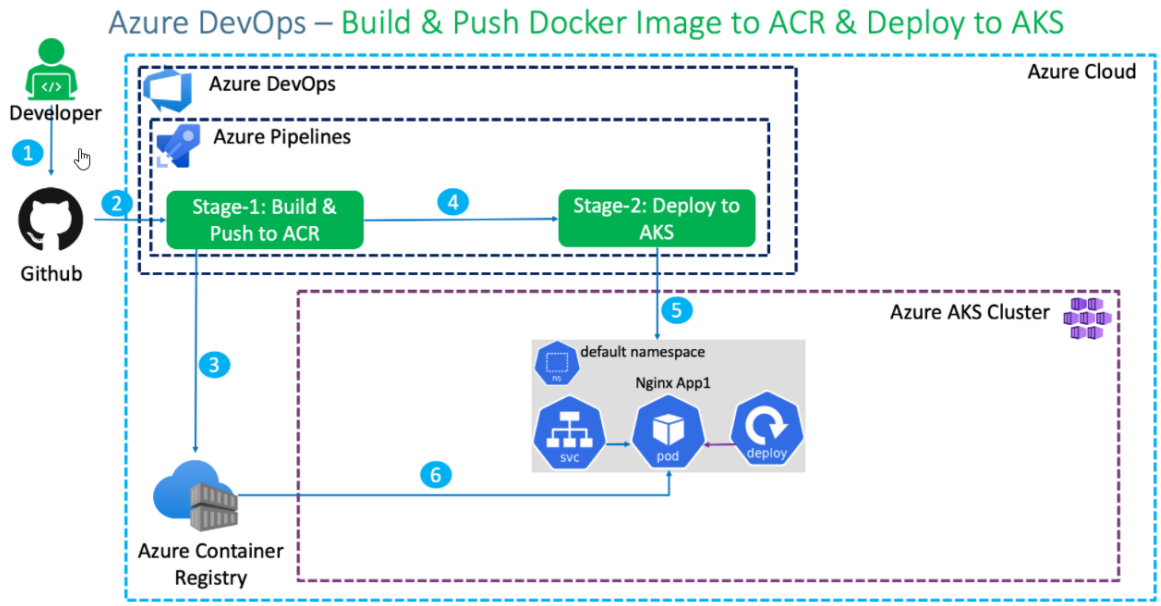
# Azure DevOps - Build, Push to ACR and Deploy to AKS




# Step-01: Pre-requisites

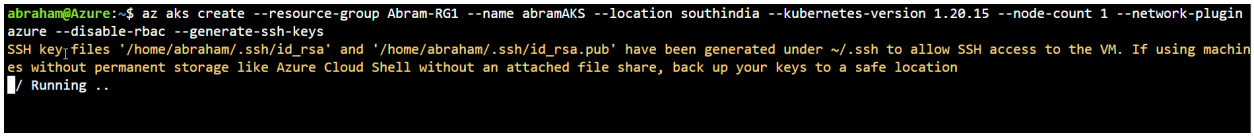
- We should have Azure AKS Cluster Up and Running.

```
# Configure Command Line Credentials
 az login
```

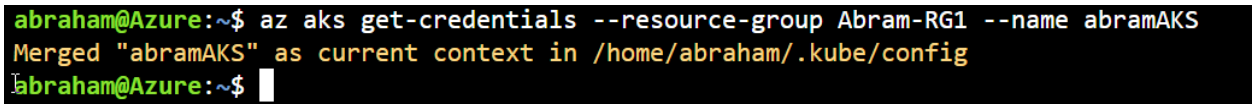
```
abraham@Azure:~$ az login
Cloud Shell is automatically authenticated under the initial account signed-in with. Run 'az login' only if you need to use a different account
To sign in, use a web browser to open the page https://microsoft.com/devicelogin and enter the code S6DBHFHZE to authenticate.
[
  {
    "cloudName": "AzureCloud",
    "homeTenantId": "[redacted]",
    "id": "[redacted]",
    "isDefault": true,
    "managedByTenants": [],
    "name": "Abraham Azure Account",
    "state": "Enabled",
    "tenantId": "[redacted]",
    "user": {
      "name": "[redacted]",
      "type": "user"
    }
  }
]
abraham@Azure:~$
```

**Create AKS**

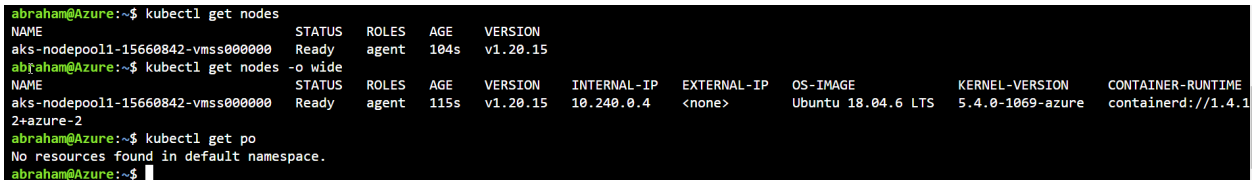
```
abraham@Azure:~$ az aks create --resource-group Abram-RG1 --name abramAKS
--location southindia --kubernetes-version 1.20.15 --node-count 1
--network-plugin azure --disable-rbac --generate-ssh-keys
az aks get-credentials --name aksdemo2 --resource-group aks-rg2
```




```
az aks get-credentials --resource-group Abram-RG1 --name abramAKS
```

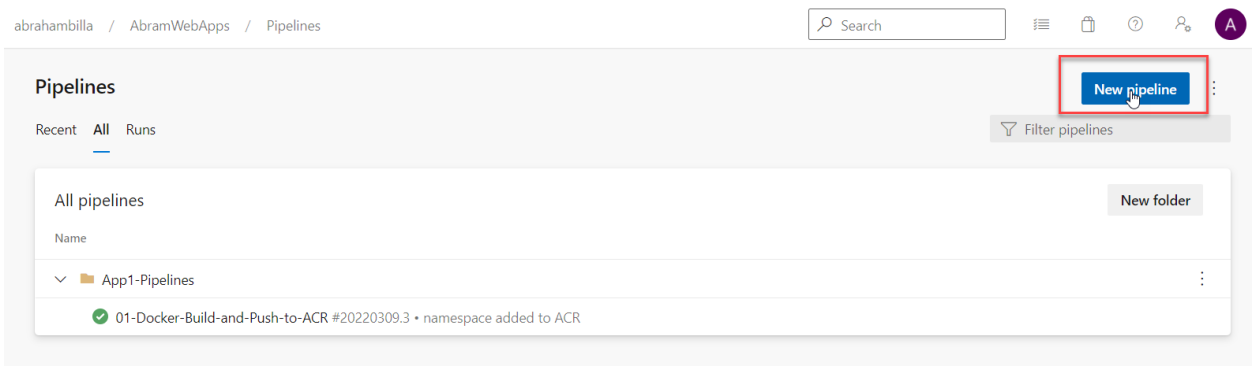



```
# Verify Nodes
kubectl get nodes
kubectl get nodes -o wide
```

