Automate docker built and push using Jenkinsfile

1) Setup a Simple Flask App

Project Structure

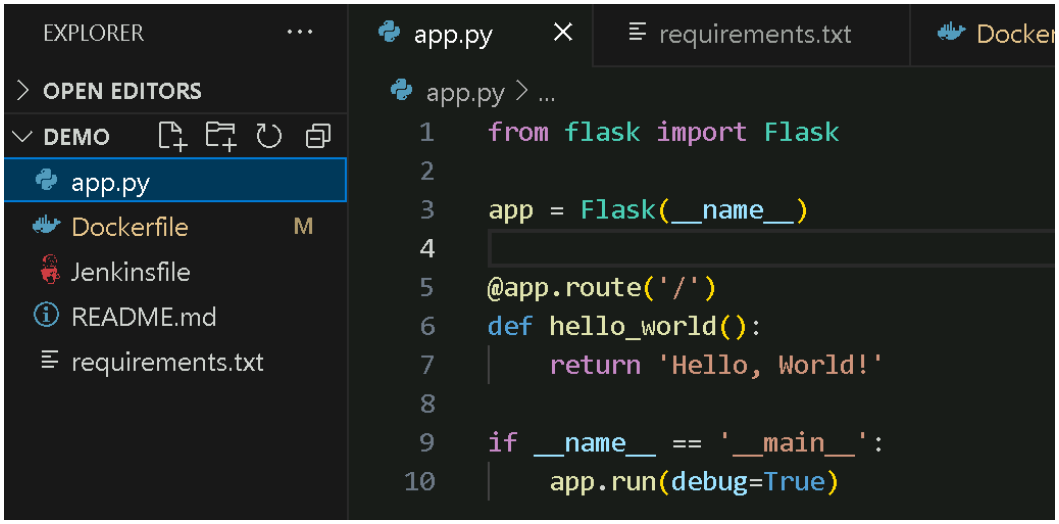
```
my-flask-app
│— app.py
│— requirements.txt
│— Dockerfile
│— Jenkinsfile
```

app.py: The main Flask application file.

requirements.txt: List of dependencies (Flask and others).

Dockerfile: Defines the Docker image for the Flask app.

Jenkinsfile: Contains the Jenkins pipeline configuration.

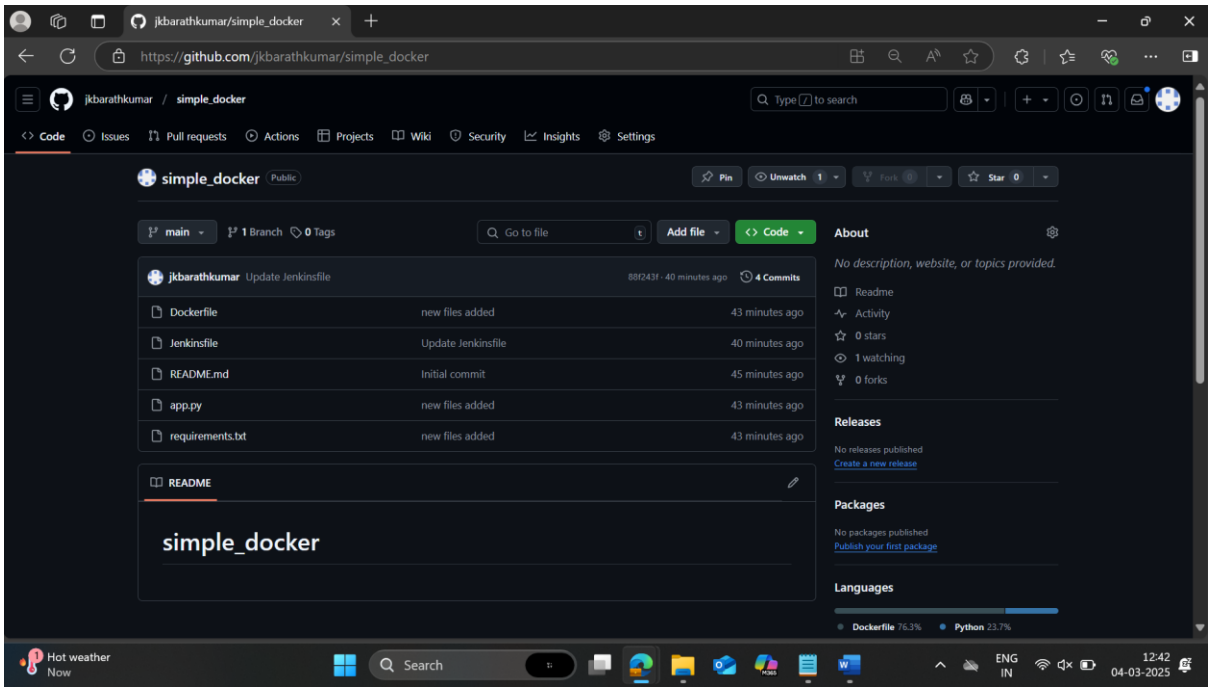


```
pipeline {
    agent any

    environment {
        DOCKER_IMAGE = 'barathkumar29/my-flask-app:latest'
    }

    stages {
        stage('Clone Repository') {
            steps {
                git url:'https://github.com/jkbarathkumar/jenkins_with_docker2.git',branch: 'main'
            }
        }

        stage('Build Docker Image') {
            steps {
                sh 'docker build -t $DOCKER_IMAGE .'
            }
        }

        stage('Push Docker Image') {
            steps {
                withDockerRegistry([credentialsId: 'docker-hub-credentials', url: 'https://index.docker.io/v1/']) {
                    sh 'docker push $DOCKER_IMAGE'
                }
            }
        }
    }
}
```

