DEVOPS – Final Assessment

SECTION - I

MCQs:

1. What does WSL stand for in the context of Windows? - **Windows System for Linux**
2. What is the primary goal of continuous integration (CI) in DevOps?- **Frequent integration of code changes**
3. In the Linux command line, what does the cd command do? - **Change the working directory**
4. Which of the following is not a Linux distribution? - **Docker**
5. What is Docker primarily used for in DevOps and containerization?- **Packaging and deploying applications in containers**
6. What is the primary purpose of Azure DevOps?- **Software development and delivery**
7. Which components are part of Azure DevOps?- **Azure Boards and Azure Pipelines**
8. How does Azure DevOps support version control in software development?- **It tracks changes in source code and manages versions.**
9. In Linux, what is the primary role of the root user? - **Administrative tasks with superuser privileges**
10. In Azure DevOps, which component is used to define, build, test, and deploy applications?- **Azure Pipelines**

SECTION - II

LAB :

Lab 1: File and Directory Management :

Lab 2: Permissions and Ownership :

```
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab1$ cd ..
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment$ mkdir Lab2
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment$ cd Lab2
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab2$ ls
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab2$ touch secret.txt
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab2$ ls
secret.txt
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab2$ chmod 600 secret.txt
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab2$ cat>secret.txt
Hii this is secret fileajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab2$ cat secret.txt
Hii this is secret fileajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab2$
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab2$ ls -l
total 0
-rwxrwxrwx 1 ajith ajith 23 Oct 20 10:58 secret.txt
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab2$ useradd Hari
useradd: Permission denied.
useradd: cannot lock /etc/passwd; try again later.
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab2$ sudo useradd Hari
[sudo] password for ajith:
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab2$ chown Hari secret.txt
chown: changing ownership of 'secret.txt': Operation not permitted
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab2$ sudo  chown Hari secret.txt
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab2$ ls -l
total 0
-rwxrwxrwx 1 ajith ajith 23 Oct 20 10:58 secret.txt
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab2$ ls -n
total 0
-rwxrwxrwx 1 1000 1000 23 Oct 20 10:58 secret.txt
```

Lab 3: Text Processing with Command Line Tools :

```
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab2$ cd ..
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment$ ls
Lab1  Lab2  README.md
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment$ mkdir Lab3
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment$ ls
Lab1  Lab2  Lab3  README.md
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment$ cd Lab3
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab3$ touch random.txt
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab3$ ls
random.txt
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab3$ cat>random.txt
This is the sample text file created for lab3 and this is the some random textsajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab3$
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab3$ cat random.txt
This is the sample text file created for lab3 and this is the some random textsajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab3$
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab3$ grep lab3 random.txt
This is the sample text file created for lab3 and this is the some random texts
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab3$ grep text random.txt
This is the sample text file created for lab3 and this is the some random texts
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab3$ grep ^t random.txt
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab3$ grep ^T random.txt
This is the sample text file created for lab3 and this is the some random texts
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab3$ sed -i 's/random/new random/g' random.txt
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab3$ cat random.txt
This is the sample text file created for lab3 and this is the some new random textsajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab3$
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab3$ wc random.txt
 0 17 83 random.txt
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab3$
```