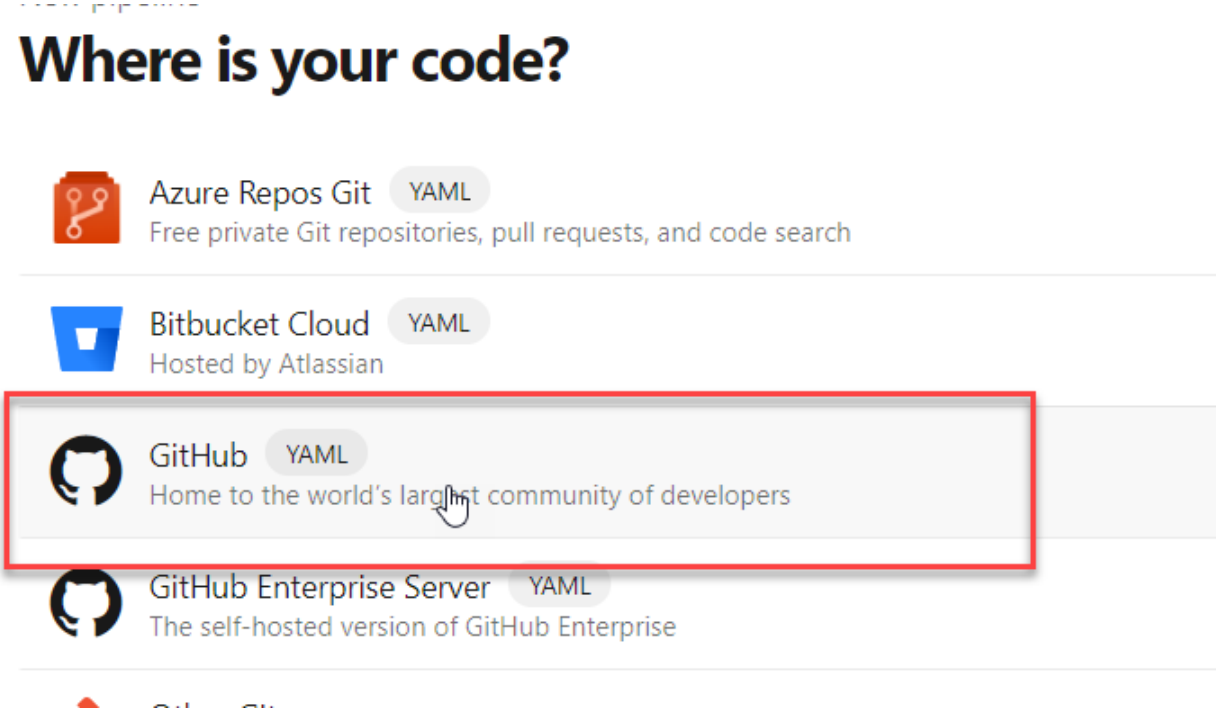



# Step-02: Create Pipeline for Deploy to AKS

- Go to Pipleines -> Create new Pipleine

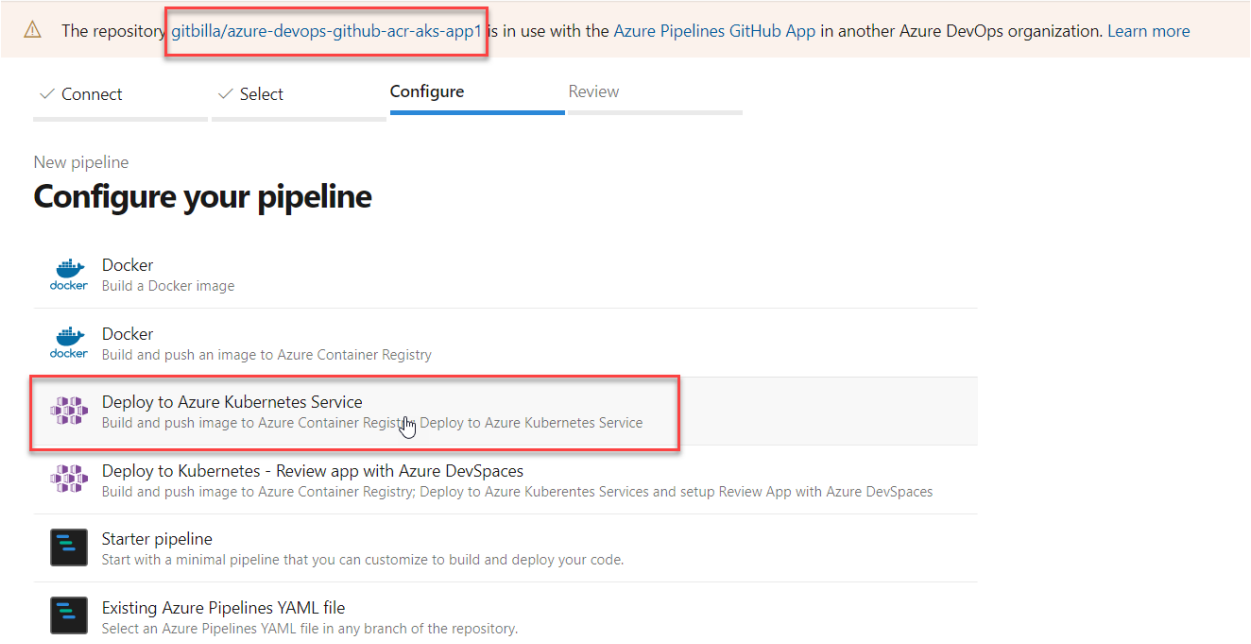



- Where is your code?: Github




- Select a Repository: "select your repo"

  (azure-devops-github-acr-aks-app1 )




