

# Experiment 4

## Docker Build and Push using GitHub Actions

**Objective:** Set up a GitHub Actions workflow to automatically build a Docker image from a Dockerfile in your GitHub repository and push it to a container registry (e.g., Docker Hub).

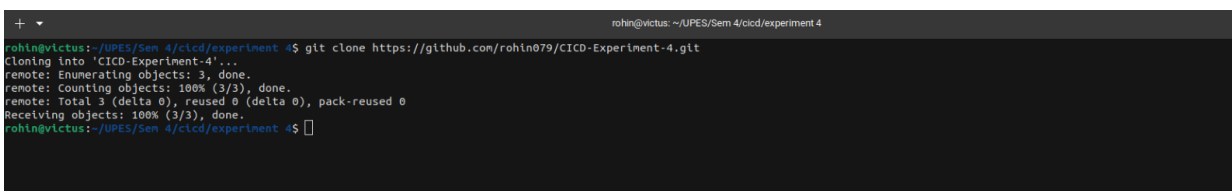
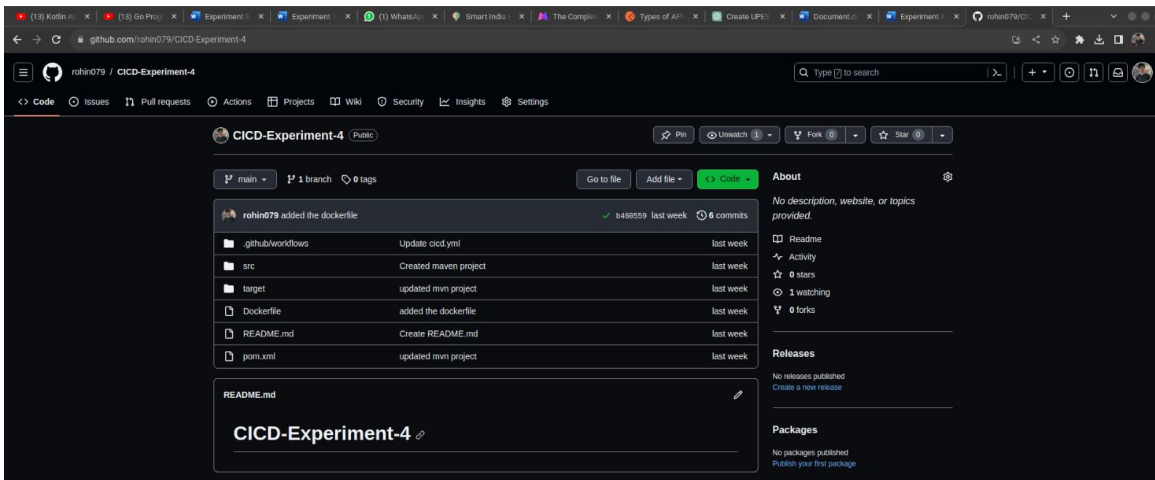
### Prerequisites:

#### GitHub account

- Docker installed on your local machine
- A Dockerfile in your GitHub repository
- A Docker Hub account (or any other container registry)

### Exercise Steps:

#### Step 1: Fork and Clone the Repository



- Fork a sample GitHub repository containing a Dockerfile or create a new repository and add a Dockerfile to it.
- Clone the forked repository to your local machine.

