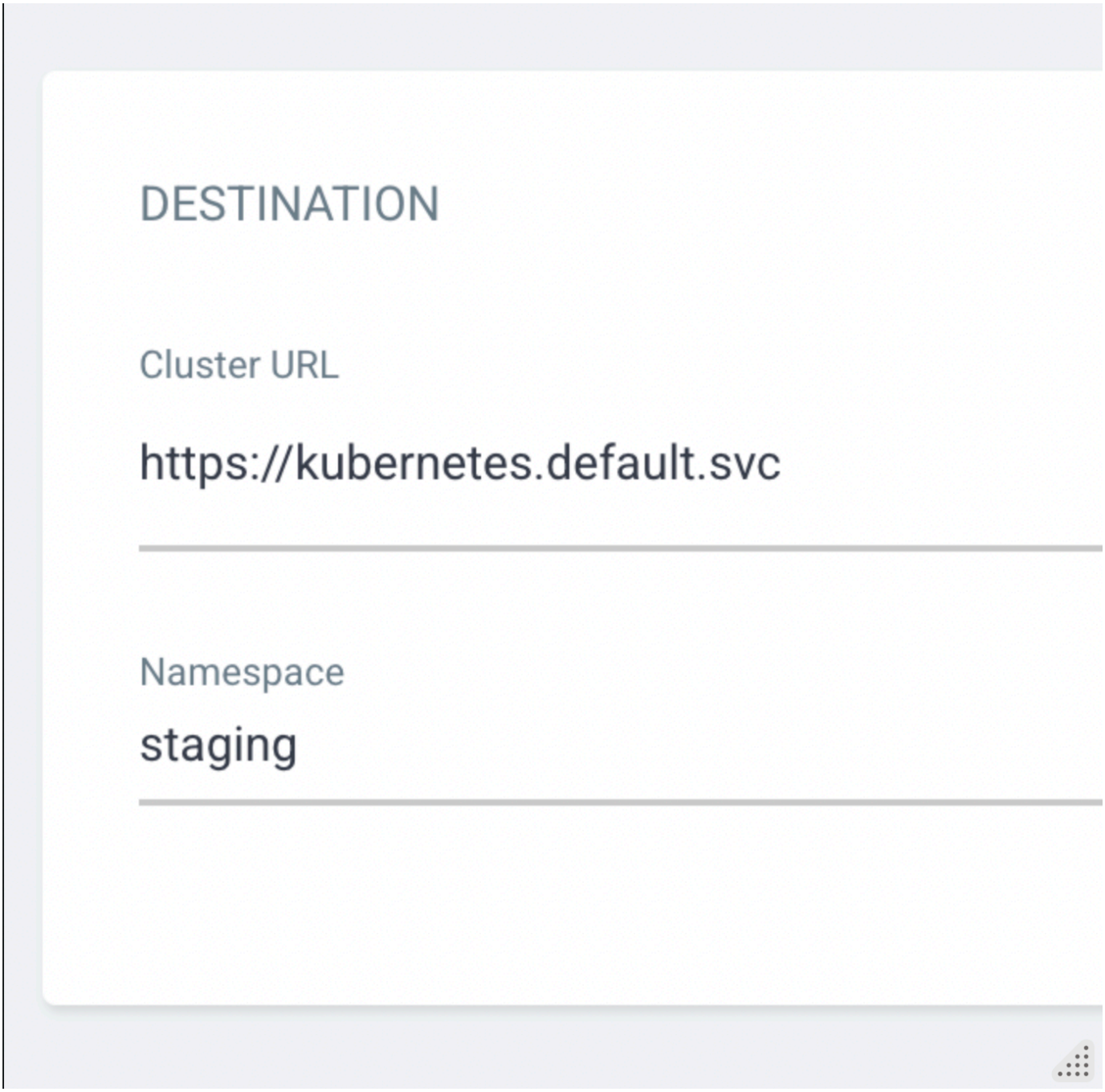

From Source,

- Repository URL : `Your Repo URL (https)`
- Revision : `main` / `HEAD`
- Path : `staging`

