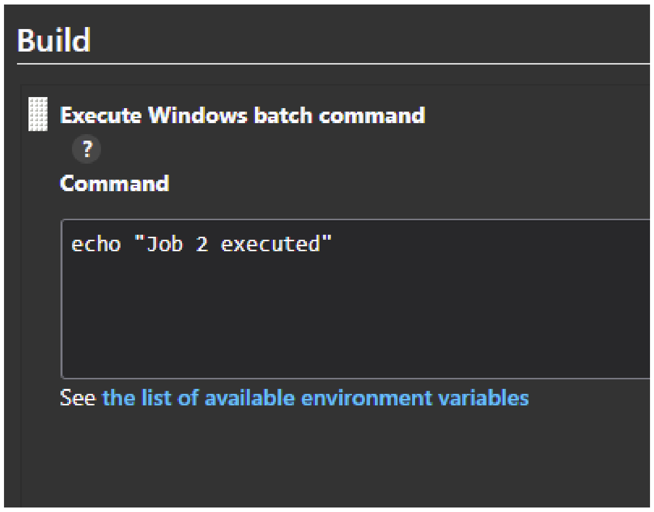
Jenkins-Learning

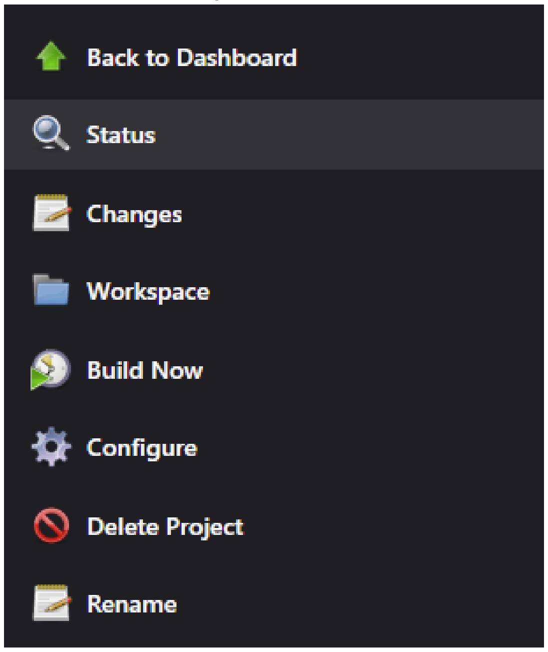
In this repo, I have demonstrated my understanding of Jenkins.

1). Creating a freestyle job:

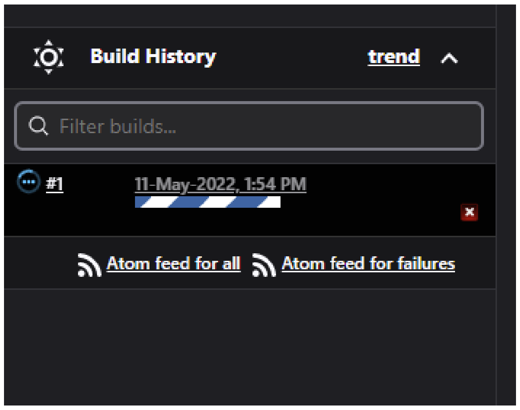
- First, I click on New Item -> Freestyle Project, give the project a name, and click OK.
- Then, go to the job and click on "Configure" on the left panel

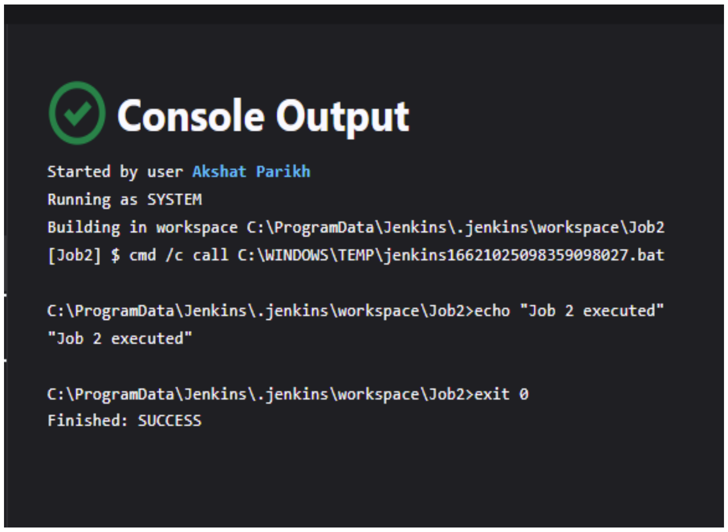

Build
Execute Windows batch command
Command
See the list of available environment variables

```
echo "Job 2 executed"
```



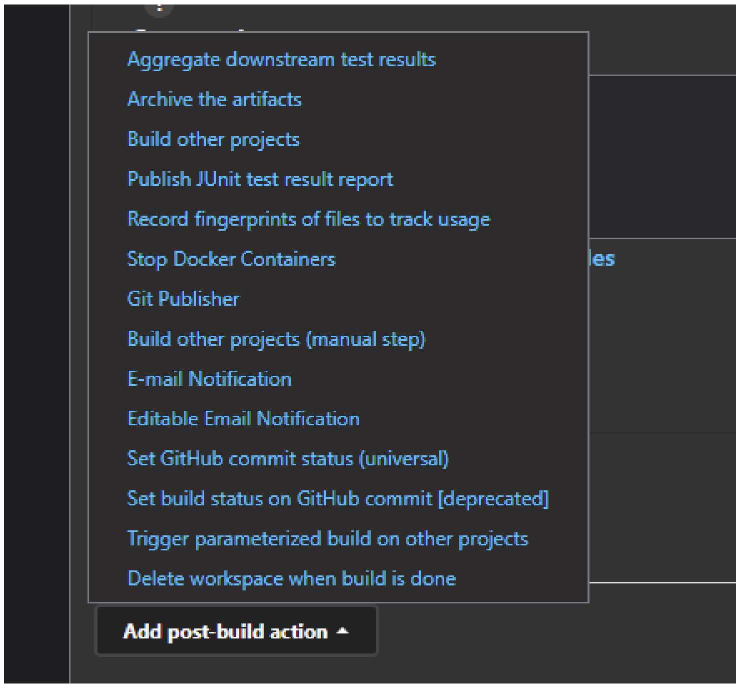
- In the "General" tab, go to the "Build" section and type in a command shown in the image above and save:
- In the end, click on "Build now" to execute the job.