Github link for the code: [jkbarathkumar/jenkins_with_docker2]

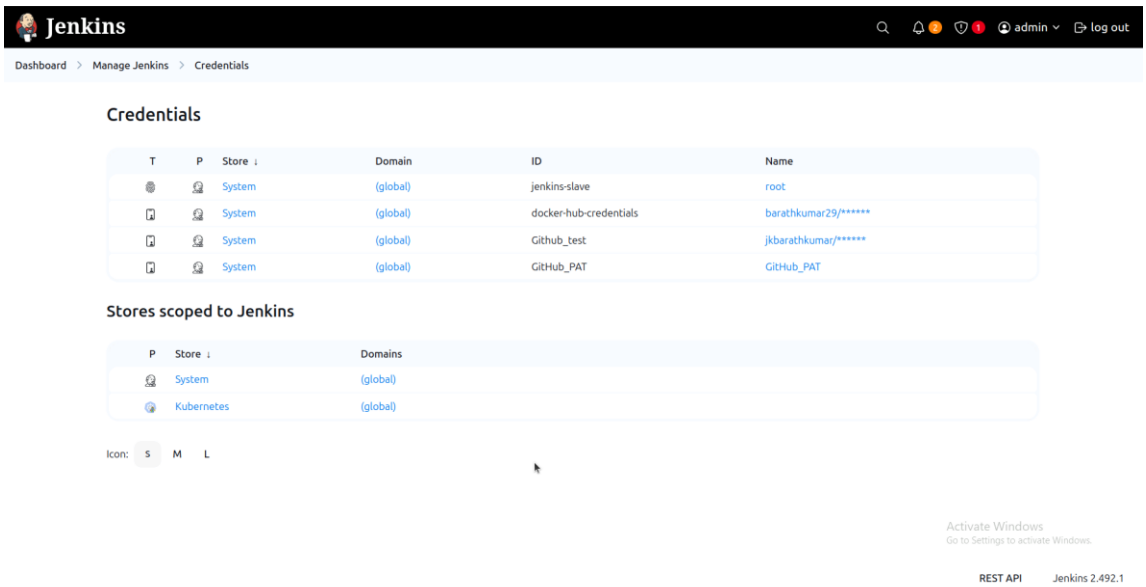
2. Push the Code to GitHub

- **Make sure you have a GitHub repository created for the project.**
- **Push all the files (app.py, requirements.txt, Dockerfile, Jenkinsfile) to the GitHub repository**