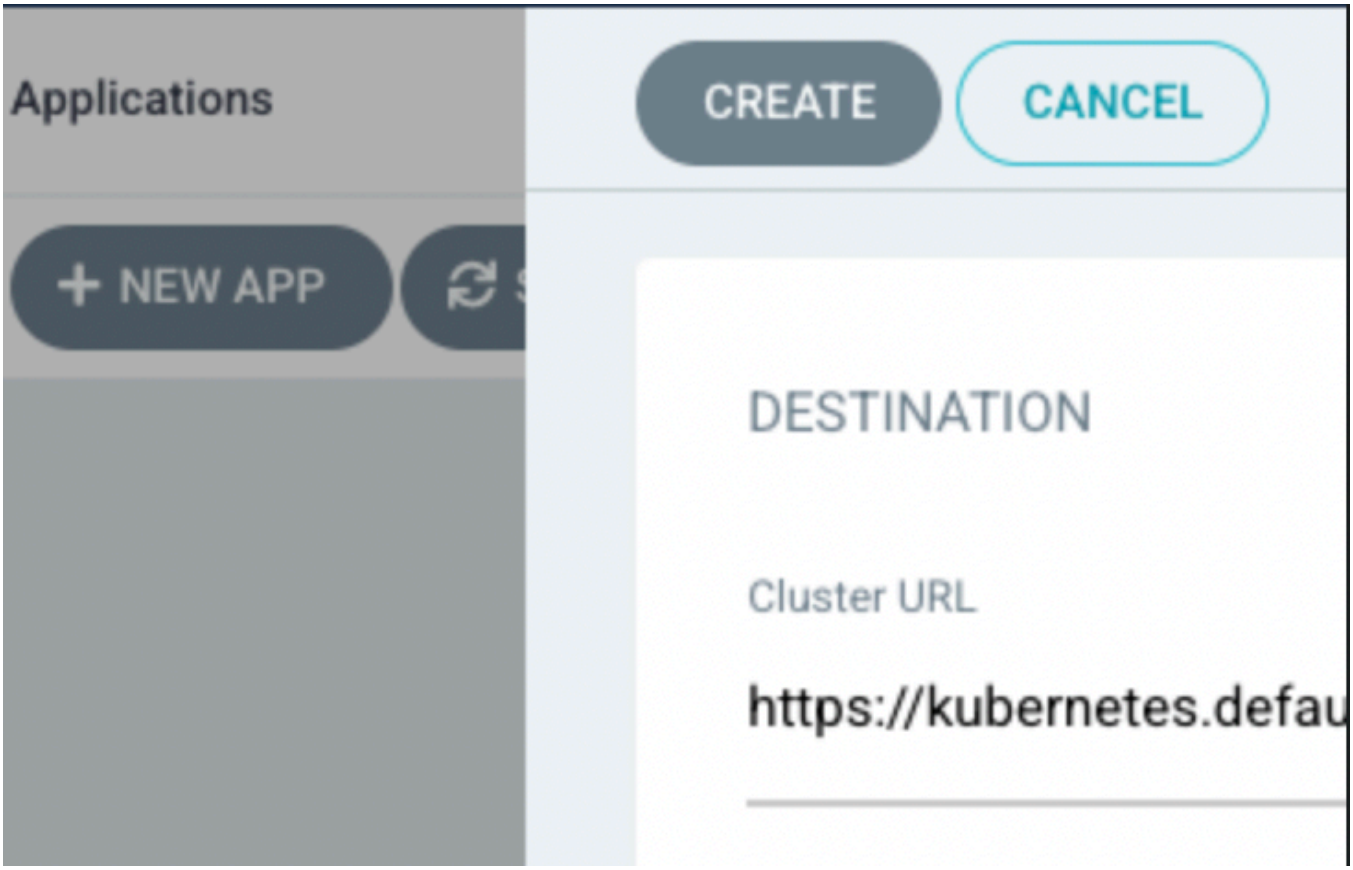



From Destination,

- Cluster URL : https://kubernetes.default.svc (default)
- Namespace : `staging`




Click on **CREATE** button on the top




validate with

```
kubectl get all -n staging
```

### Set up Deploy to Prod Configuration

You will deploy to prod based on a specific git branch e.g. `release`. Create a release branch to deploy the application to prod with,