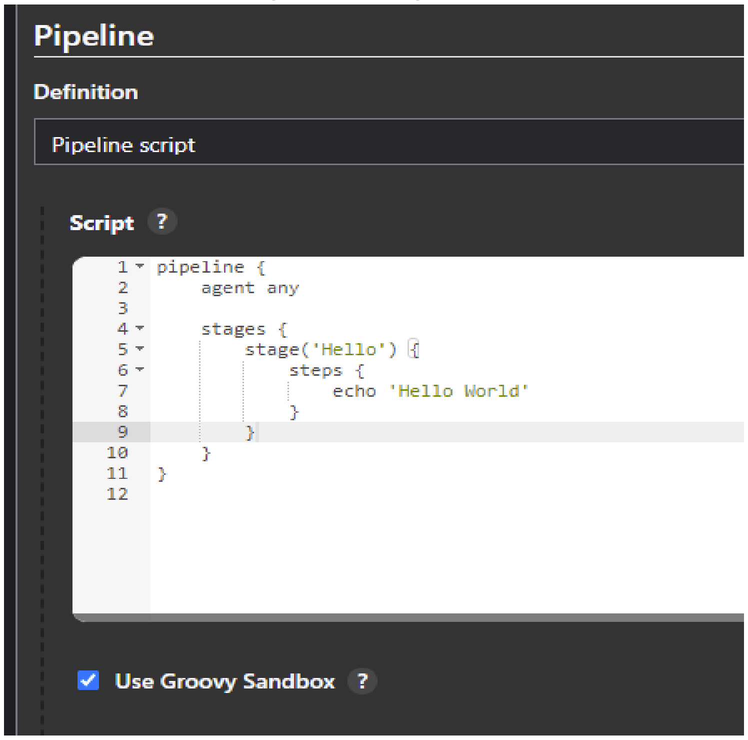
```
Started by user Akshat Parikh
Running as SYSTEM
Building in workspace C:\ProgramData\Jenkins\.jenkins\workspace\Job2
[Job2] $ cmd /c call C:\WINDOWS\TEMP\jenkins16621025098359098027.bat

C:\ProgramData\Jenkins\.jenkins\workspace\Job2>echo "Job 2 executed"
"Job 2 executed"

C:\ProgramData\Jenkins\.jenkins\workspace\Job2>exit 0
Finished: SUCCESS
```

- To check the results, click on "Build History->Console Output" and you will see the output
- We can add post-build actions which are executed once the build is complete and there are many options as per the need.


Aggregate downstream test results
Archive the artifacts
Build other projects
Publish JUnit test result report
Record fingerprints of files to track usage
Stop Docker Containers
Git Publisher
Build other projects (manual step)
E-mail Notification
Editable Email Notification
Set GitHub commit status (universal)
Set build status on GitHub commit [deprecated]
Trigger parameterized build on other projects
Delete workspace when build is done
Add post-build action

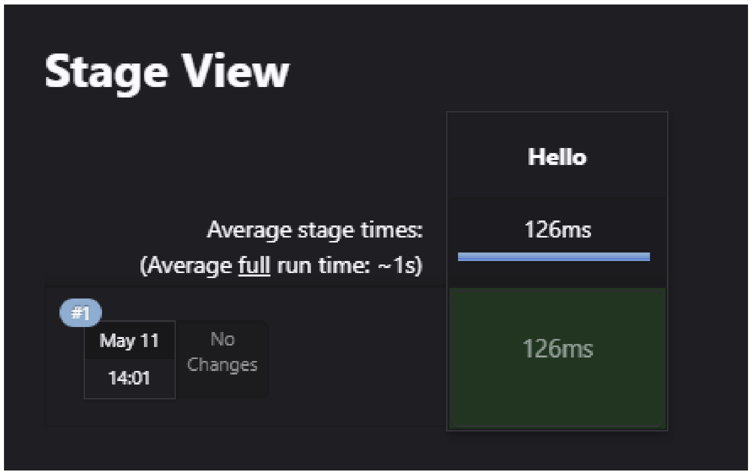
2). Build a pipeline to execute a job:

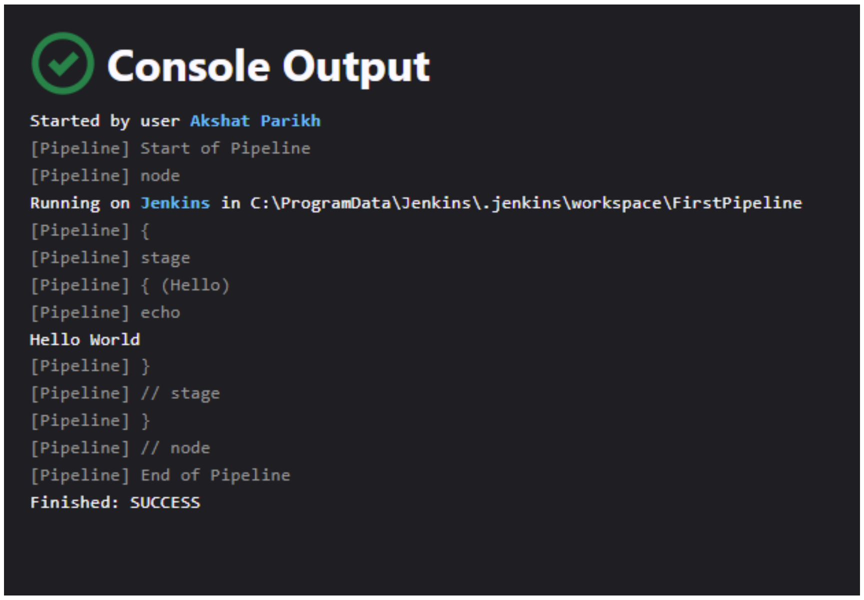
- From the dashboard, choose “New item -> Pipeline”.
- Go to “pipeline -> Configure” and go to the “Pipeline” tab.
- Choose a Pipeline script and write down a sample pipeline and build the project.



```
pipeline {
    agent any

    stages {
        stage('Hello') {
            steps {
                echo 'Hello World'
            }
        }
    }
}
```