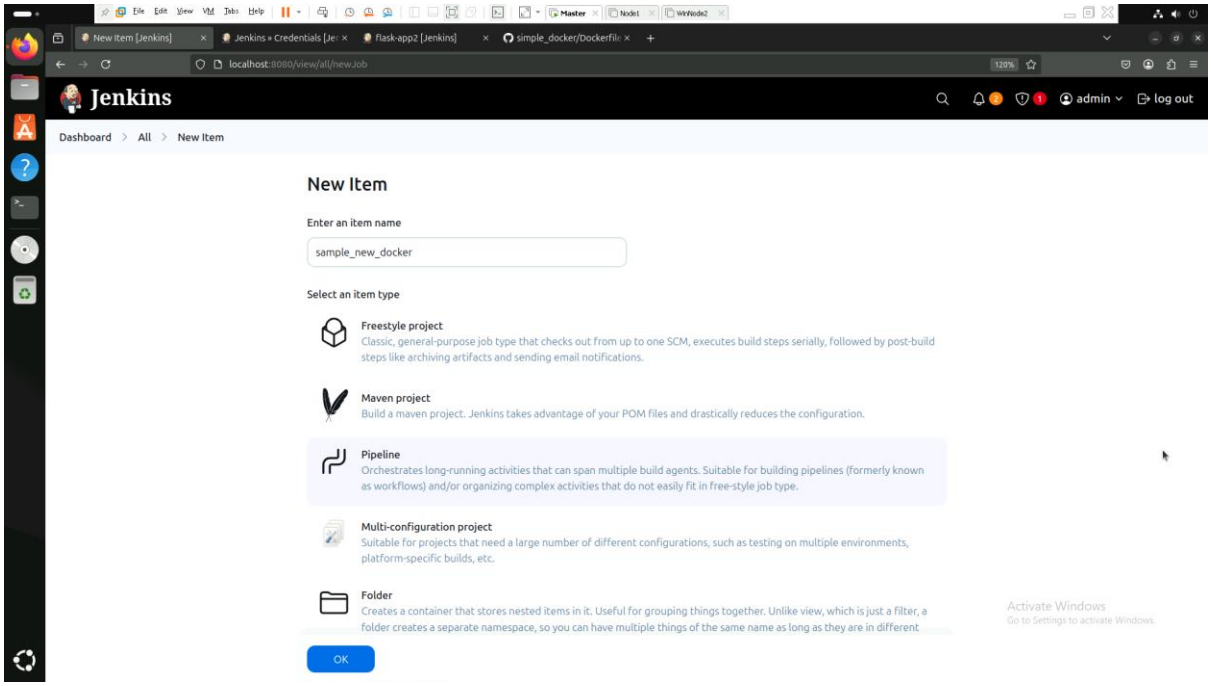
3. Configure Docker Hub Credentials in Jenkins

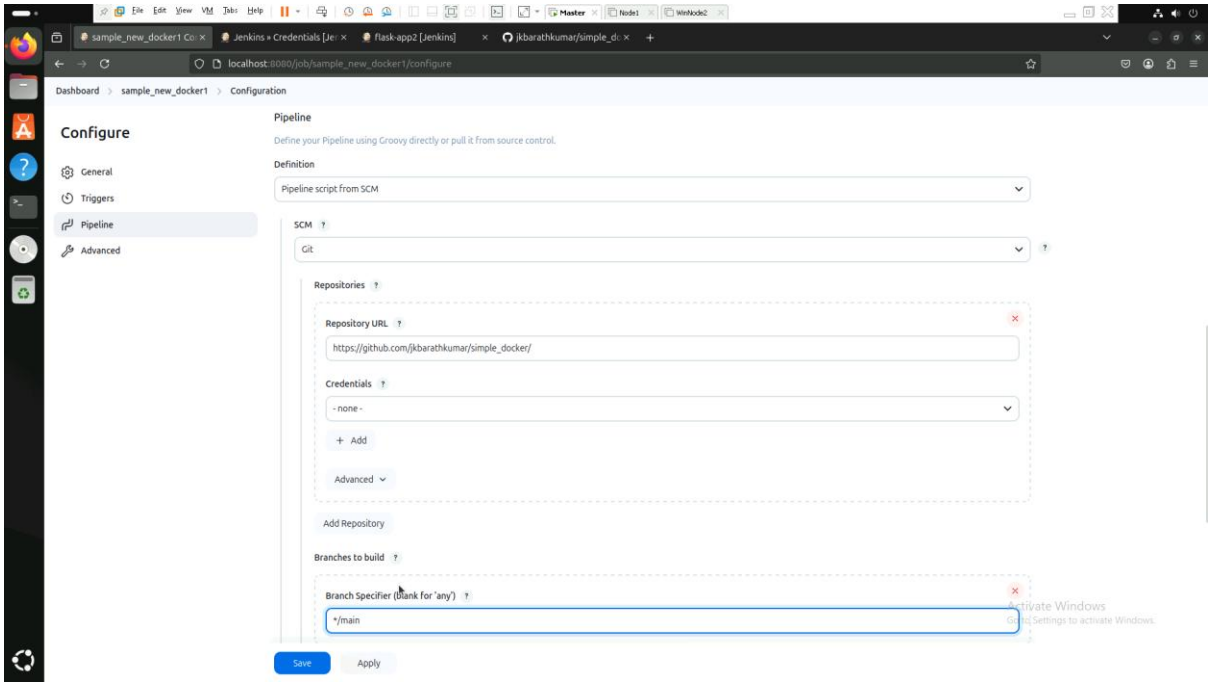
- Go to Jenkins > Manage Jenkins > Manage Credentials.
- Add new credentials:
  - Username: Your Docker Hub username.
  - Password: Your Docker Hub password (or token).
  - ID: Name it something like dockerhub-creds (the same name used in the Jenkinsfile).