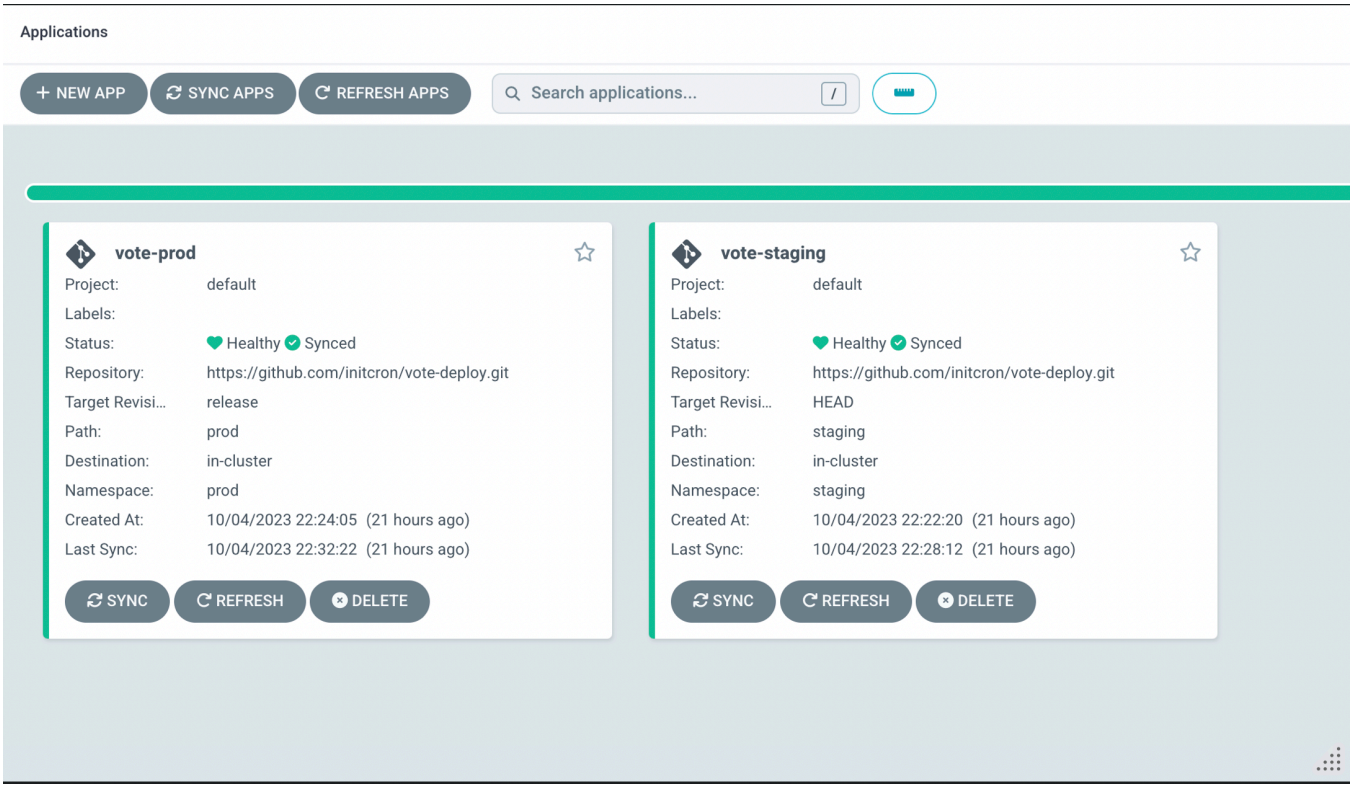
```
cd argo-labs/
git pull origin main
git checkout -b release
git push origin release
```

You will see a new branch created on GitHub for this repository. Alternately, you could also create the branch from GitHub Web UI.