Lab 4: Creating a Simple YAML File :

```
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab3$ cd ..
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment$ mkdir Lab4
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment$ cd lab4
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/lab4$ ls
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/lab4$ touch config.yaml
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/lab4$ ls
config.yaml
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/lab4$ code .
```
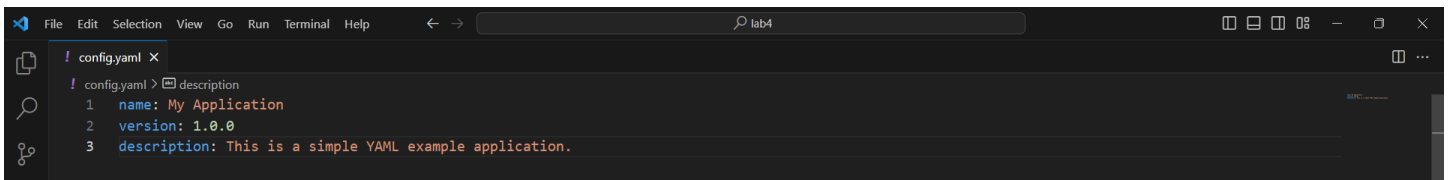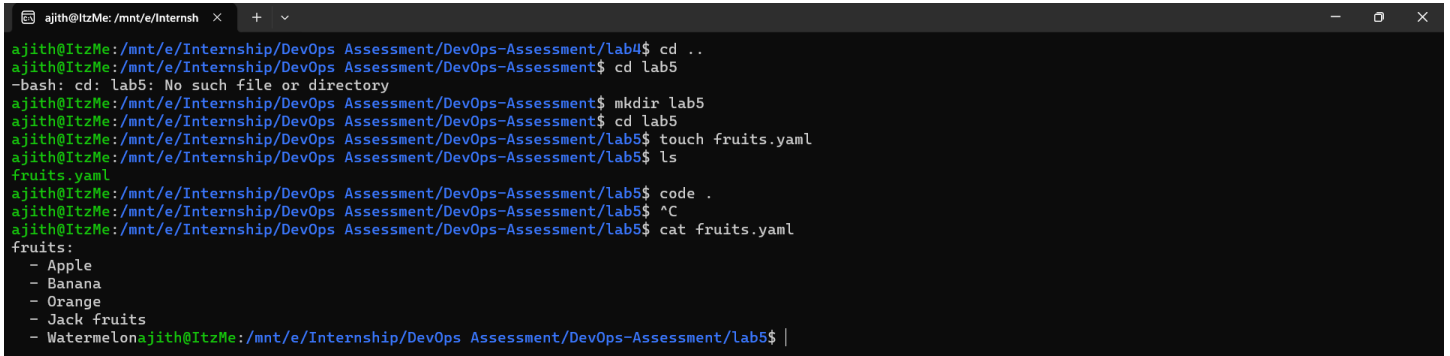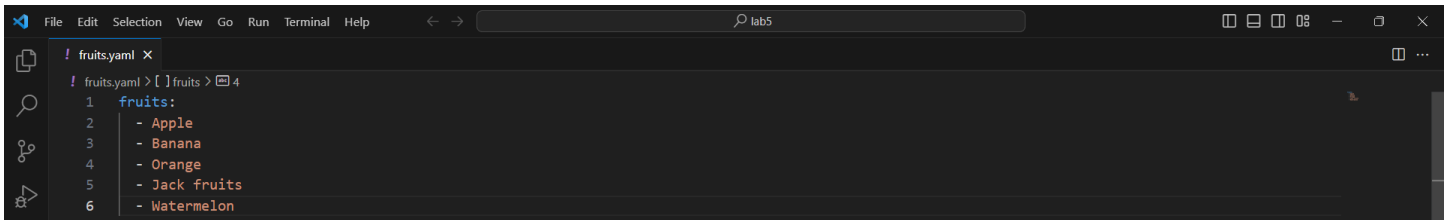
Lab 5: Working with Lists in YAML :

```
ajith@ItzMe: /mnt/e/Internsh        +   ˅
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/lab4$ cd ..
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment$ cd lab5
-bash: cd: lab5: No such file or directory
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment$ mkdir lab5
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment$ cd lab5
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/lab5$ touch fruits.yaml
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/lab5$ ls
fruits.yaml
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/lab5$ code .
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/lab5$ ^C
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/lab5$ cat fruits.yaml
fruits:
  - Apple
  - Banana
  - Orange
  - Jack fruits
  - Watermelonajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/lab5$