- Configure your pipeline: Deploy to Azure Kubernetes Service

- Select Subscription: Abraham Azure Account (select your subscription)
- Provide username and password (Azure cloud admin user)
- Deploy to Azure Kubernetes Service
    - Cluster: abramAKS
    - Namespace: existing (default)
    - Container Registry: Billaaksdevopsacr
    - Image Name: app1nginxaks
    - Service Port: 80
- Click on Validate and Configure

# Deploy to Azure Kubernetes Service

Build and push image to Azure Container Registry; Deploy to Azure Kubernetes Service

Cluster

abramAKS

Namespace

New Existing

default

Container registry

Billaaksdevopsacr

Image Name

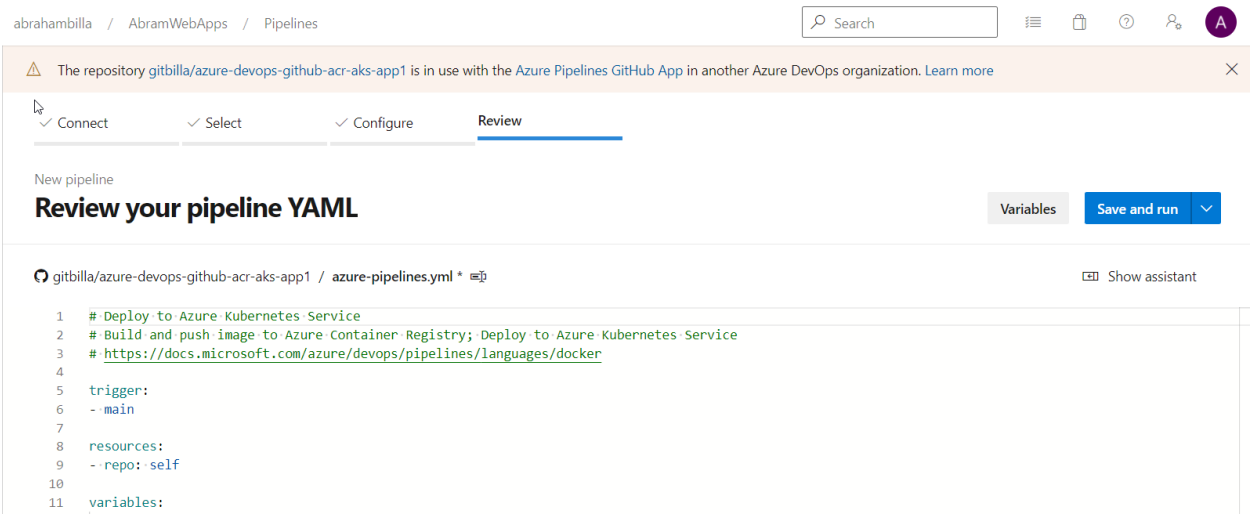
app1nginxaks

Service Port

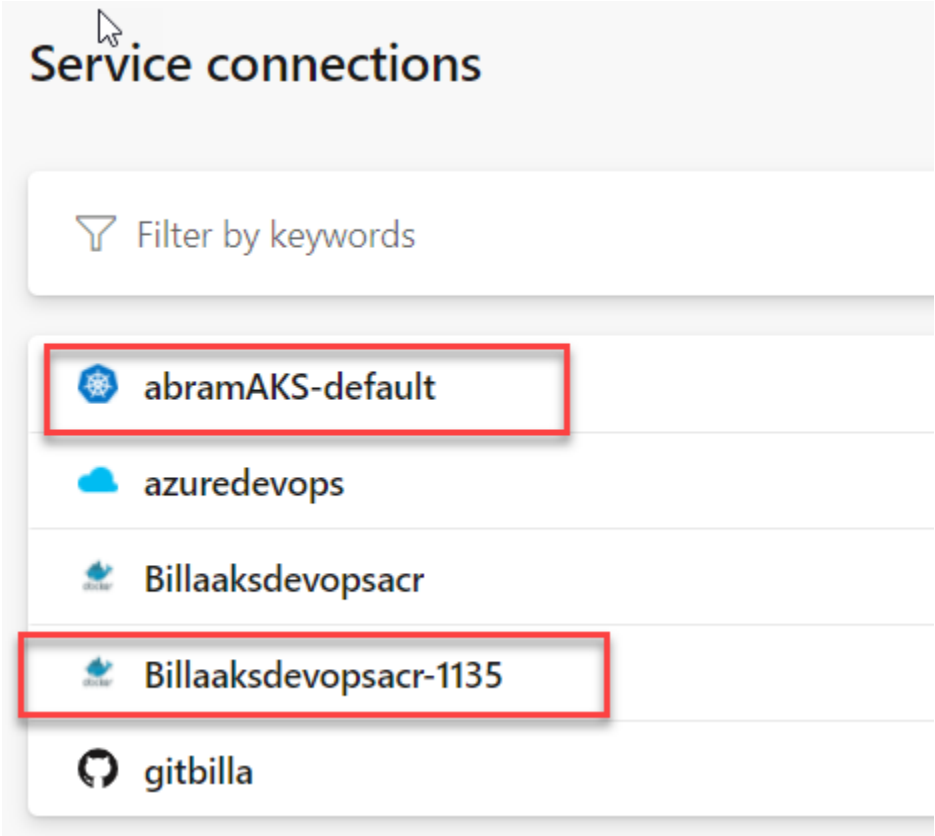
80

Enable Review App flow for Pull Requests

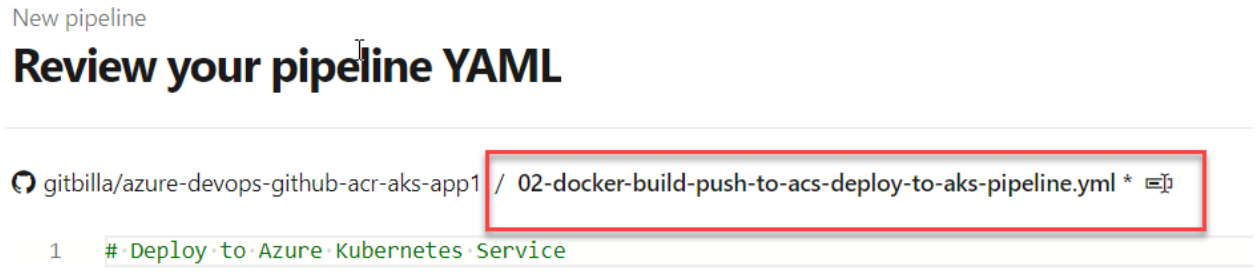
Back Validate and configure



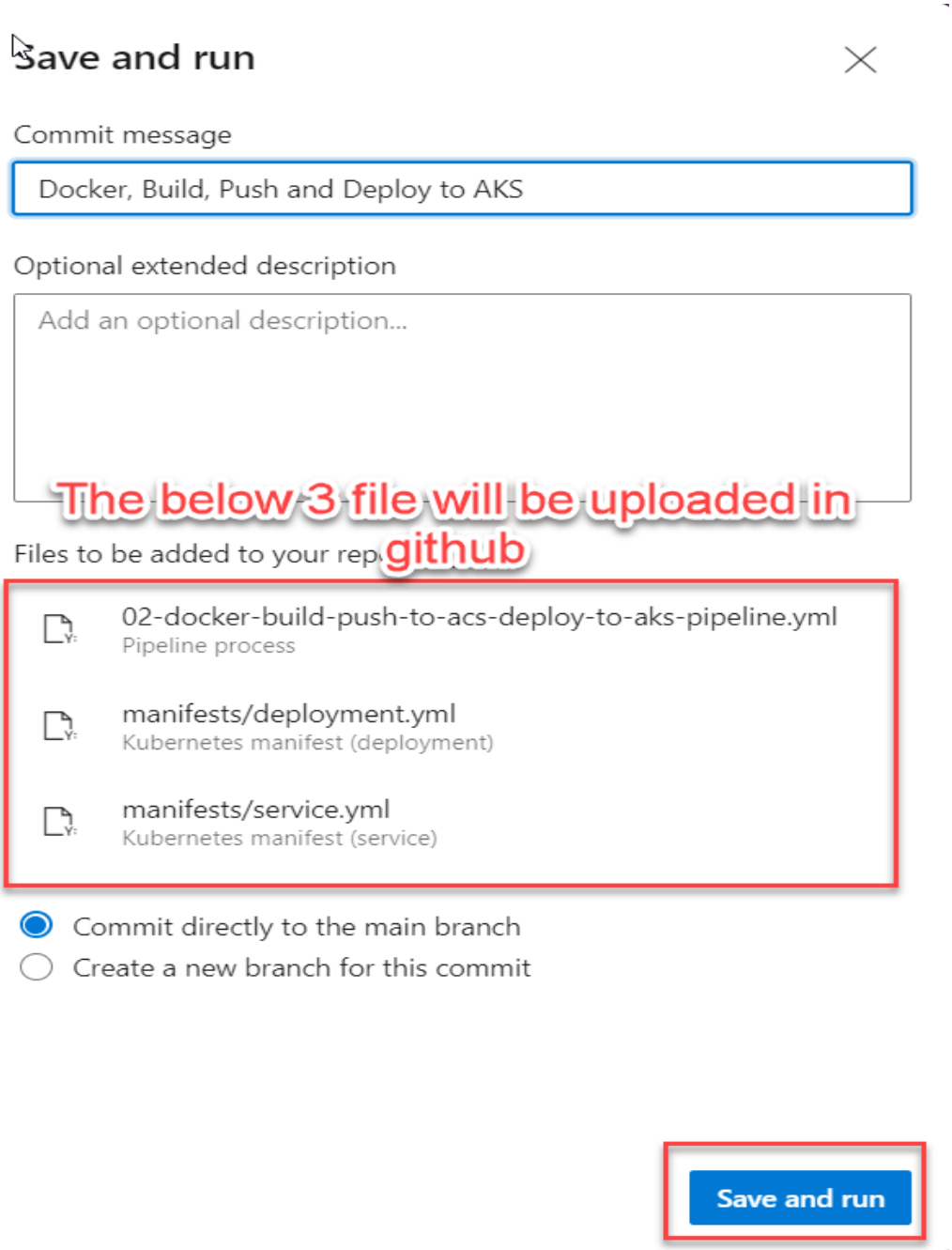

Two  new service connection are create automatically

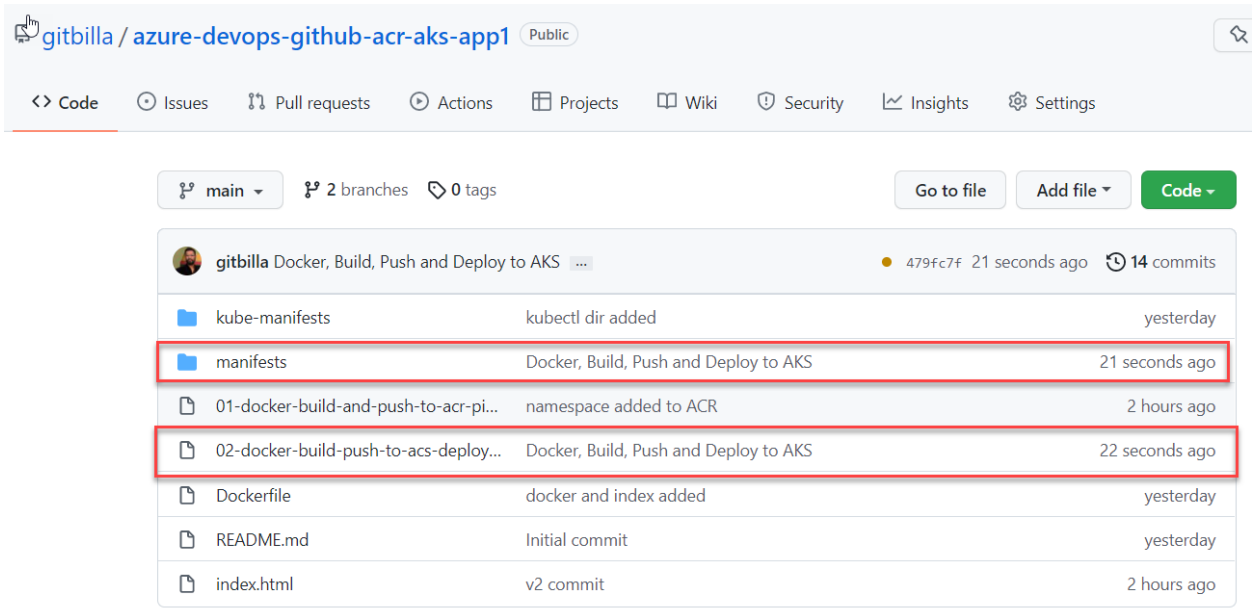



- Review your pipeline YAML
    - Change Pipeline Name:
      02-docker-build-push-to-acs-deploy-to-aks-pipeline.yml



