Class 6: Automating Terraform with GitHub Actions

Step 1: Preparing AWS

1. **Log in to AWS**
   - Access your AWS account at AWS Console.
2. **Navigate to IAM Dashboard**
   - Once logged in, type "IAM" in the search bar and navigate to the Identity and Access Management dashboard.
3. **Set Up IAM Permissions**
   - Click **User Groups** in the left-hand menu.
   - Create a new user group with these permissions
     - **AdministratorAccess**
     - **AmazonAPIGatewayAdministrator**
     - **SystemAdministrator**
   - Save the user group.
4. **Create an IAM User**
   - Go back to the IAM dashboard and select **Users** from the left-hand menu.
   - Click **Create Users**:
     - Enter the user name `Terraform`.
     - Click "Next"
   - Assign the user to the previously created user group.
   - Finish creating the user.
5. **Generate Access Keys**
   - Click the new user.
   - Under the **Summary**, click "Create Access Key."
   - Command Line Interface (CLI)
   - Click "I understand the above recommendation and want to proceed to create an access key."
   - Create access key
   - Save the Access Key ID and Secret Access Key.

Step 2: Setting Up Terraform Cloud

1. **Sign Up or Log In**
   - Go to Terraform Cloud. If you don't already have an account, click "Sign Up."
2. **Create an Organization**
   - Once logged in, navigate to the **Organizations** tab.

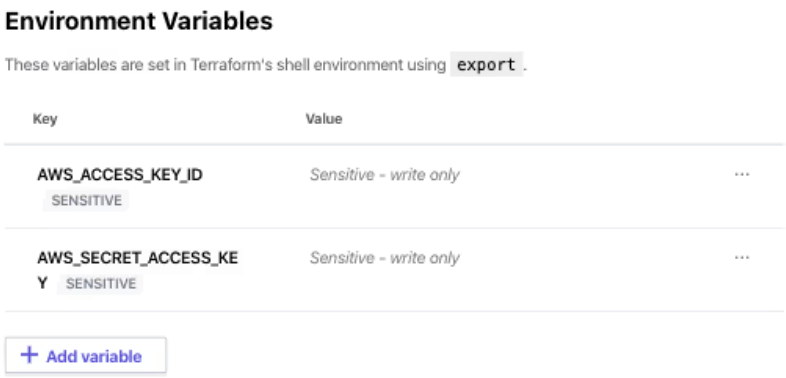
- Click "Create New Organization."
- Name the organization appropriately and click "Create."

3. **Set Up a Workspace**

   - Inside the organization, create a new workspace:
     - Default Project
     - Choose "API-Driven Workflow" if you are integrating with GitHub.
     - Name the workspace (e.g., "learn-terraform-github-actions").
   - Complete the setup.

4. **Add AWS Environment Variables**

   - Navigate to thebanner on the left side.
   - Select "Variables"
   - Under "Workspace variables," add the following environment variables:
     - `AWS_ACCESS_KEY_ID`
     - `AWS_SECRET_ACCESS_KEY`
   - Paste the values saved from Step 1.
   - Select "Environment variable"
   - Select "Sensitive"



5. **Generate a Terraform Cloud API Token**

   - Go to your **Account Settings** in Terraform Cloud.
     - Left side banner
     - Click on profile picture
     - Click "Account settings"
     - Click "Tokens"
   - Under "Tokens," generate a new token and name it (e.g., "GitHub Actions").
   - Save the token for later use in GitHub Actions.