- We can now see these 2 views that suggest that pipeline has run successfully

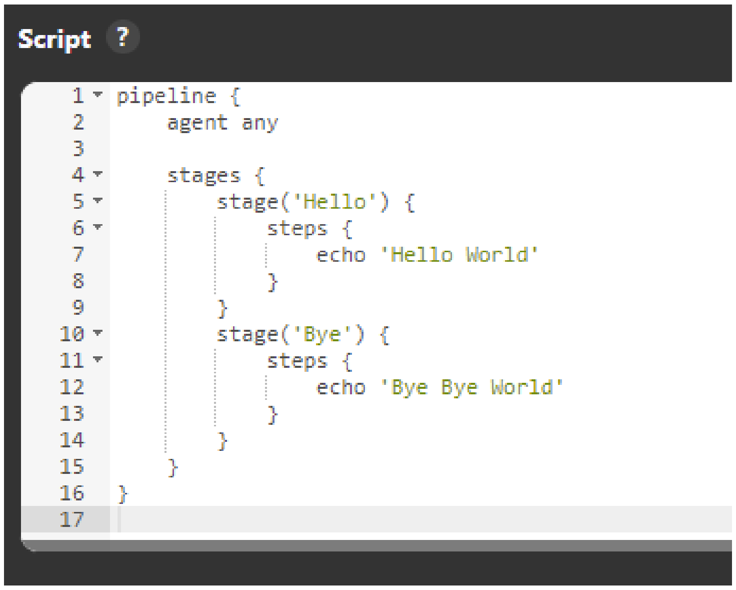




Console Output

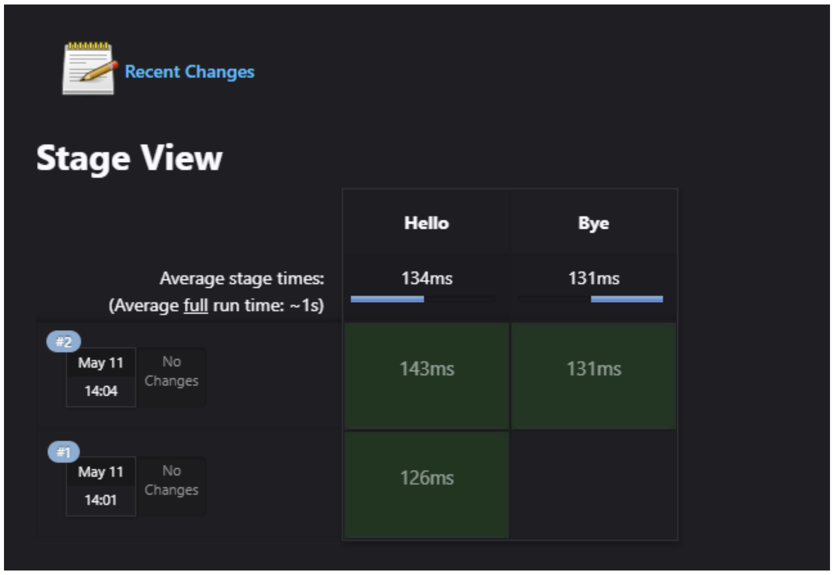
```
Started by user Akshat Parikh
[Pipeline] Start of Pipeline
[Pipeline] node
Running on Jenkins in C:\ProgramData\Jenkins\.jenkins\workspace\FirstPipeline
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Hello)
[Pipeline] echo
Hello World
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

We can add multiple stages to the pipeline as per the requirement.



Script ?