Create another application, repeat the same configurations with the following changes,

- Application Name: `vote-prod`
- Project Name: `instavote`
- Sync Policy: `Automatic`
- Prune Resources: Checked
- Repository: Same Repo
- Revision: `release` (Branches)
- Path: `prod`
- Cluster URL: default from dropdown.
- Namespace : `prod`

Create and Sync manually.




Once synced, you should see two applications configured on ArgoCD tracking two environments.

You could also check the applications using kubectl as

```
kubectl get applications -n argocd
kubectl describe  application vote-prod  -n argocd
```

# Deployments in Action

Open two terminals and start watching for changes in the staging namespace

Terminal 1

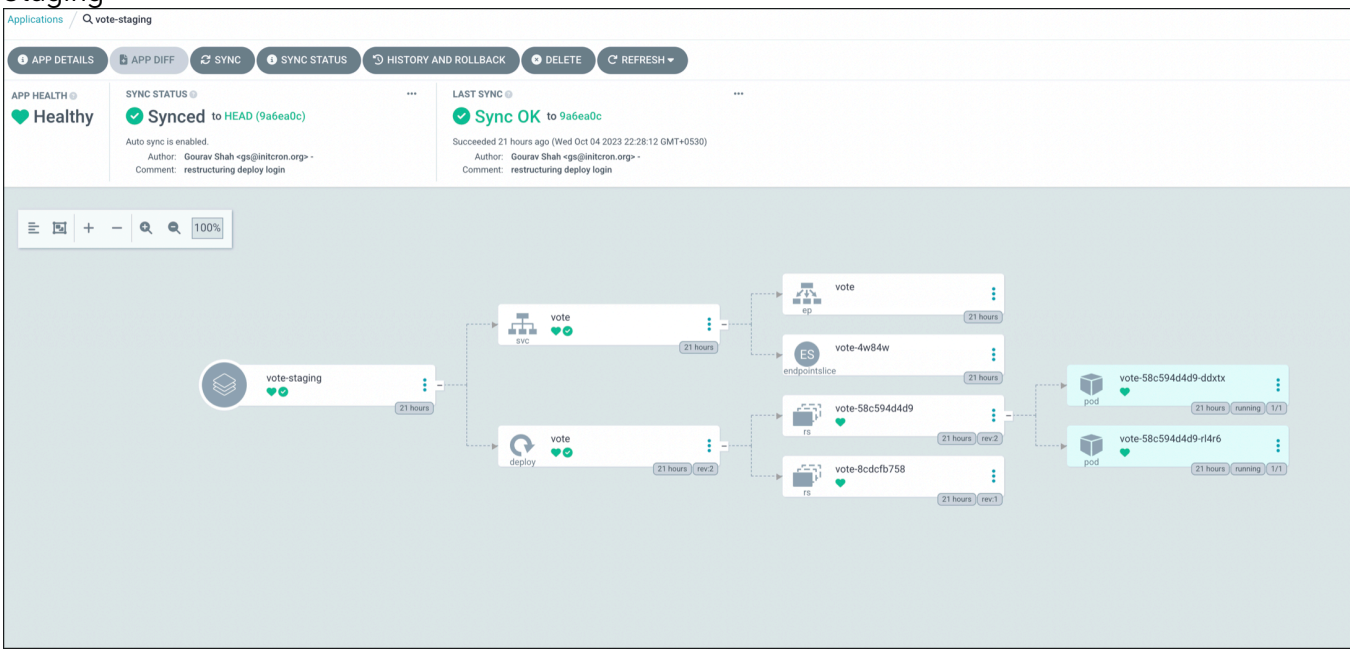
```
watch kubectl get ro,all -n staging
```