```
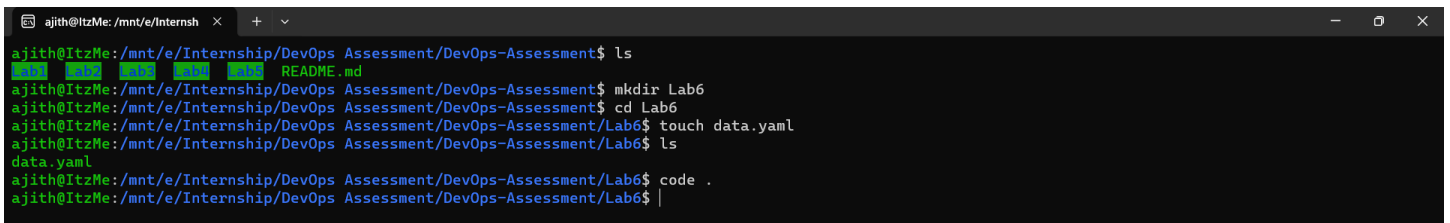
```
File   Edit   Selection   View   Go   Run   Terminal   Help                          lab5
! fruits.yaml ✕
! fruits.yaml > [ ] fruits > 🔤 4
  1   fruits:
  2     - Apple
  3     - Banana
  4     - Orange
  5     - Jack fruits
  6     - Watermelon
```
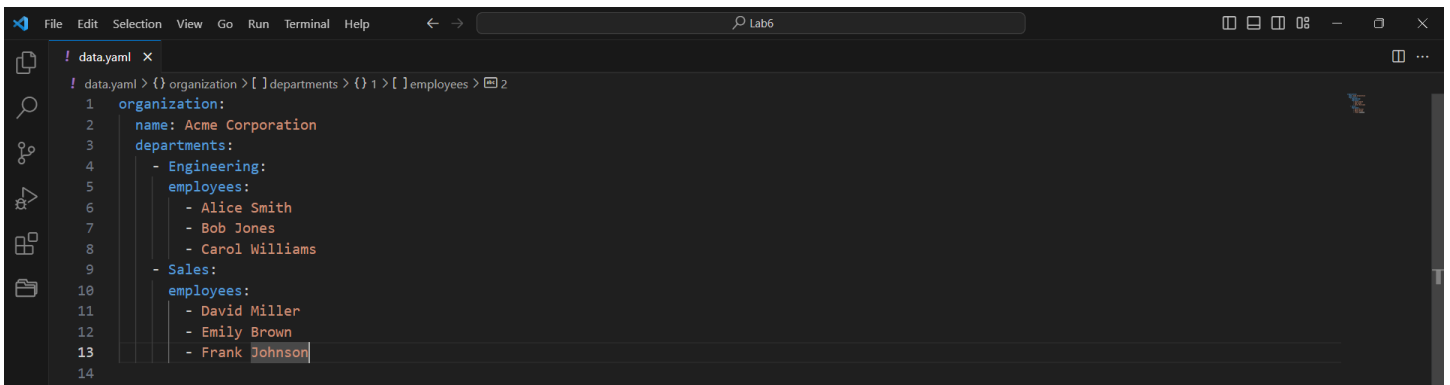
Lab 6: Nested Structures in YAML :

```
ajith@ItzMe: /mnt/e/Internsh        +   ˅
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment$ ls
Lab1  Lab2  Lab3  Lab4  Lab5  README.md
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment$ mkdir Lab6
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment$ cd Lab6
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab6$ touch data.yaml
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab6$ ls
data.yaml
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab6$ code .
ajith@ItzMe:/mnt/e/Internship/DevOps Assessment/DevOps-Assessment/Lab6$
```

```
File   Edit   Selection   View   Go   Run   Terminal   Help                          Lab6
! data.yaml ✕
! data.yaml > {} organization > [ ] departments > {} 1 > [ ] employees > 🔤 2
  1   organization:
  2     name: Acme Corporation
  3     departments:
  4       - Engineering:
  5         employees:
  6           - Alice Smith
  7           - Bob Jones
  8           - Carol Williams
  9       - Sales:
 10         employees:
 11           - David Miller
 12           - Emily Brown
 13           - Frank Johnson
 14
```