```
pipeline {
    agent any

    stages {
        stage('Hello') {
            steps {
                echo 'Hello World'
            }
        }
        stage('Bye') {
            steps {
                echo 'Bye Bye World'
            }
        }
    }
}
```

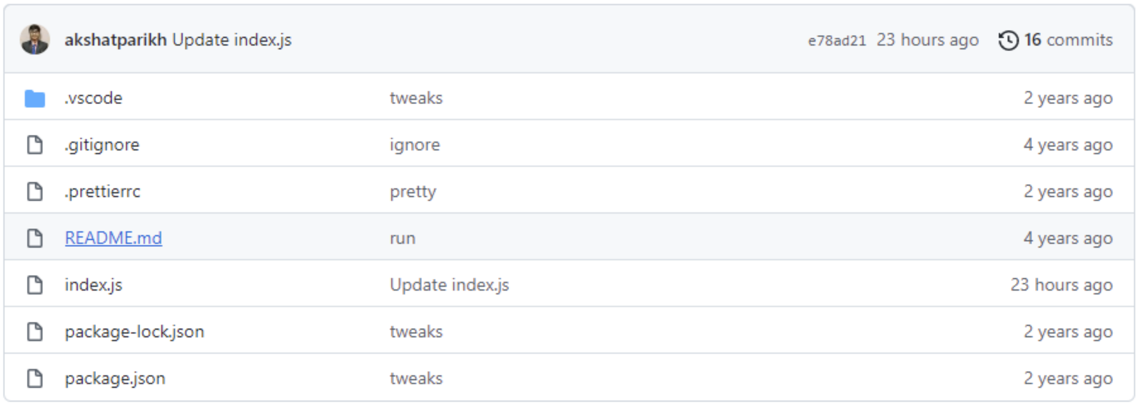


Stage View

	Hello	Bye
Average stage times: (Average full run time: ~1s)	134ms	131ms
#2 May 11 14:04 No Changes	143ms	131ms
#1 May 11 14:01 No Changes	126ms	

3). Deploy a sample nodejs application using the scripted pipeline

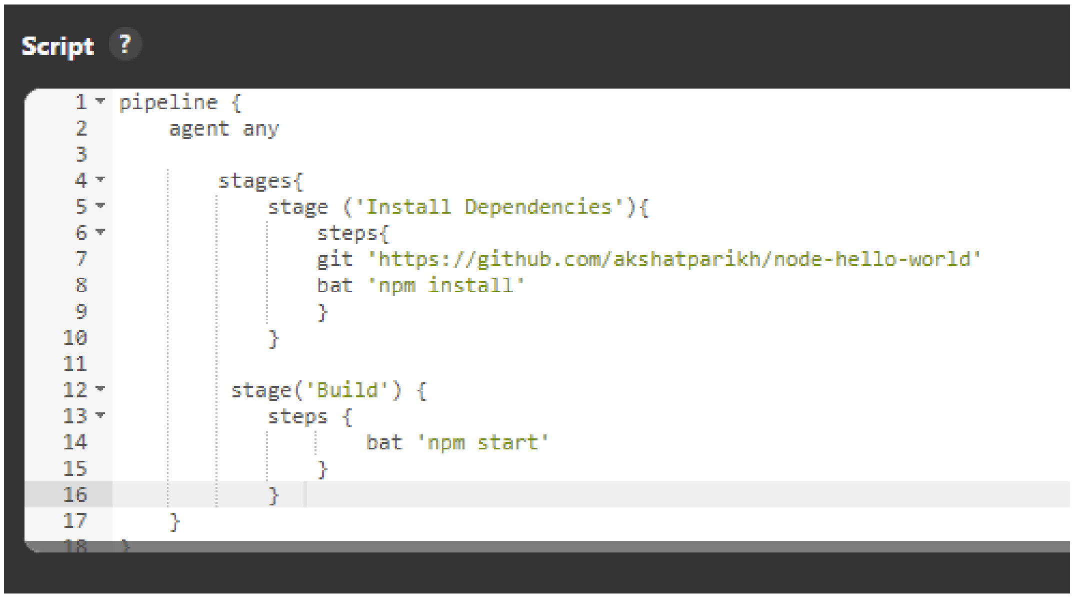
As per the image below, I have set up a sample nodejs application on my Github account.



akshatparikh Update index.js e78ad21 23 hours ago 16 commits

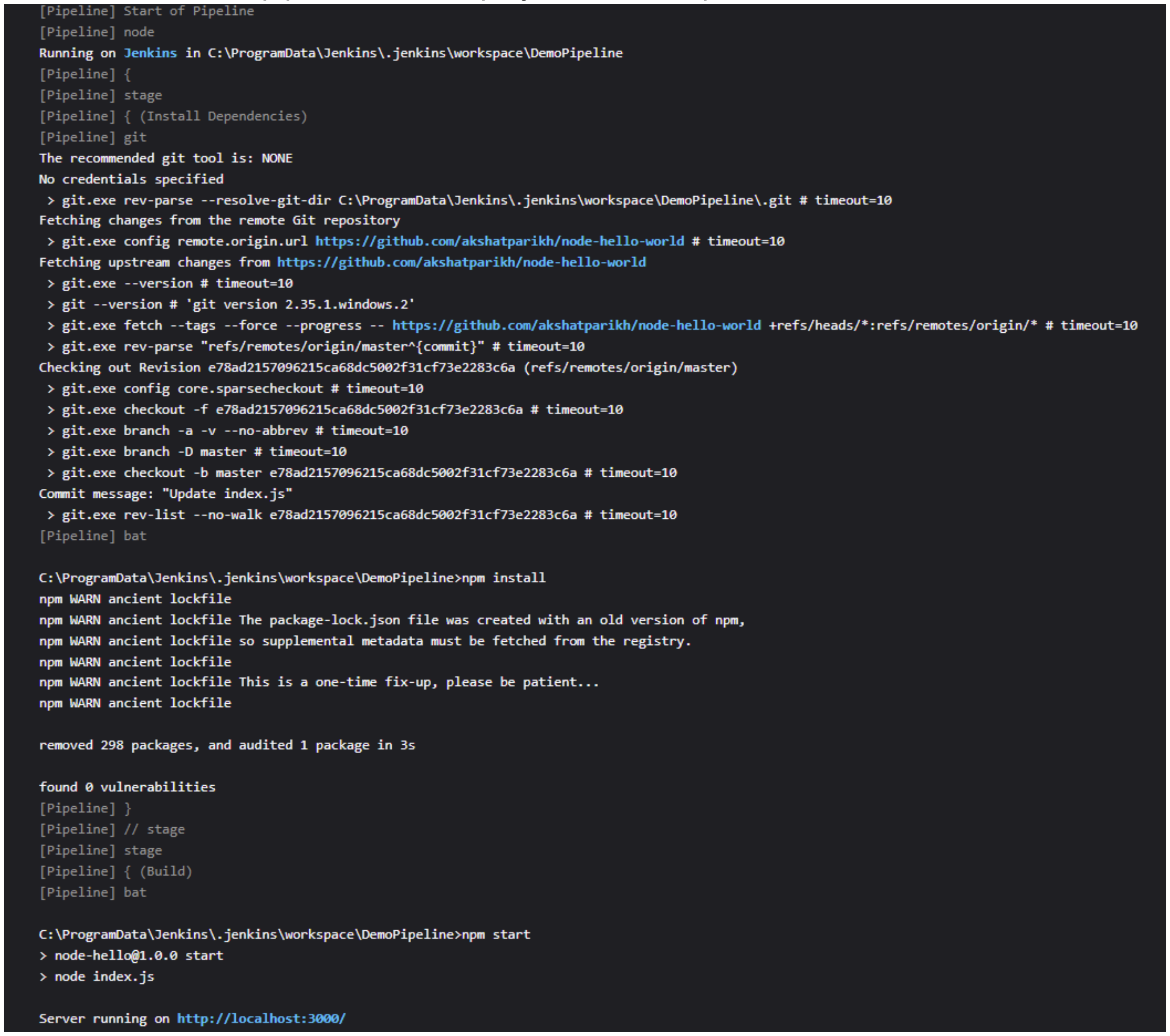
.vscode	tweaks	2 years ago
.gitignore	ignore	4 years ago
.prettierrc	pretty	2 years ago
README.md	run	4 years ago
index.js	Update index.js	23 hours ago
package-lock.json	tweaks	2 years ago
package.json	tweaks	2 years ago

Now, I have created a new pipeline and configure the pipeline script like this:

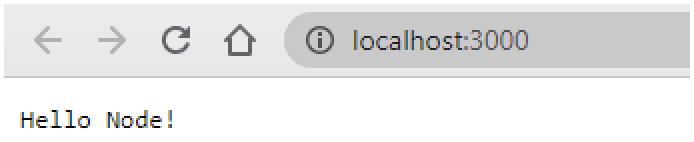