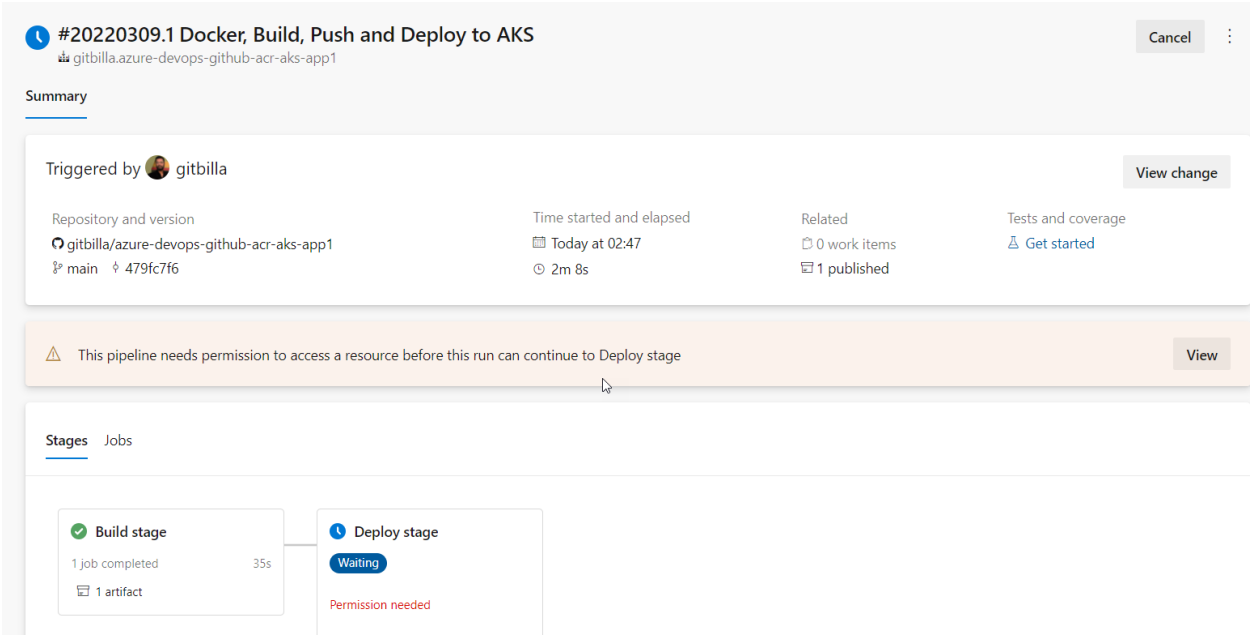

- Click on Save and Run
- Commit Message: Docker, Build, Push and Deploy to AKS
- Commit directly to master branch: check
- Click on Save and Run

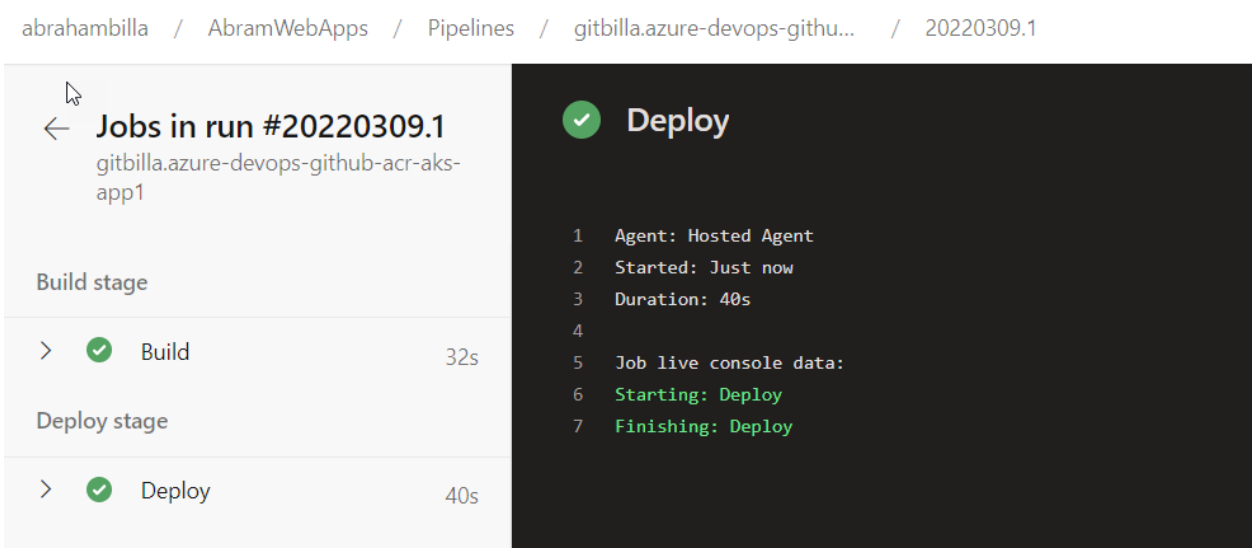

Save and run
Commit message
Docker, Build, Push and Deploy to AKS
Optional extended description
Add an optional description...
The below 3 file will be uploaded in github
Files to be added to your rep
02-docker-build-push-to-acs-deploy-to-aks-pipeline.yml
Pipeline process
manifests/deployment.yml
Kubernetes manifest (deployment)
manifests/service.yml
Kubernetes manifest (service)
Commit directly to the main branch
Create a new branch for this commit
Save and run