Lab 7: Create Classic Azure CI Pipeline for Angular Application :
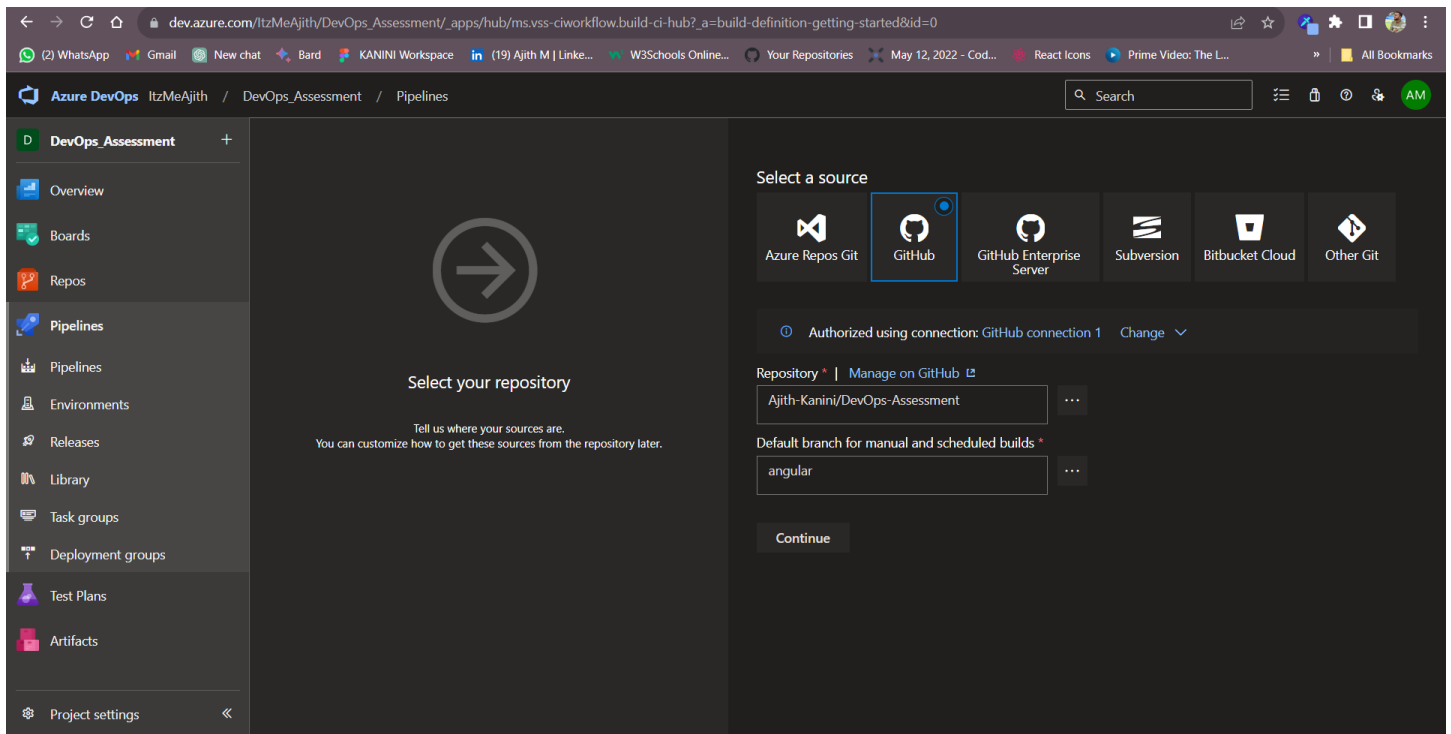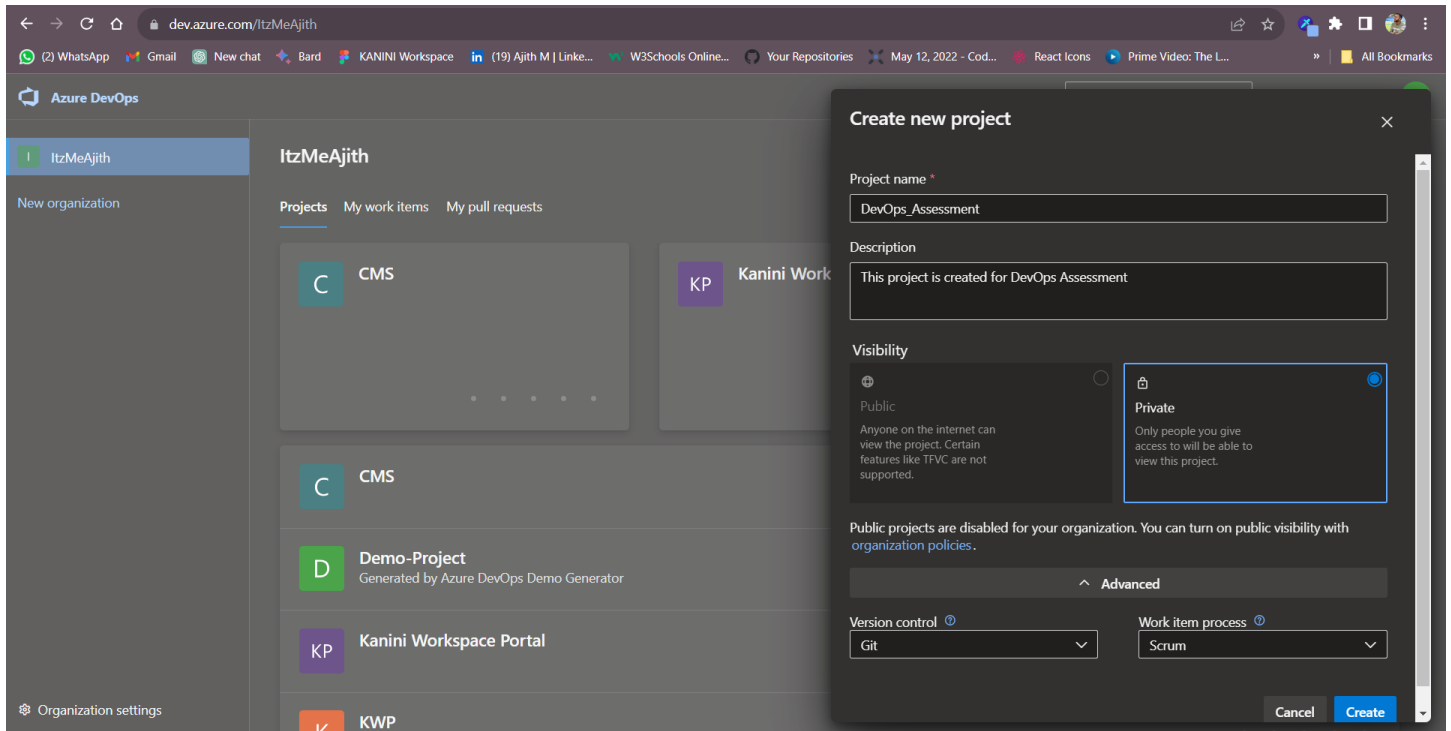
dev.azure.com/ItzMeAjith/DevOps_Assessment/_apps/hub/ms.vss-ciworkflow.build-ci-hub?_a=create-build-definition&id=0&repository=Ajith-Kanini%2FDevOps-Assessment&bran...