#### Step 2: Create Docker Hub Access Token:

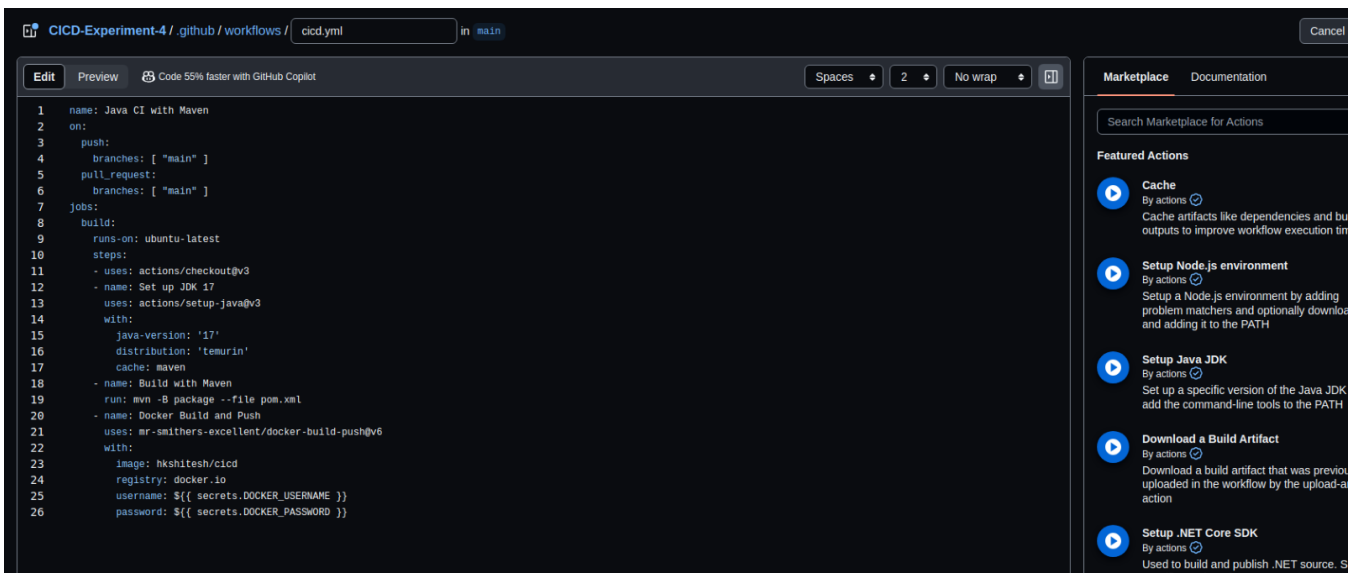
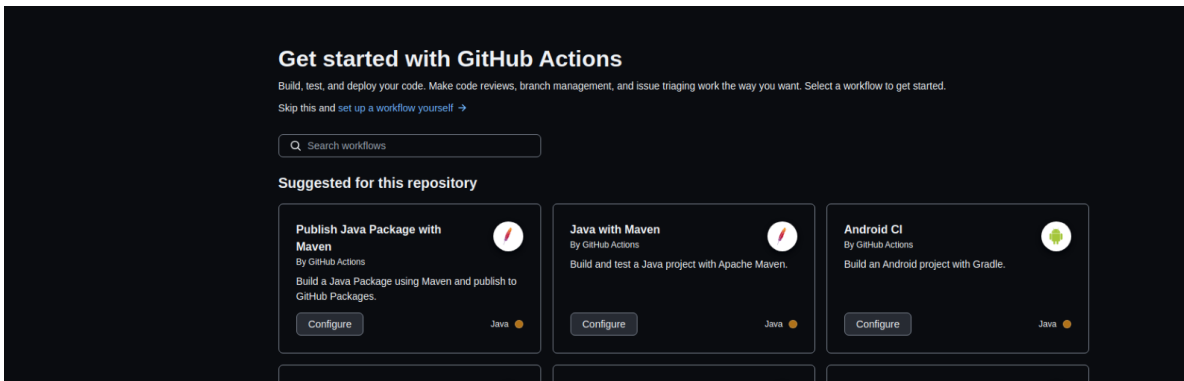
- Log in to your Docker Hub account
- Go to your account settings and click on the "Security" tab.
- Under "Access Tokens," click "New Access Token." Give it a name, select the required permissions (e.g., "Write" for pushing Docker images), and click "Create."

- Copy the generated access token. You will need it to authenticate with Docker Hub in your GitHub Actions workflow.

Access Tokens						New Access Token
<input type="checkbox"/>	Description	Source	Scope	Last Used	Created	
<input type="checkbox"/>	cicd	<a href="#">MANUAL</a>	Read, Write, Delete	Sep 26, 2023 09:46:17	Sep 26, 2023 09:43:09	⋮