```
pipeline {
    agent any

        stages{
            stage ('Install Dependencies'){
                steps{
                git 'https://github.com/akshatparikh/node-hello-world'
                bat 'npm install'
                }
            }

         stage('Build') {
            steps {
                    bat 'npm start'
                }
            }
    }
}
```

Now, I will build the pipeline and the project will startup on localhost:3000.



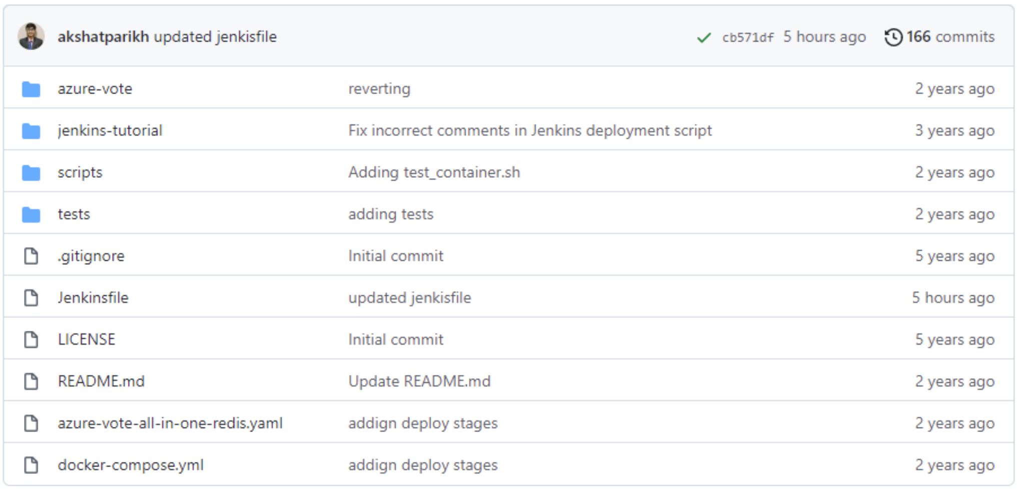
```
[Pipeline] Start of Pipeline
[Pipeline] node
Running on Jenkins in C:\ProgramData\Jenkins\.jenkins\workspace\DemoPipeline
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Install Dependencies)
[Pipeline] git
The recommended git tool is: NONE
No credentials specified
 > git.exe rev-parse --resolve-git-dir C:\ProgramData\Jenkins\.jenkins\workspace\DemoPipeline\.git # timeout=10
Fetching changes from the remote Git repository
 > git.exe config remote.origin.url https://github.com/akshatparikh/node-hello-world # timeout=10
Fetching upstream changes from https://github.com/akshatparikh/node-hello-world
 > git.exe --version # timeout=10
 > git --version # 'git version 2.35.1.windows.2'
 > git.exe fetch --tags --force --progress -- https://github.com/akshatparikh/node-hello-world +refs/heads/*:refs/remotes/origin/* # timeout=10
 > git.exe rev-parse "refs/remotes/origin/master^{commit}" # timeout=10
Checking out Revision e78ad2157096215ca68dc5002f31cf73e2283c6a (refs/remotes/origin/master)
 > git.exe config core.sparsecheckout # timeout=10
 > git.exe checkout -f e78ad2157096215ca68dc5002f31cf73e2283c6a # timeout=10
 > git.exe branch -a -v --no-abbrev # timeout=10
 > git.exe branch -D master # timeout=10
 > git.exe checkout -b master e78ad2157096215ca68dc5002f31cf73e2283c6a # timeout=10
Commit message: "Update index.js"
 > git.exe rev-list --no-walk e78ad2157096215ca68dc5002f31cf73e2283c6a # timeout=10
[Pipeline] bat

C:\ProgramData\Jenkins\.jenkins\workspace\DemoPipeline>npm install
npm WARN ancient lockfile
npm WARN ancient lockfile The package-lock.json file was created with an old version of npm,
npm WARN ancient lockfile so supplemental metadata must be fetched from the registry.
npm WARN ancient lockfile
npm WARN ancient lockfile This is a one-time fix-up, please be patient...
npm WARN ancient lockfile

removed 298 packages, and audited 1 package in 3s

found 0 vulnerabilities
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Build)
[Pipeline] bat

C:\ProgramData\Jenkins\.jenkins\workspace\DemoPipeline>npm start
> node-hello@1.0.0 start
> node index.js