Terminal 2

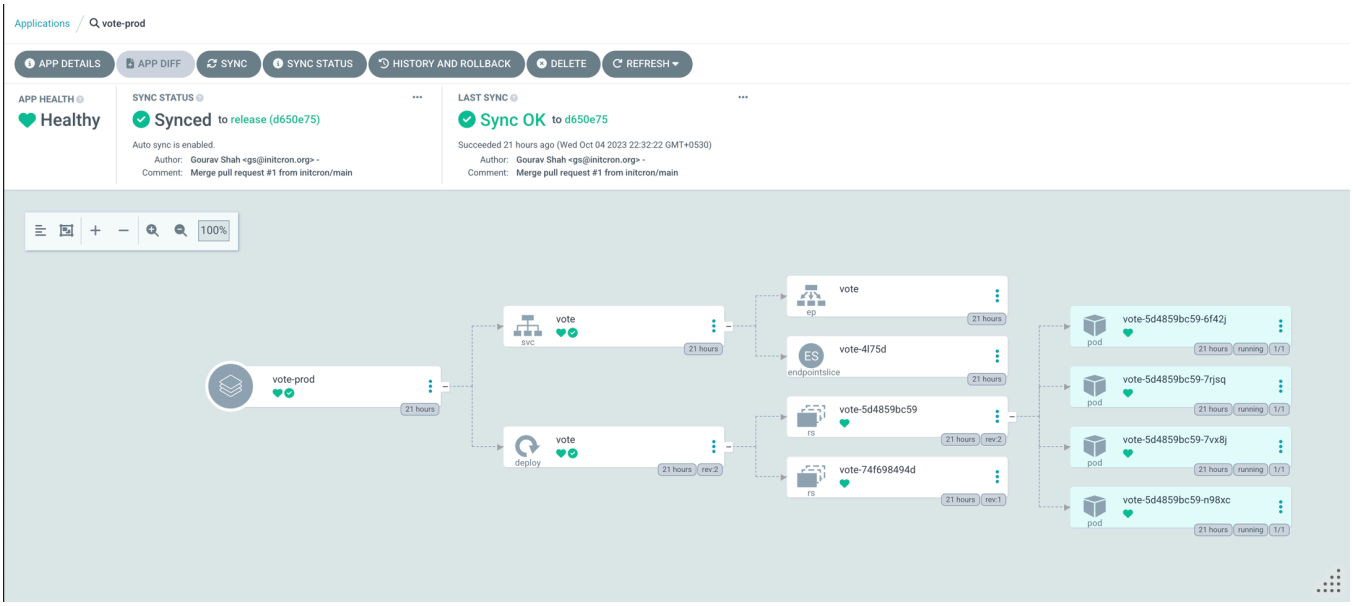
```
watch kubectl get ro,all -n prod
```

Watch for the changes in the console as well as on Argo. You shall see the application synced from the Git Repo to the Kubernetes Cluster in a few seconds.