### Step 3: Create a GitHub Actions Workflow

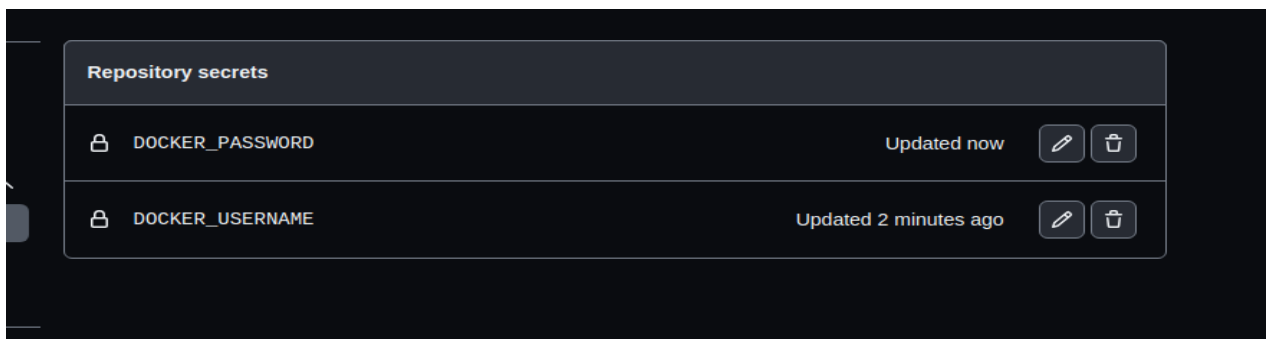
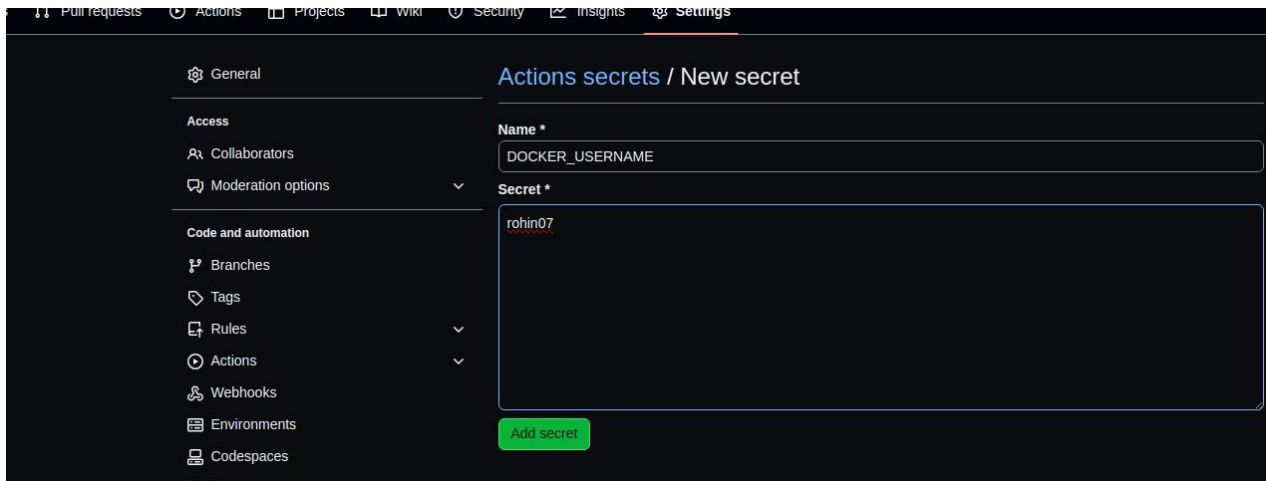
- In your cloned repository, create a directory named `.github/workflows` if it doesn't exist.
- Inside the `.github/workflows` directory, create a YAML file (e.g., `docker-build-and-push.yml`) to define your GitHub Actions workflow. You can use any text editor to create the file.
- Edit `cicd.yml`



### Step 4: Add Docker Hub Credentials to GitHub Secrets

- Go to your GitHub repository on the GitHub website.
- Click on "Settings" and then "Secrets" in the left sidebar.

- Click on "New repository secret" and add two secrets:
- DOCKER\_USERNAME: Set this to your Docker Hub username.
- DOCKER\_PASSWORD: Set this to the Docker Hub access token you generated earlier.



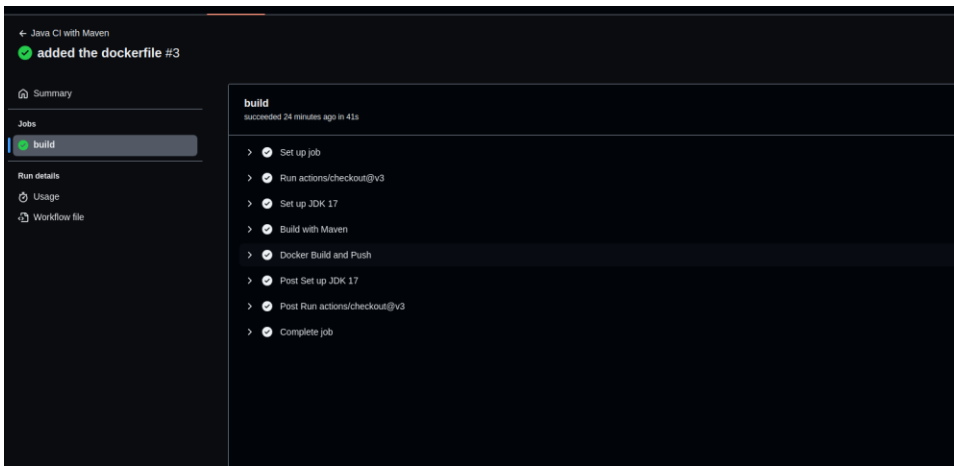
### Step 5: Commit and Push Changes

Save the docker-build-and-push.yml file.

Commit the changes to your local repository:

### Step 6: Check the Workflow Status

- Go to your GitHub repository on the GitHub website.
- Click on the "Actions" tab to see the workflow running. You should see a workflow named "Docker Build and Push" or the name you specified in the YAML file.
- Monitor the workflow's progress, and once it is completed successfully, you should see a green checkmark indicating a successful build and push of the Docker image to Docker Hub.





## Step 7: Verify the Docker Image on Docker Hub

- Log in to your Docker Hub account.
- Navigate to your Docker Hub repository, and you should see the Docker image you pushed from the GitHub Actions workflow.

### Tags

This repository contains 1 tag(s).

Tag	OS	Type	Pulled	Pushed
 <a href="#">main-b460559</a>		Image	7 days ago	7 days ago

[See all](#) [Go to Advanced Image Management](#)

### Automated Builds

Manually pushing images to Hub? Connect Bitbucket to automatically build and tag code is updated, so you can focus your

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