Server running on http://localhost:3000/
```



```
Hello Node!
```

This is the sample nodejs app listening on port 3000

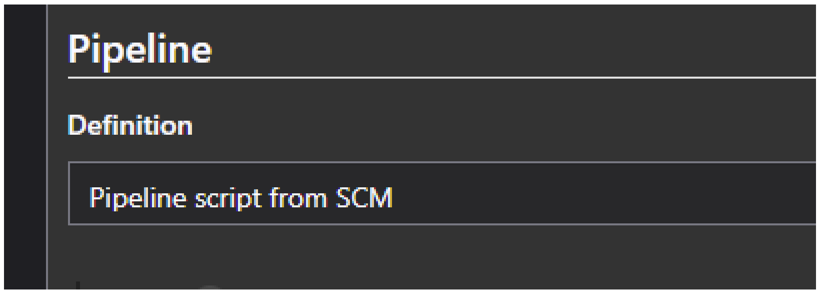
4). Build a docker image using a pipeline from SCM



akshatparikh updated jenkisfile ✓ cb571df 5 hours ago 166 commits

azure-vote	reverting	2 years ago
jenkins-tutorial	Fix incorrect comments in Jenkins deployment script	3 years ago
scripts	Adding test_container.sh	2 years ago
tests	adding tests	2 years ago
.gitignore	Initial commit	5 years ago
Jenkinsfile	updated jenkisfile	5 hours ago
LICENSE	Initial commit	5 years ago
README.md	Update README.md	2 years ago
azure-vote-all-in-one-redis.yaml	addign deploy stages	2 years ago
docker-compose.yml	addign deploy stages	2 years ago

I have set up a repository on GitHub for this purpose as shown below:

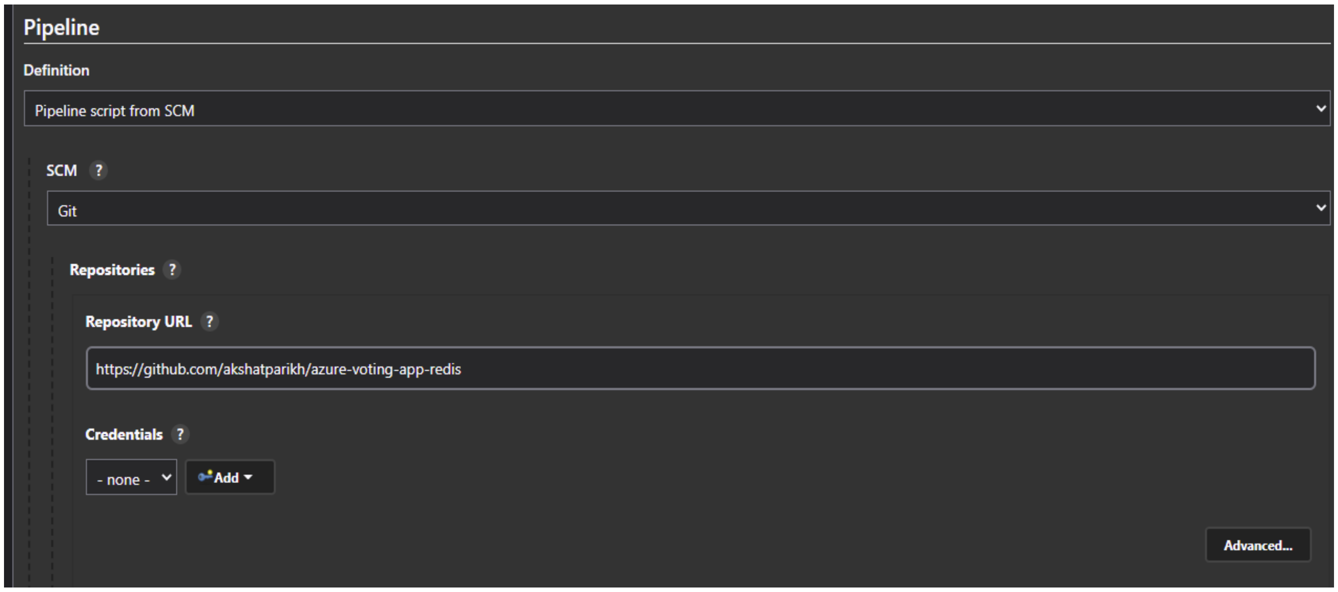


Pipeline

Definition

Pipeline script from SCM

Now, I will create a new pipeline and this time, I will choose the option “Pipeline Script from SCM”



Pipeline

Definition: Pipeline script from SCM

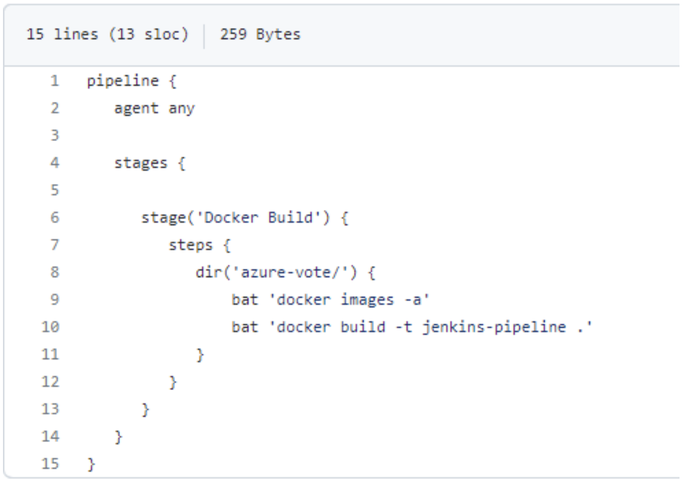
SCM: Git

Repositories

Repository URL: https://github.com/akshatparikh/azure-voting-app-redis

Credentials: - none -

Here I have selected my GitHub repository to get “Jenkinsfile” from.

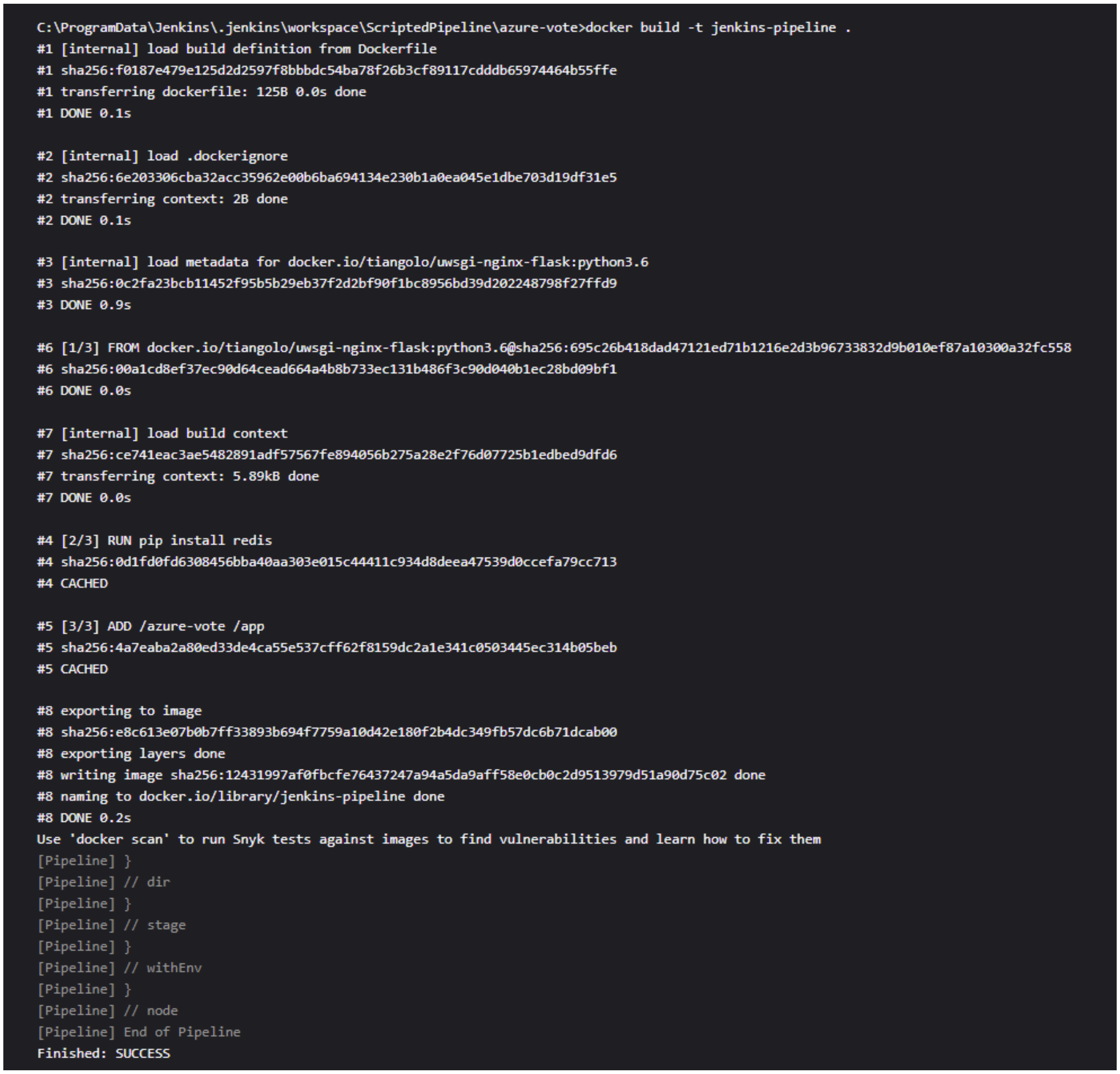