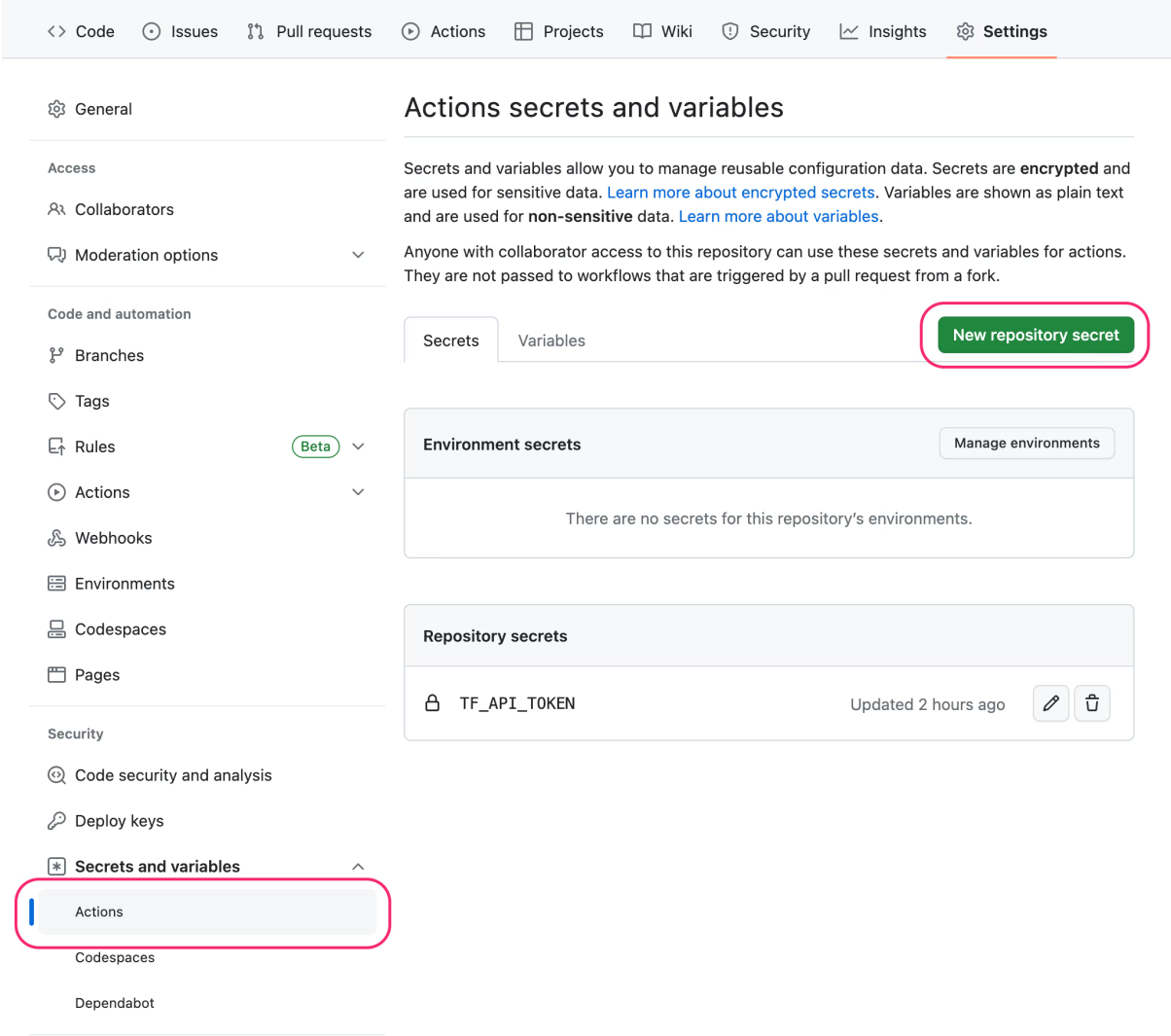
Step 3: Setting Up GitHub Repository

1. **Fork the Repository**

   - Navigate to Theo's repository and click "Fork."
   - Create fork

2. **Add Terraform Cloud Token as a GitHub Secret**

   - In your forked repository, navigate to **Settings > Secrets and Variables (Left side banner) > Actions**.
   - Click "New Repository Secret."
   - Name it `TF_API_TOKEN` and paste the Terraform Cloud API token.
   - Add secret



3. **Clone the Repository**

   - On your local machine, create a folder for the project.
   - Open a terminal and run the following command:

```
git clone <repository-url>
```

   - Navigate into the repository directory:

```
cd <repository-name>
```

Step 4: Updating Terraform Configuration Locally

1. **Open the Repository in Visual Studio Code**
   - Use `cd` to navigate to the repository folder in your terminal.
   - Open the repository in Visual Studio Code:

     ```
     code .
     ```

2. **Update Terraform Configuration**
   - Open the `main.tf` file.
   - Locate the `cloud` block and update it with:
     - Your Terraform Cloud organization name.
     - Your workspace name.