(2) WhatsApp | Gmail | New chat | Bard | KANINI Workspace | (19) Ajith M | Linke... | W3Schools Online... | Your Repositories | May 12, 2022 - Cod... | React Icons | Prime Video: The L... | All Bookmarks

Azure DevOps ItzMeAjith / DevOps_Assessment / Pipelines

DevOps_Assessment

- Overview
- Boards
- Repos
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  - Pipelines
  - Environments
  - Releases
  - Library
  - Task groups
  - Deployment groups
- Test Plans
- Artifacts

Project settings

CI pipeline to build an Angular appli...

Tasks   Variables   Triggers   Options   History   Save & queue ▾   ⟲ Discard   ≡ Summary   ▷ Queue   ⋯

Pipeline
Build pipeline

Get sources
Ajith-Kanini/DevOps-Assessment   ⅄ angular

Install Dependencies.
≡ Run on agent   +

npm install
npm

Run Unit Tests
npm

Task version   1.* ▾

Display name *
npm install

Command * ⓘ
install   ▾

Working folder that contains package.json ⓘ
Lab7/angularProject   ...

Custom registries and authentication ▾

Advanced ▾

Control Options ▾

Output Variables ▾

---

dev.azure.com/ItzMeAjith/DevOps_Assessment/_apps/hub/ms.vss-ciworkflow.build-ci-hub?_a=create-build-definition&id=0&repository=Ajith-Kanini%2FDevOps-Assessment&bran...

(2) WhatsApp | Gmail | New chat | Bard | KANINI Workspace | (19) Ajith M | Linke... | W3Schools Online... | Your Repositories | May 12, 2022 - Cod... | React Icons | Prime Video: The L... | All Bookmarks

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DevOps_Assessment

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  - Library
  - Task groups
  - Deployment groups
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Project settings

CI pipeline to build an Angular appli...

Tasks   Variables   Triggers   Options   History   Save & queue ▾   ⟲ Discard   ≡ Summary   ▷ Queue   ⋯

Pipeline

Repos

⎙ Files

⟲ Commits

⤴ Pushes

⅄ Branches

◇ Tags

⬓ Pull requests

○ Advanced Security

⅄ angular

+

Display name *
Run Unit Tests

Command * ⓘ
custom   ▾

Working folder that contains package.json ⓘ
Lab7/angularProject   ...