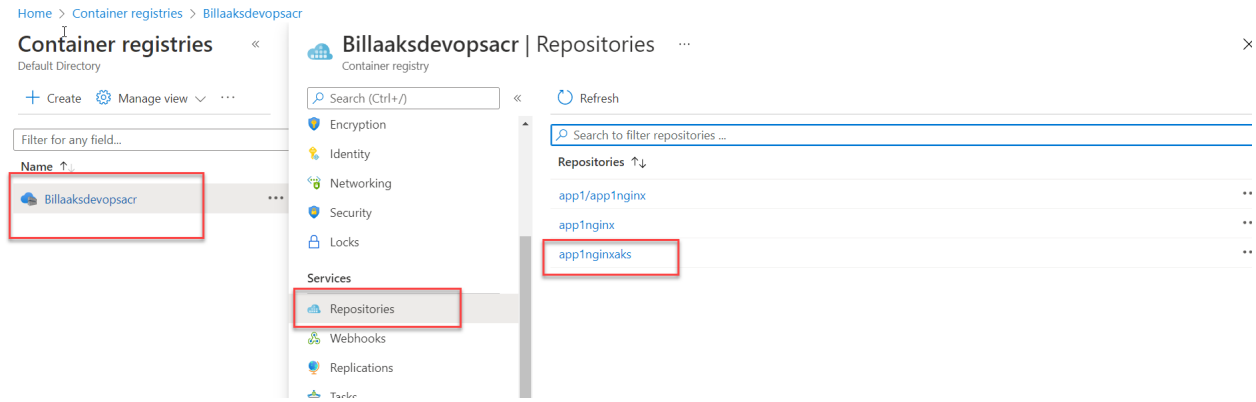



# Step-03: Verify Build and Deploy logs

- Build stage should pass. Verify logs






- Deploy stage should pass. Verify logs

# Step-04: Verify Build and Deploy pipeline logs

- Go to Pipeline -> Verify logs

```
# Verify Pods

kubectl get pods


# Get Public IP
```

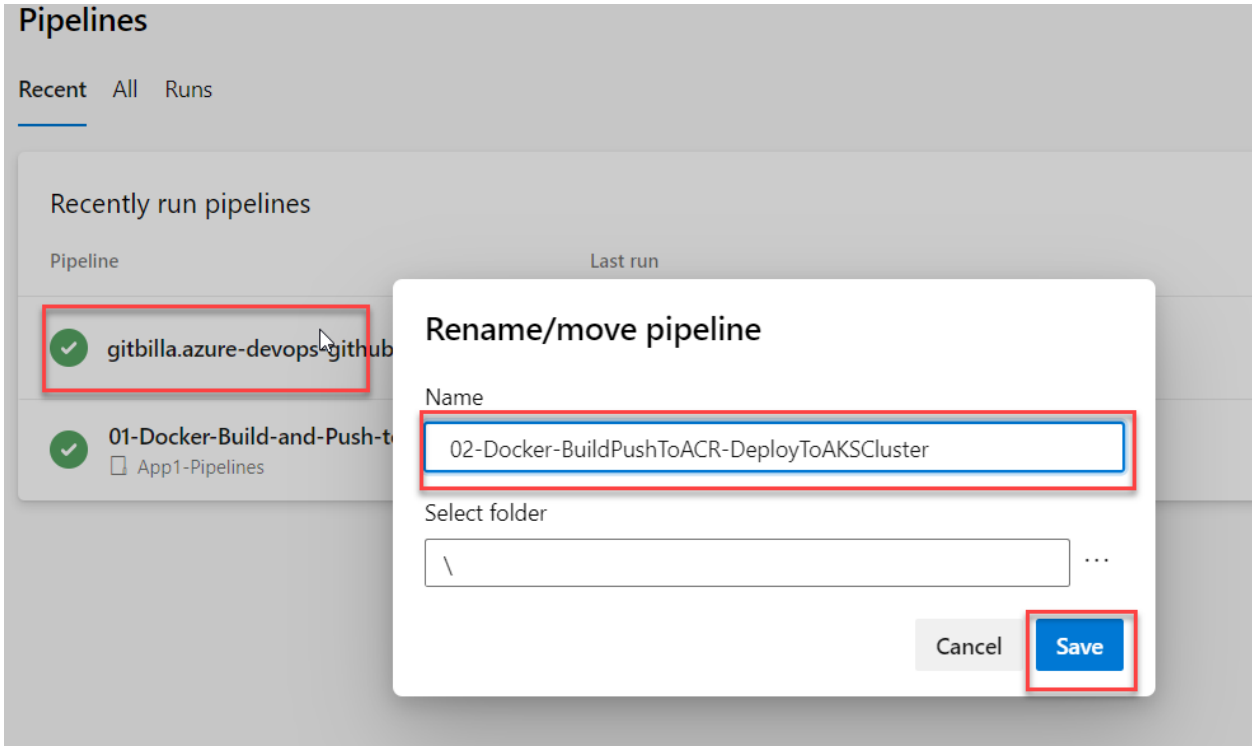
```
kubectl get svc
```

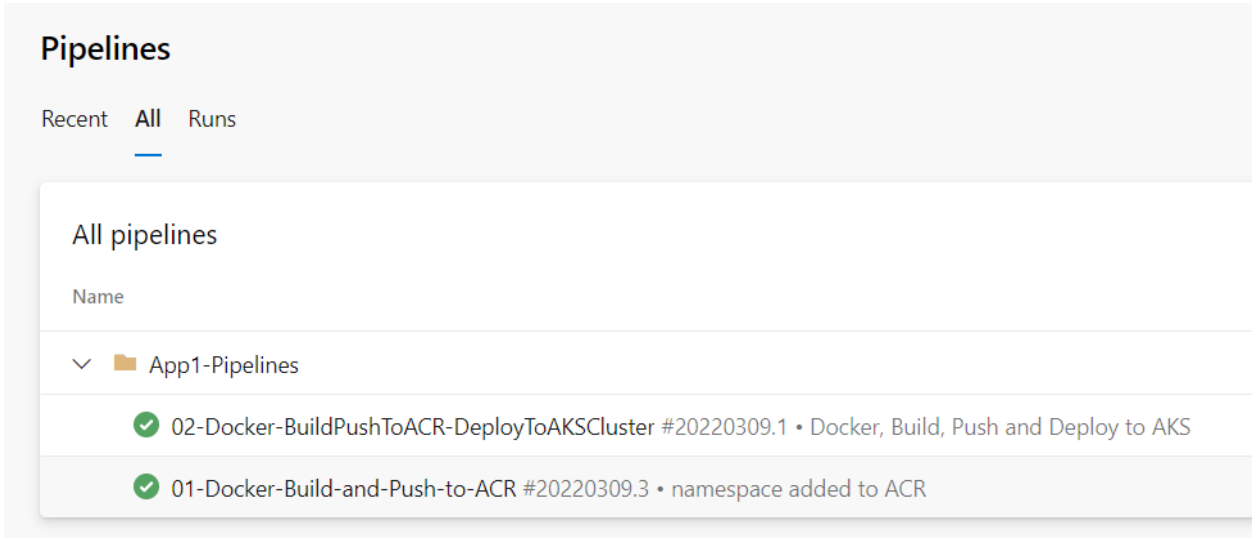
```
abraham@Azure:~$ kubectl get po
NAME                              READY   STATUS    RESTARTS   AGE
app1nginxaks-d6fb57959-kkzmf      1/1     Running   0          4m23s
abraham@Azure:~$ kubectl get svc
NAME           TYPE           CLUSTER-IP     EXTERNAL-IP      PORT(S)        AGE
app1nginxaks   LoadBalancer   10.0.80.146    20.219.68.185    80:30767/TCP   4m44s
kubernetes     ClusterIP      10.0.0.1       <none>           443/TCP        37m
abraham@Azure:~$
```

```
# Access Application

http://20.219.68.185/
```