     ```
     cloud {

      organization = "your_organization"

      workspaces {
          name = "your_workspace"
      }
     ```

3. **Save and Commit Changes**
   - Save the updated file.
   - Create a new branch:

     ```
     git checkout -b 'update-tfc-org'
     ```

   - Stage and commit your changes:

     ```
     git add main.tf
     git commit -m "Use our HCP Terraform organization"
     ```

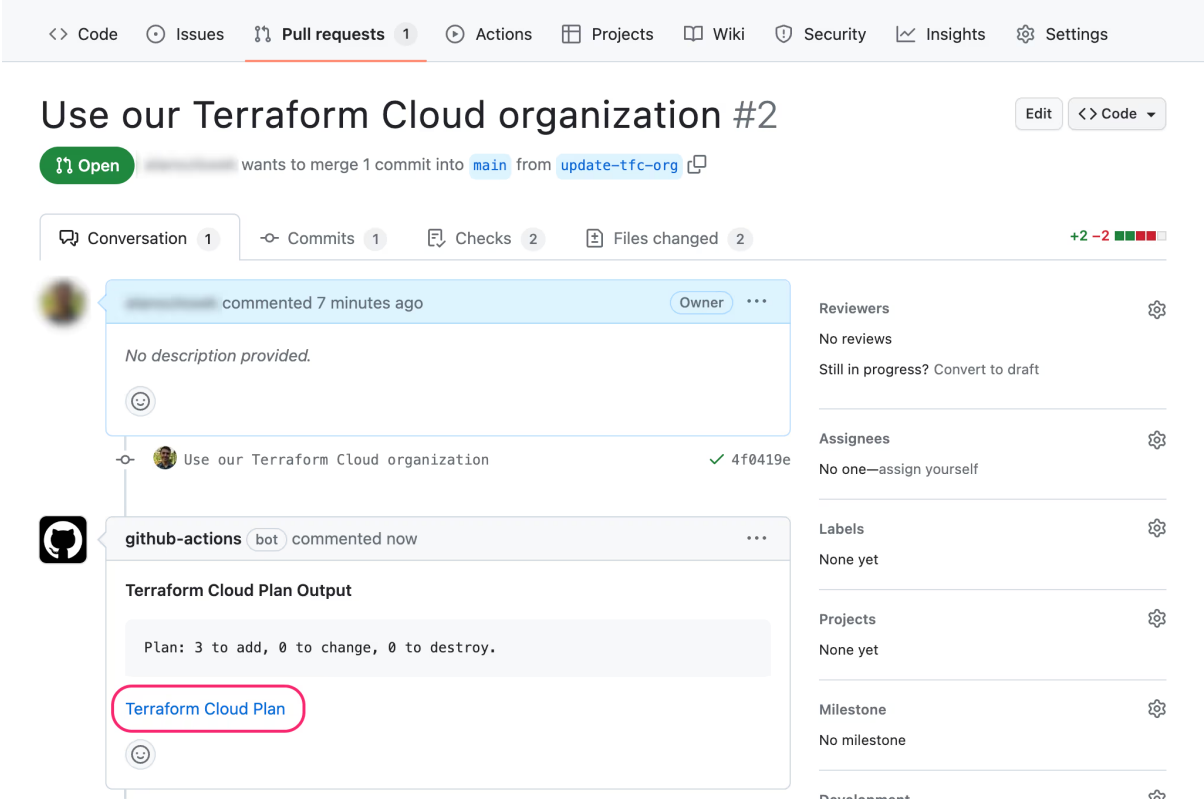
4. **Push Your Changes**
   - Push the branch to GitHub:

     ```
     git push -u origin update-tfc-org
     ```

Step 5: Deploying Terraform Plan via GitHub Actions

1. **Create a Pull Request (PR)**
    - On GitHub, go to your repository.
    - Click "Pull Requests"
    - Click "New"
    - For "base repository" select your repo
    - For compare: select "update-tfc-org"
    - Create it.