Command and arguments * ⓘ
ng test --single-run=true

Custom registries and authentication ▾

Control Options ▾

Output Variables ▾

Screenshot 1 — Azure DevOps: Jobs in run #47 — Command Line Script

```
dev.azure.com/ItzMeAjith/DevOps_Assessment/_build/results?buildId=47&view=logs&j=275f1d19-1bd8-5591-b06b-07d489ea915a&t=40b1ee41-44d6-5bba-aa04-4b76a5c732e5
```

Azure DevOps   ItzMeAjith / DevOps_Assessment / Pipelines / CI pipeline to build an Angu... / 47

Jobs in run #47
CI pipeline to build an Angular application.

Jobs
- Install Dependencies.   1m 43s
  - Initialize job   <1s
  - Checkout Ajith-Kanini/... 8s
  - npm install   26s
  - Command Line Script   1m 7s
  - Post-job: Checkout Ajith-

Command Line Script

```
1   Starting: Command Line Script
2   ==============================================================================
3   Task        : Command line
4   Description  : Run a command line script using Bash on Linux and macOS and cmd.exe on Windows
5   Version      : 2.229.0
6   Author       : Microsoft Corporation
7   Help         : https://docs.microsoft.com/azure/devops/pipelines/tasks/utility/command-line
8   ==============================================================================
9   Generating script.
10  Script contents: shell
11  ng test
12  ========================== Starting Command Output ===========================
13  "C:\WINDOWS\system32\cmd.exe" /D /E:ON /V:OFF /S /C "CALL "E:\Internship\agent\_work\_temp\958a60b9-39d0-4fd1-8fde-dd7ae675ae1e.cmd""
14  - Generating browser application bundles (phase: setup)...
15  √ Browser application bundle generation complete.
16  20 10 2023 13:41:09.523:WARN [karma]: No captured browser, open http://localhost:9876/
17  20 10 2023 13:41:09.545:INFO [karma-server]: Karma v6.4.2 server started at http://localhost:9876/
18  20 10 2023 13:41:09.545:INFO [launcher]: Launching browsers Chrome with concurrency unlimited
19  20 10 2023 13:41:09.557:INFO [launcher]: Starting browser Chrome
20  20 10 2023 13:41:10.372:INFO [Chrome 118.0.0.0 (Windows 10)]: Connected on socket yp_o52rJ6P_MCoyxAAAB with id 90320673
21  Chrome 118.0.0.0 (Windows 10): Executed 0 of 3 SUCCESS (0 secs / 0 secs)
22  Chrome 118.0.0.0 (Windows 10): Executed 1 of 3 SUCCESS (0 secs / 0.156 secs)
23  Chrome 118.0.0.0 (Windows 10): Executed 2 of 3 SUCCESS (0 secs / 0.173 secs)
24  Chrome 118.0.0.0 (Windows 10): Executed 3 of 3 SUCCESS (0 secs / 0.189 secs)
25  Chrome 118.0.0.0 (Windows 10): Executed 3 of 3 SUCCESS (0.201 secs / 0.189 secs)
26  TOTAL: 3 SUCCESS
```

Screenshot 2 — Azure DevOps: Jobs in run #53 — npm custom

```
dev.azure.com/ItzMeAjith/DevOps_Assessment/_build/results?buildId=53&view=logs&j=275f1d19-1bd8-5591-b06b-07d489ea915a&t=d9da7763-9240-5687-a21e-dab36b0f8a46
```

Azure DevOps   ItzMeAjith / DevOps_Assessment / Pipelines / CI pipeline to build an Angu... / 53

Jobs in run #53
CI pipeline to build an Angular application.

