

Troubleshooting

1. GitHub Auth

Git repeatedly requested authentication on every push or pull operation, disrupting workflow. The root cause was an expired token. To resolve the issue, a GitHub Personal Access Token with **repo** permissions was generated and Git was configured to store credentials globally using `git config --global credential.helper store`. The token was also added to Jenkins Credentials for automated pipelines. This provided persistent and reliable authentication for all remote Git operations.

2. Jenkins Pipeline

The Jenkins pipeline initially failed to clone the Git repository because the GitHub credential was not correctly associated. After creating it I linked to the pipeline using `checkout scm`, resolving the issue. Another problem occurred when `docker push` to Docker Hub failed due to missing or invalid Docker Hub credentials in the Jenkins environment. This was fixed by creating Docker Hub credentials in Jenkins and adding a login step in the Jenkinsfile with `sh 'docker login -u $DOCKER_USER -p $DOCKER_PASS'`. As a result, Docker images were built locally and successfully pushed to Docker Hub. Additionally, some Jenkinsfile scripts failed due to relative path issues such as `sh "src/web/run.sh"`. The issue was corrected by using absolute workspace paths, for example `sh "$WORKSPACE/src/web/run.sh"`.

3. Docker Config

The Docker build initially failed due to incorrect file paths. The issue was resolved by verifying and correcting the paths in the Dockerfile, followed by testing a local build using `docker build -t snapfinance` and `docker run -p 8080:80 snapfinance`. The container then built successfully. A second issue occurred when the push to Docker Hub failed because of an invalid Auth. This was resolved by regenerating the Docker Hub token and testing authentication locally using `docker login -u <username> -p <token>`.

4. Local System

Potential version conflicts between Docker, Jenkins, and Minikube caused intermittent failures during testing. The issue was mitigated by verifying component versions using `docker --version`, `kubectl version --client`, and `minikube version`. To ensure a clean and stable environment, services were restarted and the Minikube cluster was reset with `systemctl restart docker` and `minikube start` before running pipelines.

5. Minikube

The Minikube cluster failed to start pods or containers due to persistent configuration and connectivity issues. The decision was made to focus on the Docker build and push stages while postponing the Kubernetes deployment for a later phase.

6. Jenkins Credentials

Created credentials did not appear in the Jenkins credential selection list. The credential type was verified and credentials were deleted and recreated to force recognition by Jenkins.

Kubernetes Deployment Troubleshooting

Pods in staging and production namespaces failed with ImagePullBackOff and ErrImagePull because Minikube could not pull the Docker image dcerdassan/devopssnapfinance:latest from Docker Hub.

The root cause was that Minikube runs inside a lightweight VM with an isolated network stack, which did not have internet access, causing docker pull operations to time out. imagePullSecrets did not resolve the issue because the problem was network connectivity, not authentication. Steps taken to resolve included verifying image availability on the host using [docker images dcerdassan/devopssnapfinance:latest](#).

Loaded the image directly into Minikube's Docker daemon:

```
docker save dcerdassan/devopssnapfinance:latest | (eval $(minikube docker-env) && docker load)
```

Applied Kubernetes manifests

```
kubectl apply -f production/deployment.yaml -n production
```

```
kubectl apply -f production/service.yaml -n staging
```

Verified pod status:

```
kubectl get pods -n production
```

```
kubectl get pods -n staging
```

Output:

NAME	READY	STATUS	RESTARTS	AGE
snapfinance-app-7688bd8bd5-kxdsf	1/1	Running	1 (7h36m ago)	18h
snapfinance-app-7688bd8bd5-zkfqd	1/1	Running	1 (7h36m ago)	18h

NAME	READY	STATUS	RESTARTS	AGE
snapfinance-app-7688bd8bd5-6q8ws	1/1	Running	1 (7h36m ago)	18h
snapfinance-app-7688bd8bd5-qb7pw	1/1	Running	1 (7h36m ago)	18h