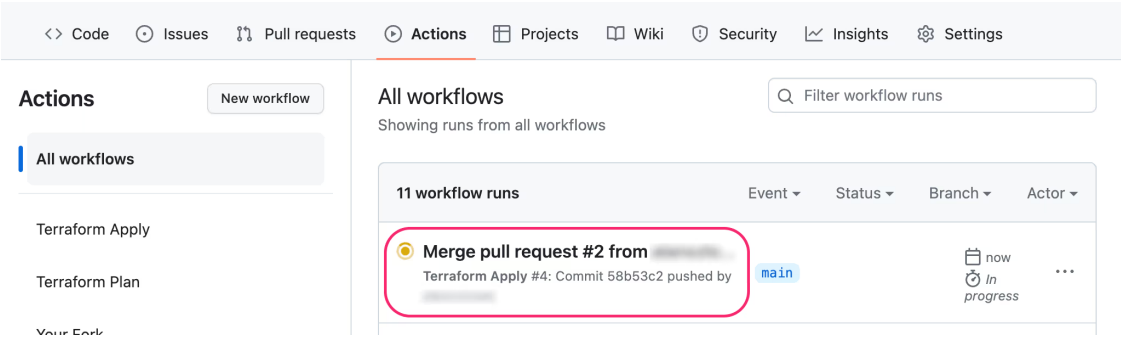
2. **Wait for Workflow Validation**
    - On the pull request page wait for the check to be done
    - Ensure it completes successfully.



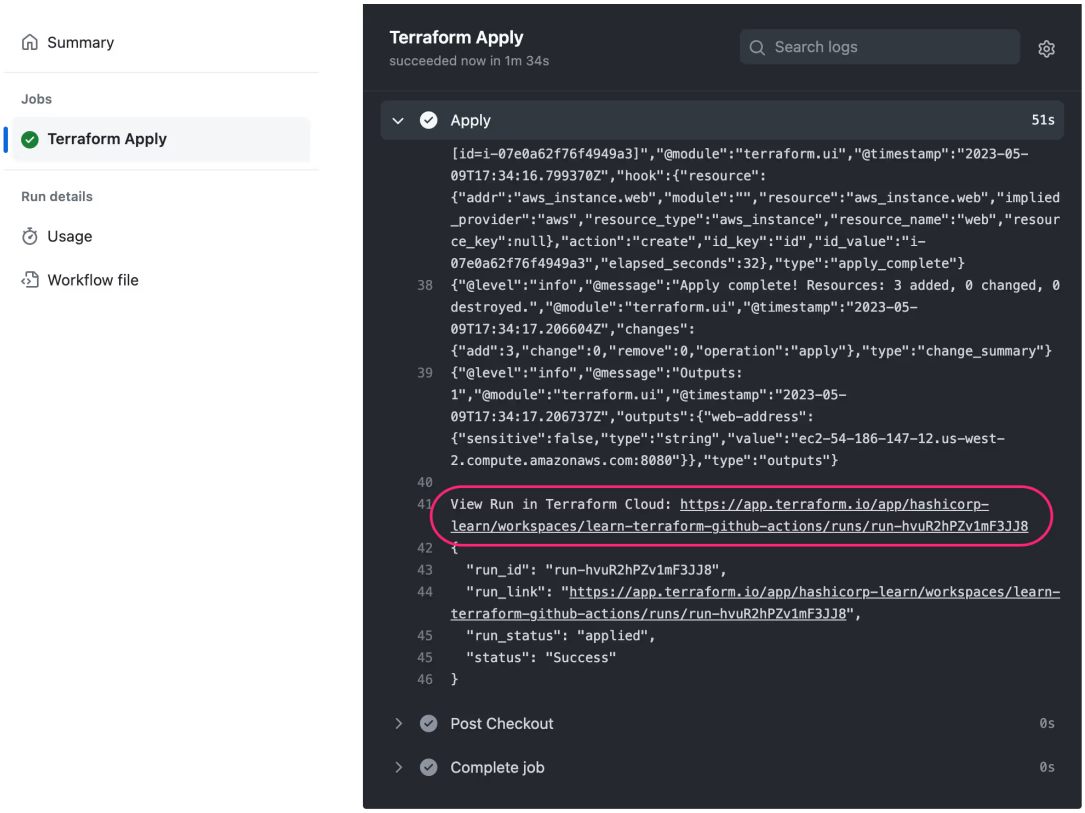
3. **Merge the Pull Request**
    - Once the workflow completes, merge the PR into the main branch.