```
15 lines (13 sloc) | 259 Bytes

pipeline {
   agent any

   stages {

      stage('Docker Build') {
         steps {
            dir('azure-vote/') {
                bat 'docker images -a'
                bat 'docker build -t jenkins-pipeline .'
            }
         }
      }
   }
}
```

This is how the Jenkinsfile is scripted inside the repo

This is how the Jenkinsfile is scripted inside the repo

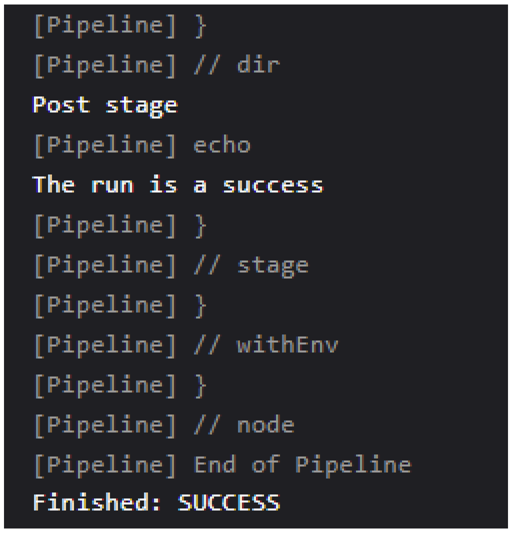
Upon building the pipeline, you can see the output below with the “SUCCESS” message.



```
C:\ProgramData\Jenkins\.jenkins\workspace\ScriptedPipeline\azure-vote>docker build -t jenkins-pipeline .
#1 [internal] load build definition from Dockerfile
#1 sha256:f0187e479e125d2d2597f8bbbdc54ba78f26b3cf89117cdddb65974464b55ffe
#1 transferring dockerfile: 125B 0.0s done
#1 DONE 0.1s

#2 [internal] load .dockerignore
#2 sha256:6e203306cba32acc35962e00b6ba694134e230b1a0ea045e1dbe703d19df31e5
#2 transferring context: 2B done
#2 DONE 0.1s

#3 [internal] load metadata for docker.io/tiangolo/uwsgi-nginx-flask:python3.6
#3 sha256:0c2fa23bcb11452f95b5b29eb37f2d2bf90f1bc8956bd39d202248798f27ffd9
#3 DONE 0.9s

#6 [1/3] FROM docker.io/tiangolo/uwsgi-nginx-flask:python3.6@sha256:695c26b418dad47121ed71b1216e2d3b96733832d9b010ef87a10300a32fc558
#6 sha256:00a1cd8ef37ec90d64cead664a4b8b733ec131b486f3c90d040b1ec28bd09bf1
#6 DONE 0.0s

#7 [internal] load build context
#7 sha256:ce741eac3ae5482891adf57567fe894056b275a28e2f76d07725b1edbed9dfd6
#7 transferring context: 5.89kB done
#7 DONE 0.0s

#4 [2/3] RUN pip install redis
#4 sha256:0d1fd0fd6308456bba40aa303e015c44411c934d8deea47539d0ccefa79cc713
#4 CACHED

#5 [3/3] ADD /azure-vote /app
#5 sha256:4a7eaba2a80ed33de4ca55e537cff62f8159dc2a1e341c0503445ec314b05beb
#5 CACHED

#8 exporting to image
#8 sha256:e8c613e07b0b7ff33893b694f7759a10d42e180f2b4dc349fb57dc6b71dcab00
#8 exporting layers done
#8 writing image sha256:12431997af0fbcfe76437247a94a5da9aff58e0cb0c2d9513979d51a90d75c02 done
#8 naming to docker.io/library/jenkins-pipeline done
#8 DONE 0.2s
Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them
[Pipeline] }
[Pipeline] // dir
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

Now, I have added a post-build step to the Jenkinsfile.