Staging




Prod

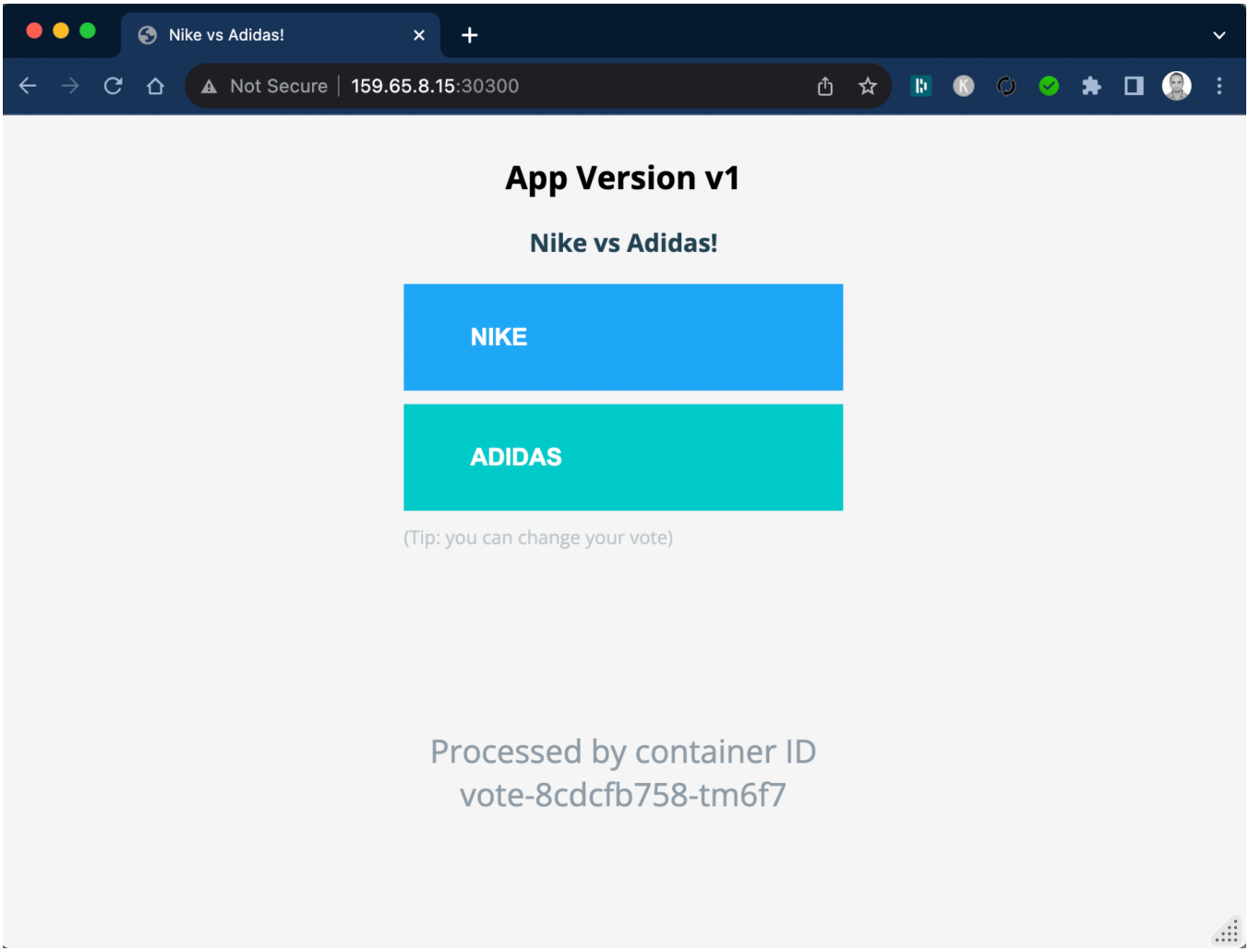



Validate by accessing the vote apps on

- Staging : http://NODEIP:30000
- Prod : http://NODEIP:30200

where, replace `NODEIP` with actual IP or Hostname of your cluster node.

e.g.




## Exercises

- Set up branch protection rule to lock down `release` branch and allow changes via pull requests. You can experiment by adding additional policies as well.
- Try modifying YAML manifests in Deploy Repo in Git in main branch by changing the image tag in `staging/kustomization.yaml` and wait for the staging deployment. Then raise the pull request to merge it into release and see it deployed to prod.

### References

- Getting Started with Argo Getting Started - Argo CD - Declarative GitOps CD for Kubernetes
- Reset admin password argo-cd/faq.md at master · argoproj/argo-cd · GitHub

#courses/argo/labs/v1