4. Create a New Pipeline in Jenkins

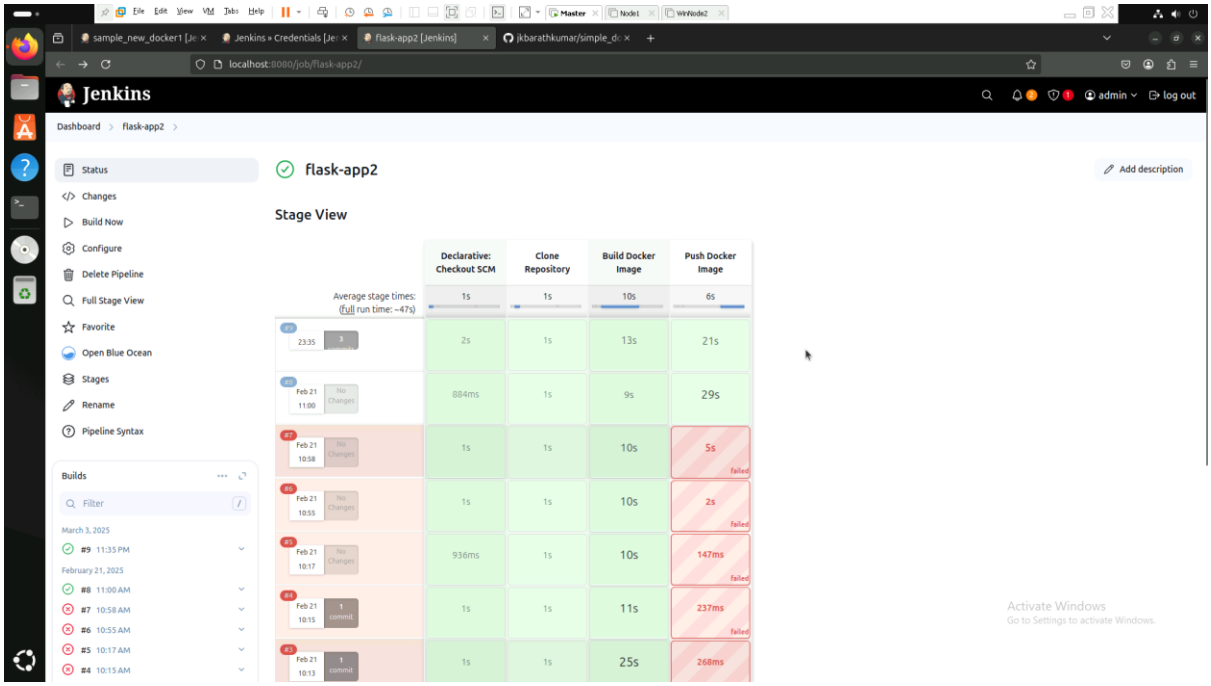
- In Jenkins, click New Item > Pipeline.
- Enter a name for the pipeline.
- Under Pipeline Definition, select Pipeline script from SCM.
  - Select Git as the SCM.
  - Enter the GitHub repository URL (https://github.com/your-username/my-flask-app.git).
  - Set the branch (typically master or main).
- Click Save.