Jobs
- Install Dependencies.   2m 26s
  - Initialize job   <1s
  - Checkout Ajith-Kanini/... 10s
  - npm install   27s
  - build   53s
  - npm custom   53s
  - Post-job: Checkout Aji... <1s
  - Finalize Job   <1s

npm custom   View raw log

```
21  ; node version = v18.18.2
22  ; npm local prefix = E:\Internship\agent\_work\12\s\Lab7\angularProject
23  ; npm version = 9.8.1
24  ; cwd = E:\Internship\agent\_work\12\s\Lab7\angularProject
25  ; HOME = C:\Users\Redbeast
26  ; Run `npm config ls -l` to show all defaults.
27  C:\WINDOWS\system32\cmd.exe /D /S /C ""C:\Program Files\nodejs\npm.cmd" test"
28  - Generating browser application bundles (phase: setup)...
29  √ Browser application bundle generation complete.
30  √ Browser application bundle generation complete.
31
32  > angular-project@0.0.0 test
33  √ Browser application bundle generation complete.
34  > ng test --watch=false
35
36  20 10 2023 16:15:46.786:INFO [karma-server]: Karma v6.4.2 server started at http://localhost:9876/
37  20 10 2023 16:15:46.790:INFO [launcher]: Launching browsers Chrome with concurrency unlimited
38  20 10 2023 16:15:46.794:INFO [launcher]: Starting browser Chrome
39  20 10 2023 16:15:47.645:INFO [Chrome 118.0.0.0 (Windows 10)]: Connected on socket 0DODMKwAf1boKkjjAAAB with id 58819402
40  Chrome 118.0.0.0 (Windows 10): Executed 0 of 3 SUCCESS (0 secs / 0 secs)
41  Chrome 118.0.0.0 (Windows 10): Executed 1 of 3 SUCCESS (0 secs / 0.133 secs)
42  Chrome 118.0.0.0 (Windows 10): Executed 2 of 3 SUCCESS (0 secs / 0.156 secs)
43  Chrome 118.0.0.0 (Windows 10): Executed 3 of 3 SUCCESS (0 secs / 0.173 secs)
44  Chrome 118.0.0.0 (Windows 10): Executed 3 of 3 SUCCESS (0.19 secs / 0.173 secs)
45  TOTAL: 3 SUCCESS
46  Finishing: npm custom
```

Karma v 6.4.2 - connected; test: complete;

DEBUG

Chrome 118.0.0.0 (Windows 10) is idle

Jasmine 4.6.0

Options

3 specs, 0 failures, randomized with seed 47457   finished in 0.223s

AppComponent
- should create the app
- should have as title 'angularProject'
- should render title

Chrome is being controlled by automated test software.

Chrome is being controlled by automated test software.

Jasmine 4.6.0

Options

3 specs, 0 failures, randomized with seed 16595   finished in 0.102s

AppComponent
- should create the app
- should have as title 'angularProject'
- should render title

Lab 8: Create YAML Azure CI Pipeline for React Application :

Lab 9: Create CI Pipeline for .NET Core Application with MS Unit Test

Azure DevOps ItzMeAjith / DevOps_Assessment / Pipelines / DevOps_Assessment-ASP.N... / 20231023.2

← Jobs in run #20231023.2
DevOps_Assessment-ASP.NET Core-CI

Jobs

✓ Agent job 1   40s
  ✓ Initialize job   10s
  ✓ Checkout DevOps_Asse...   4s
  ✓ Restore   8s
  ✓ Build   9s
  ✓ Test   <1s
  ✓ Publish   3s
  ✓ Publish Artifact   1s
  ✓ Post-job: Checkout De...   <1s
  ✓ Finalize Job   <1s
  ✓ Report build status   <1s

✓ Agent job 1   View raw log

```
1  Pool: Default
2  Agent: Ajithagent
3  Started: Today at 21:19
4  Duration: 40s
5
6  ▸ Job preparation parameters
7  ▸ fx 3 queue time variables used
8     1 artifact produced
```

Azure DevOps ItzMeAjith / DevOps_Assessment / Pipelines / DevOps_Assessment-ASP.N... / 20231023.2

← Jobs in run #20231023.2
DevOps_Assessment-ASP.NET Core-CI

Jobs

✓ Agent job 1   40s
  ✓ Initialize job   10s
  ✓ Checkout DevOps_Asse...   4s
  ✓ Restore   8s
  ✓ Build   9s
  ✓ Test   <1s
  ✓ Publish   3s
  ✓ Publish Artifact   1s
  ✓ Post-job: Checkout De...   <1s
  ✓ Finalize Job   <1s
  ✓ Report build status   <1s