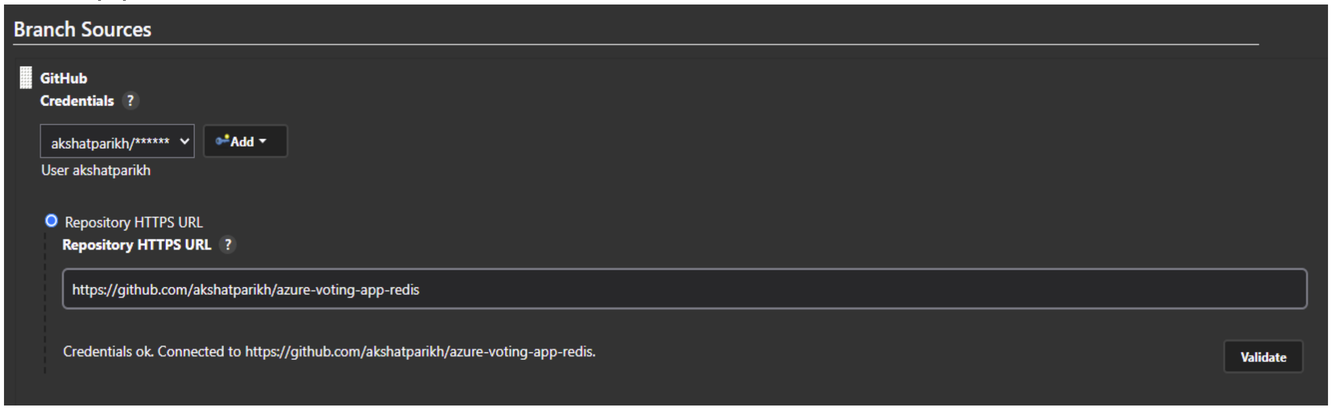
```
post {
    success{
        echo ('The run is a success')
    }
    failure{
        echo ('The run is a failure')
    }
}
```



```
[Pipeline] }
[Pipeline] // dir
Post stage
[Pipeline] echo
The run is a success
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

5). Creating a multi-branch pipeline

- From Dashboard, create a new item and choose 'Multibranch Pipeline'.
- To get the repository from GitHub, I have set up the following and saved the pipeline



Branch Sources

GitHub

Credentials ?

akshatparikh/****** | Add

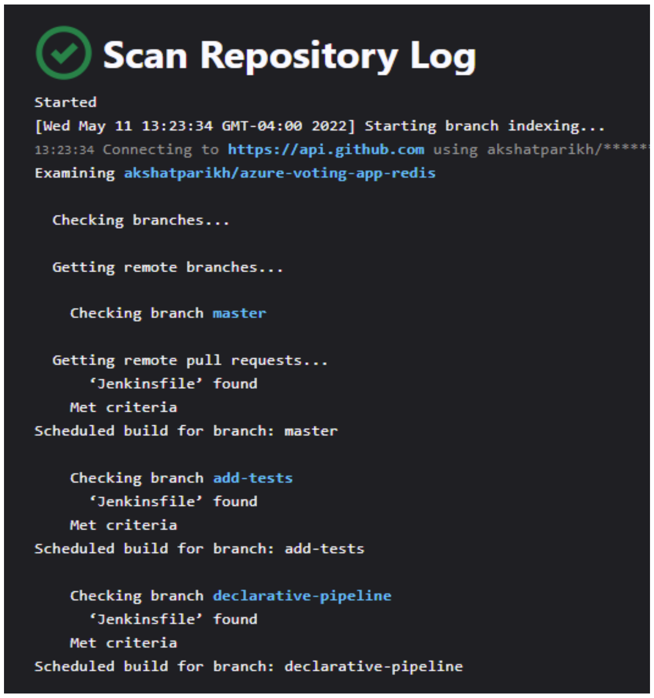
User akshatparikh

Repository HTTPS URL

Repository HTTPS URL ?

https://github.com/akshatparikh/azure-voting-app-redis

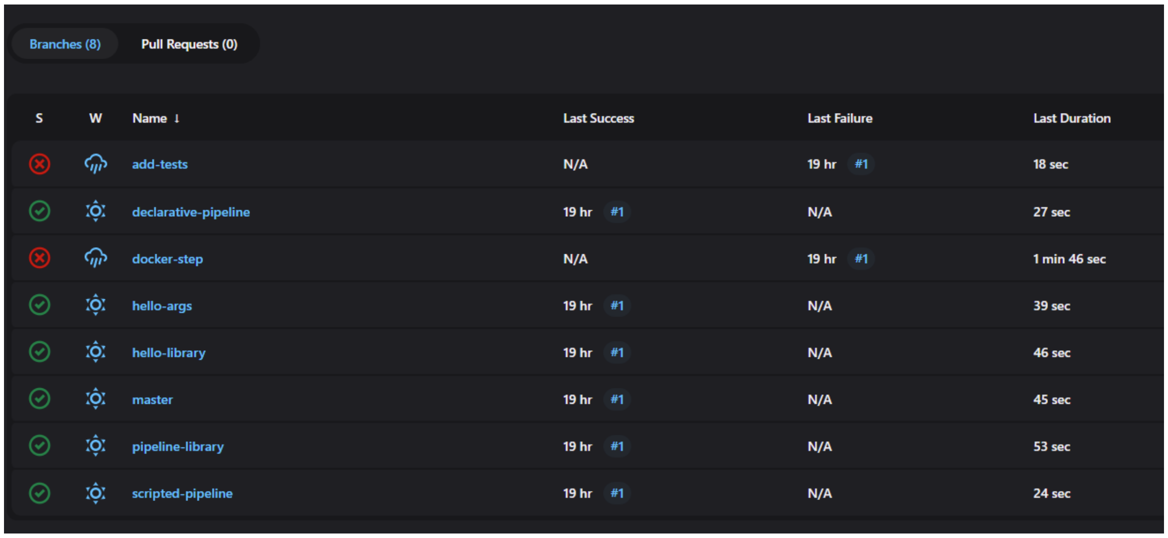
Credentials ok. Connected to https://github.com/akshatparikh/azure-voting-app-redis.



Scan Repository Log

```
Started
[Wed May 11 13:23:34 GMT-04:00 2022] Starting branch indexing...
13:23:34 Connecting to https://api.github.com using akshatparikh/*****
Examining akshatparikh/azure-voting-app-redis

  Checking branches...

  Getting remote branches...

    Checking branch master

  Getting remote pull requests...
      'Jenkinsfile' found
    Met criteria
Scheduled build for branch: master

    Checking branch add-tests
      'Jenkinsfile' found
    Met criteria
Scheduled build for branch: add-tests

    Checking branch declarative-pipeline
      'Jenkinsfile' found
    Met criteria
Scheduled build for branch: declarative-pipeline
```

Now, it will run a scan of the repository to find Jenkinsfile and return the list of branches



Branches (8) | Pull Requests (0)

S	W	Name ↓	Last Success	Last Failure	Last Duration
✗	🌧	add-tests	N/A	19 hr #1	18 sec
✓	☀	declarative-pipeline	19 hr #1	N/A	27 sec
✗	🌧	docker-step	N/A	19 hr #1	1 min 46 sec
✓	☀	hello-args	19 hr #1	N/A	39 sec
✓	☀	hello-library	19 hr #1	N/A	46 sec
✓	☀	master	19 hr #1	N/A	45 sec
✓	☀	pipeline-library	19 hr #1	N/A	53 sec
✓	☀	scripted-pipeline	19 hr #1	N/A	24 sec

This is the list of branches in the repository.