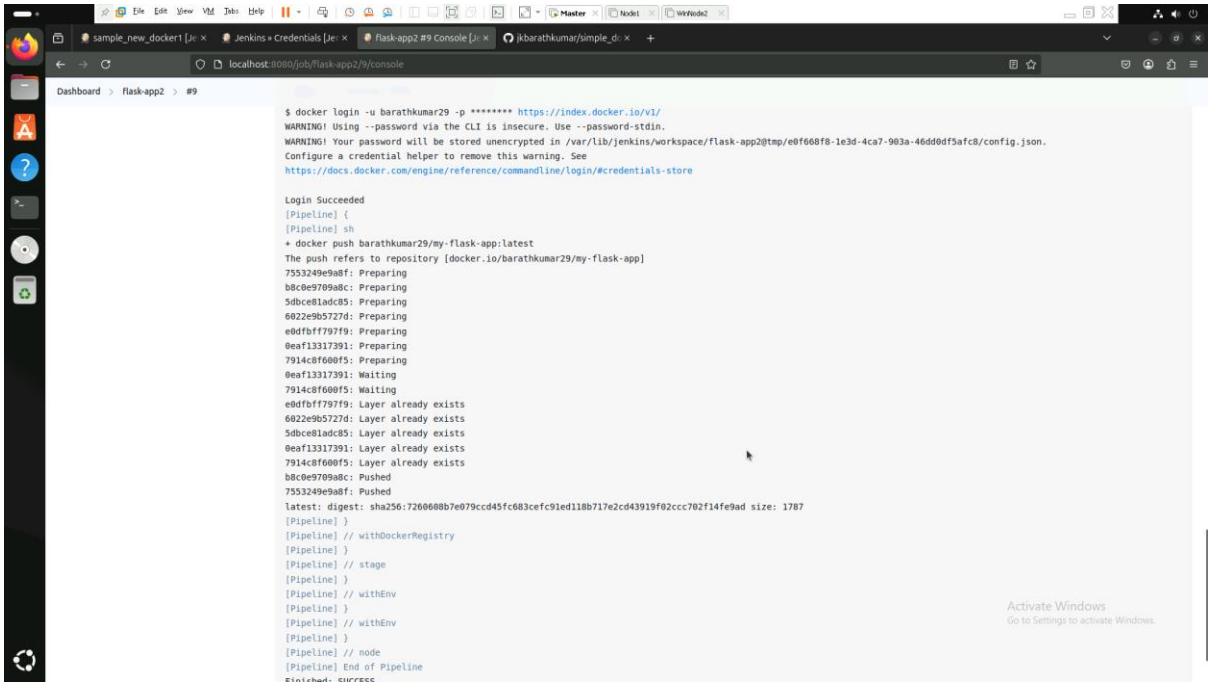




5. Click Build Now

- **Click Build Now in Jenkins to trigger the build.**
- **Jenkins will:**
  - **Checkout the code from GitHub.**
  - **Build the Docker image.**
  - **Push the image to Docker Hub.**


Jenkins
Dashboard > flask-app2 >
Status
Changes
Build Now
Configure
Delete Pipeline
Full Stage View
Favorite
Open Blue Ocean
Stages
Rename
Pipeline Syntax
Builds
Filter
March 3, 2025
#9 11:35 PM
February 21, 2025
#8 11:00 AM
#7 10:58 AM
#6 10:55 AM
#5 10:17 AM
#4 10:15 AM
flask-app2
Add description
Stage View
Declarative: Checkout SCM
Clone Repository
Build Docker Image
Push Docker Image
Average stage times:
(Full run time: ~47s)
1s
1s
10s
6s
#10 23:35 3 commits
2s
1s
13s
21s
#9 Feb 21 11:00 No Changes
884ms
1s
9s
29s
#7 Feb 21 10:58 No Changes
1s
1s
10s
5s
failed
#6 Feb 21 10:55 No Changes
1s
1s
10s
2s
failed
#5 Feb 21 10:17 No Changes
936ms
1s
10s
147ms
failed
#4 Feb 21 10:15 1 commit
1s
1s
11s
237ms
failed
#3 Feb 21 10:13 1 commit
1s
1s
25s
268ms
Activate Windows
Go to Settings to activate Windows.


Dashboard > flask-app2 > #9
$ docker login -u barathkumar29 -p ******** https://index.docker.io/v1/
WARNING! Using --password via the CLI is insecure. Use --password-stdin.
WARNING! Your password will be stored unencrypted in /var/lib/jenkins/workspace/flask-app2@tmp/e0f668f8-1e3d-4ca7-903a-46dd0df5afc8/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store
Login Succeeded
[Pipeline] {
[Pipeline] sh
+ docker push barathkumar29/my-flask-app:latest
The push refers to repository [docker.io/barathkumar29/my-flask-app]
7553249e9a8f: Preparing
b8c0e9709a8c: Preparing
5dbce81adc85: Preparing
6022e9b5727d: Preparing
e0dfbff797f9: Preparing
0eaf13317391: Preparing
7914c8f600f5: Preparing
0eaf13317391: Waiting
7914c8f600f5: Waiting
e0dfbff797f9: Layer already exists
6022e9b5727d: Layer already exists
5dbce81adc85: Layer already exists
0eaf13317391: Layer already exists
7914c8f600f5: Layer already exists
b8c0e9709a8c: Pushed
7553249e9a8f: Pushed
latest: digest: sha256:7260608b7e079ccd45fc683cefc91ed118b717e2cd43919f02ccc702f14fe9ad size: 1787
[Pipeline] }
[Pipeline] // withDockerRegistry
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Activate Windows
Go to Settings to activate Windows.

6. Verify Docker Image on Docker Hub

- **After the build finishes, log into your Docker Hub account.**
- **You should see the my-flask-app image under Repositories with the latest tag.**