## Step-05: Rename Pipeline Name

- Go to pipeline -> Rename / Move
- Name: 02-Docker-BuildPushToACR-DeployToAKSCluster
- Folder: App1-Pipelines
- Refresh till changes reflect
- Verify -> Pipelines -> Click on All tab




## Step-06: Make Changes to index.html and Verify

```
# Pull
 git pull
```

```
Billa@DESKTOP-2SFP2EH MINGW64 ~/Desktop/VisualCode-Apps/azure-devops-github-acr-aks-app1 (main)
$ git pull
remote: Enumerating objects: 22, done.
remote: Counting objects: 100% (22/22), done.
remote: Compressing objects: 100% (20/20), done.
remote: Total 21 (delta 13), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (21/21), 3.54 KiB | 5.00 KiB/s, done.
From https://github.com/gitbilla/azure-devops-github-acr-aks-app1
   8b01130..53b223e  main       -> origin/main
Updating 8b01130..53b223e
Fast-forward
 ...er-build-push-to-acs-deploy-to-aks-pipeline.yml | 79 ++++++++++++++++++++++
 manifests/deployment.yml                           | 19 ++++++
 manifests/service.yml                              | 10 +++
 3 files changed, 108 insertions(+)
 create mode 100644 02-docker-build-push-to-acs-deploy-to-aks-pipeline.yml
 create mode 100644 manifests/deployment.yml
 create mode 100644 manifests/service.yml

Billa@DESKTOP-2SFP2EH MINGW64 ~/Desktop/VisualCode-Apps/azure-devops-github-acr-aks-app1 (main)
$ ls -ltr
total 11
-rw-r--r-- 1 Billa 197121   49 Mar  9 19:09 Dockerfile
-rw-r--r-- 1 Billa 197121  108 Mar  9 19:09 README.md
drwxr-xr-x 1 Billa 197121    0 Mar  9 19:09 kube-manifests/
-rw-r--r-- 1 Billa 197121  241 Mar 10 00:57 index.html
-rw-r--r-- 1 Billa 197121 1064 Mar 10 01:16 01-docker-build-and-push-to-acr-pipeline.yml
-rw-r--r-- 1 Billa 197121 2240 Mar 10 03:13 02-docker-build-push-to-acs-deploy-to-aks-pipeline.yml
drwxr-xr-x 1 Billa 197121    0 Mar 10 03:13 manifests/

Billa@DESKTOP-2SFP2EH MINGW64 ~/Desktop/VisualCode-Apps/azure-devops-github-acr-aks-app1 (main)
$
```

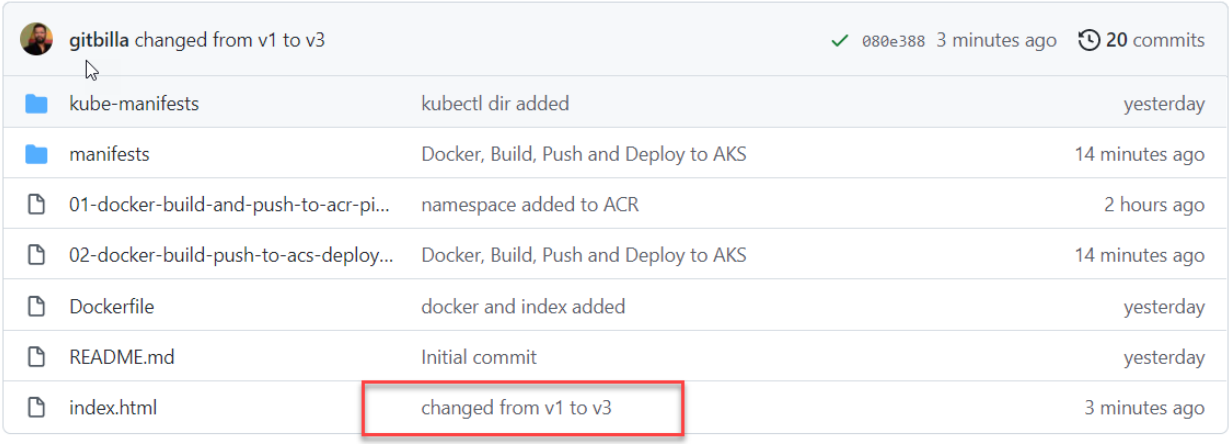
```
# Make changes to index.html
Change version to V3
```

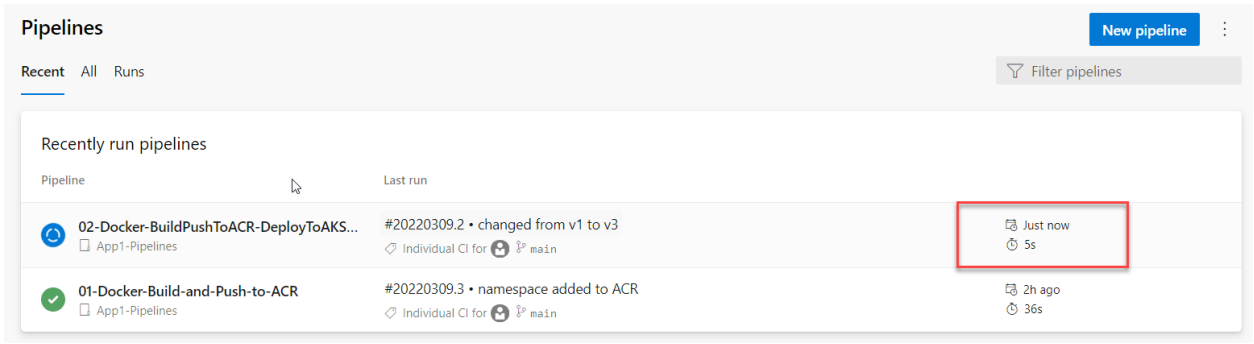
```
$ cat index.html
<!DOCTYPE html>
<html>
    <body style="background-color:rgb(212, 240, 234);">
        <h1>Abraham Welcome to - Azure DevOps App1 - V3</h1>
        <h2>Azure DevOps Demo App1</h2>
        <h2>Application Version: V3</h2>
    </body>
</html>
```