4. **Verify Deployment**
    - Check the `terraform.yml` workflow in GitHub Actions to confirm success.

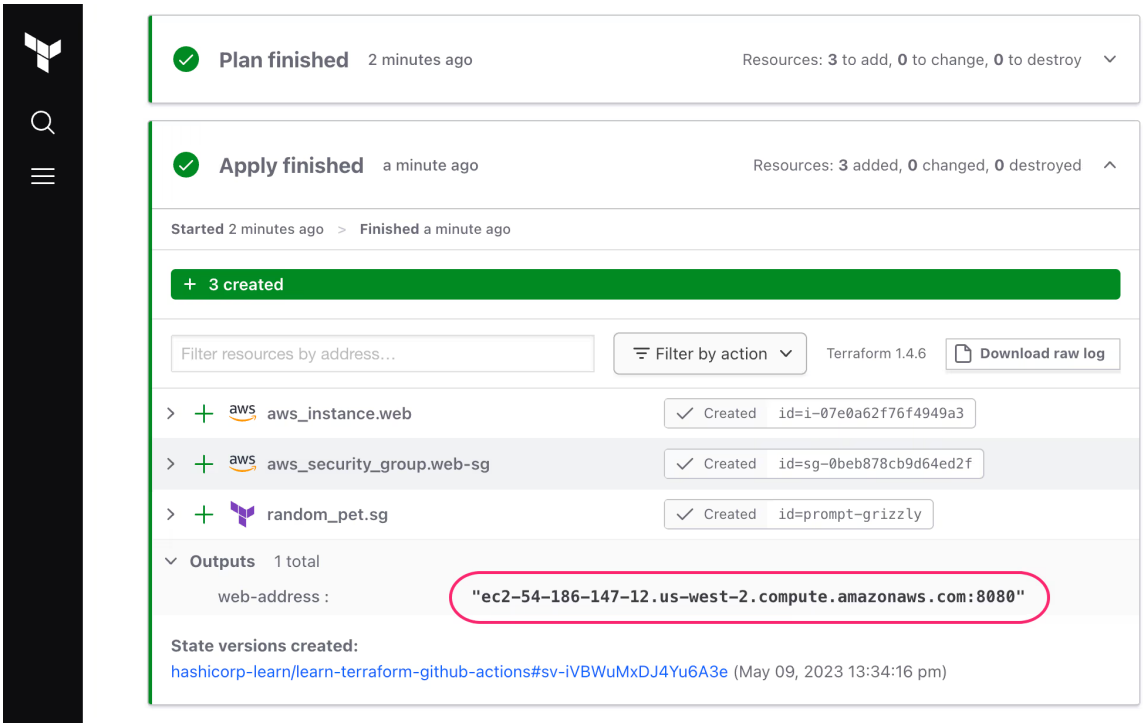
- Click "Actions" on your repo



- Click on the latest run



- Log in to Terraform Cloud and review the "Runs" section for the latest run.



5. **Validate Resources in AWS Console**

   - Log in to the AWS console and confirm that the resources specified in `main.tf` are created.

Step 6: Cleaning Up Resources

1. **Destroy Resources in Terraform Cloud**

   - Navigate to your workspace settings in Terraform Cloud.
     - Left side banner
     - "Settings"
     - "Destruction and Deletion"
   - Queue a destroy plan and confirm the action.

2. **Monitor Resource Deletion**

   - Watch the "Runs" section in Terraform Cloud to ensure the destroy process completes.

3. **Verify Deletion in AWS**

   - Confirm that all resources have been deleted.

Actually do this so you can get a job - Jourdan