✓ Test   View raw log

```
1   Starting: Test
2   ==============================================================================
3   Task         : .NET Core
4   Description  : Build, test, package, or publish a dotnet application, or run a custom dotnet command
5   Version      : 2.221.0
6   Author       : Microsoft Corporation
7   Help         : https://docs.microsoft.com/azure/devops/pipelines/tasks/build/dotnet-core-cli
8   ==============================================================================
9   C:\Windows\system32\chcp.com 65001
10  Active code page: 65001
11  Info: .NET Core SDK/runtime 2.2 and 3.0 are now End of Life(EOL) and have been removed from all hosted agents. If you're using these SD
12  ##[warning]Project file(s) matching the specified pattern were not found.
13  Info: Azure Pipelines hosted agents have been updated and now contain .Net 5.x SDK/Runtime along with the older .Net Core version which
14  Finishing: Test
```
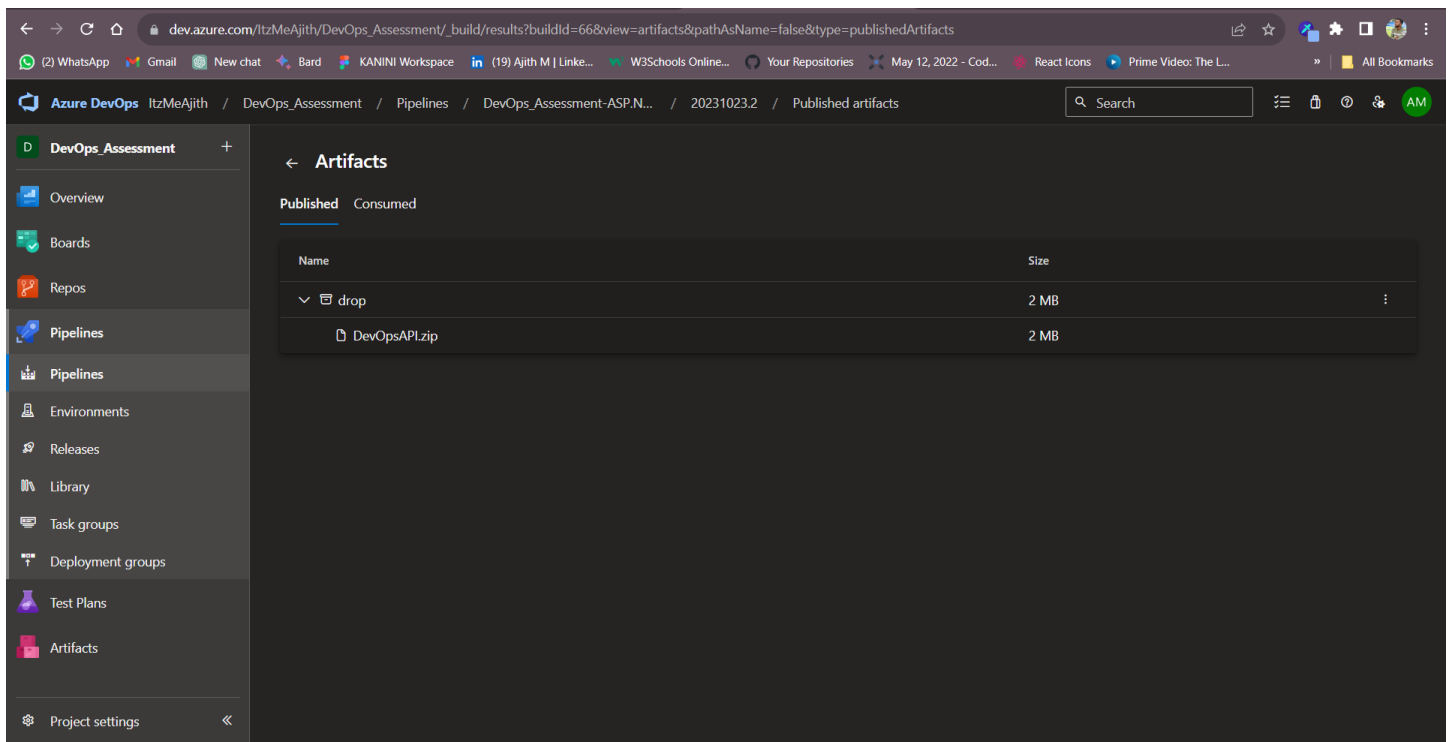
Lab 10: Creating a Docker Image for a .NET Core Web API and Running it in Rancher Desktop