changed to v3

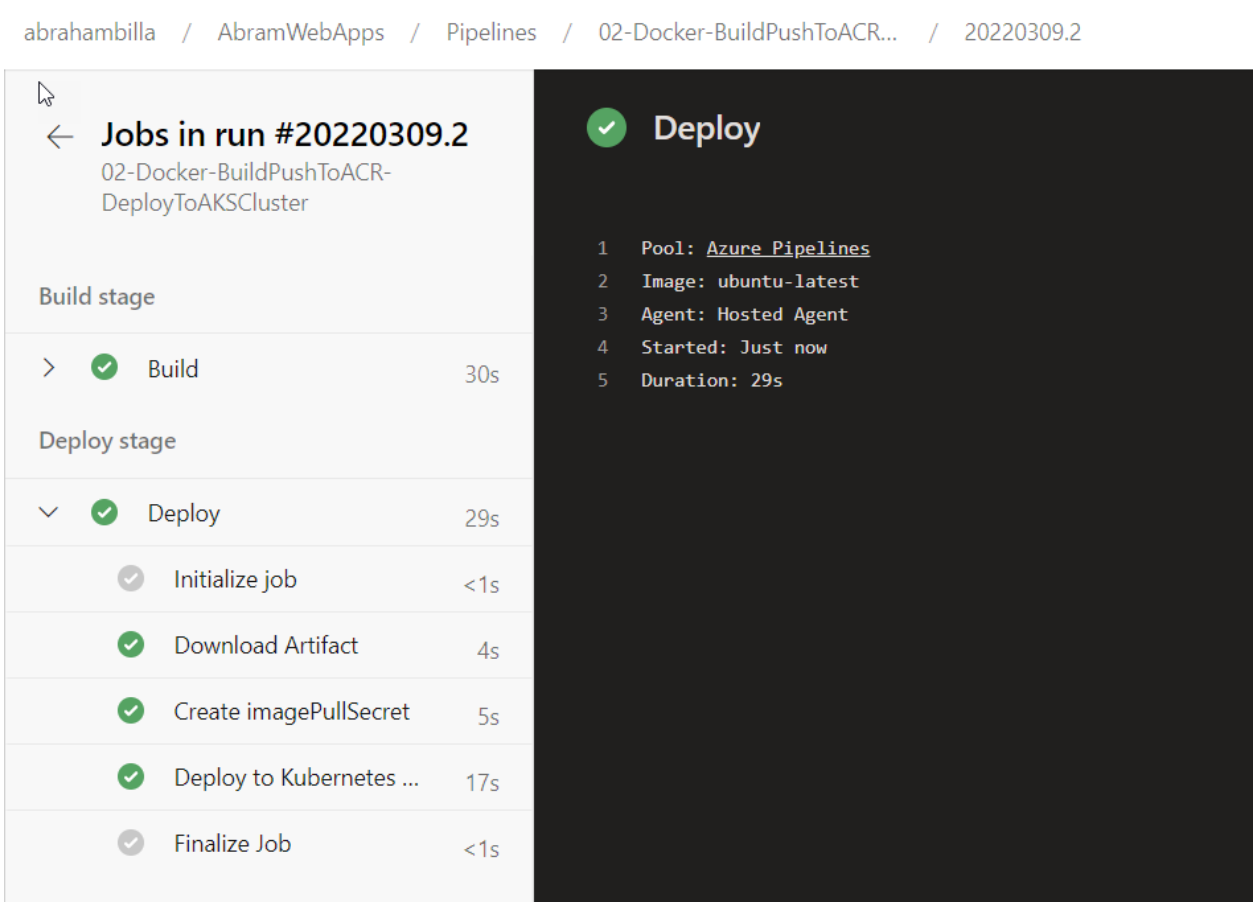
```
# Commit and Push
git commit -am "V3 commit index.html"
git push
```

```
Billa@DESKTOP-2SFP2EH MINGW64 ~/Desktop/VisualCode-Apps/azure-devops-github-acr-aks-app1 (main)
$ git add .

Billa@DESKTOP-2SFP2EH MINGW64 ~/Desktop/VisualCode-Apps/azure-devops-github-acr-aks-app1 (main)
$ git commit -m "changed from v1 to v3"
[main 080e388] changed from v1 to v3
 1 file changed, 2 insertions(+), 2 deletions(-)

Billa@DESKTOP-2SFP2EH MINGW64 ~/Desktop/VisualCode-Apps/azure-devops-github-acr-aks-app1 (main)
$ git push
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 4 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 306 bytes | 306.00 KiB/s, done.
Total 3 (delta 2), reused 0 (delta 0)
remote: Resolving deltas: 100% (2/2), completed with 2 local objects.
To https://github.com/gitbilla/azure-devops-github-acr-aks-app1.git
   53b223e..080e388  main -> main

Billa@DESKTOP-2SFP2EH MINGW64 ~/Desktop/VisualCode-Apps/azure-devops-github-acr-aks-app1 (main)
$
```




# Verify Build and Deploy logs




```
- Build stage logs
- Deploy stage logs
- Verify ACR Repository

# List Pods (Verify Age of Pod)
kubectl get pods

# Get Public IP
kubectl get svc

# Access Application
http://<Public-IP-from-Get-Service-Output>
```

```
abraham@Azure:~$ kubectl get po
NAME                              READY   STATUS    RESTARTS   AGE
app1nginxaks-75f6d97ff5-d26qr     1/1     Running   0          2m25s
abraham@Azure:~$
abraham@Azure:~$ kubectl get svc
NAME           TYPE           CLUSTER-IP    EXTERNAL-IP     PORT(S)        AGE
app1nginxaks   LoadBalancer   10.0.80.146   20.219.68.185   80:30767/TCP   30m
kubernetes     ClusterIP      10.0.0.1      <none>          443/TCP        63m
abraham@Azure:~$
```