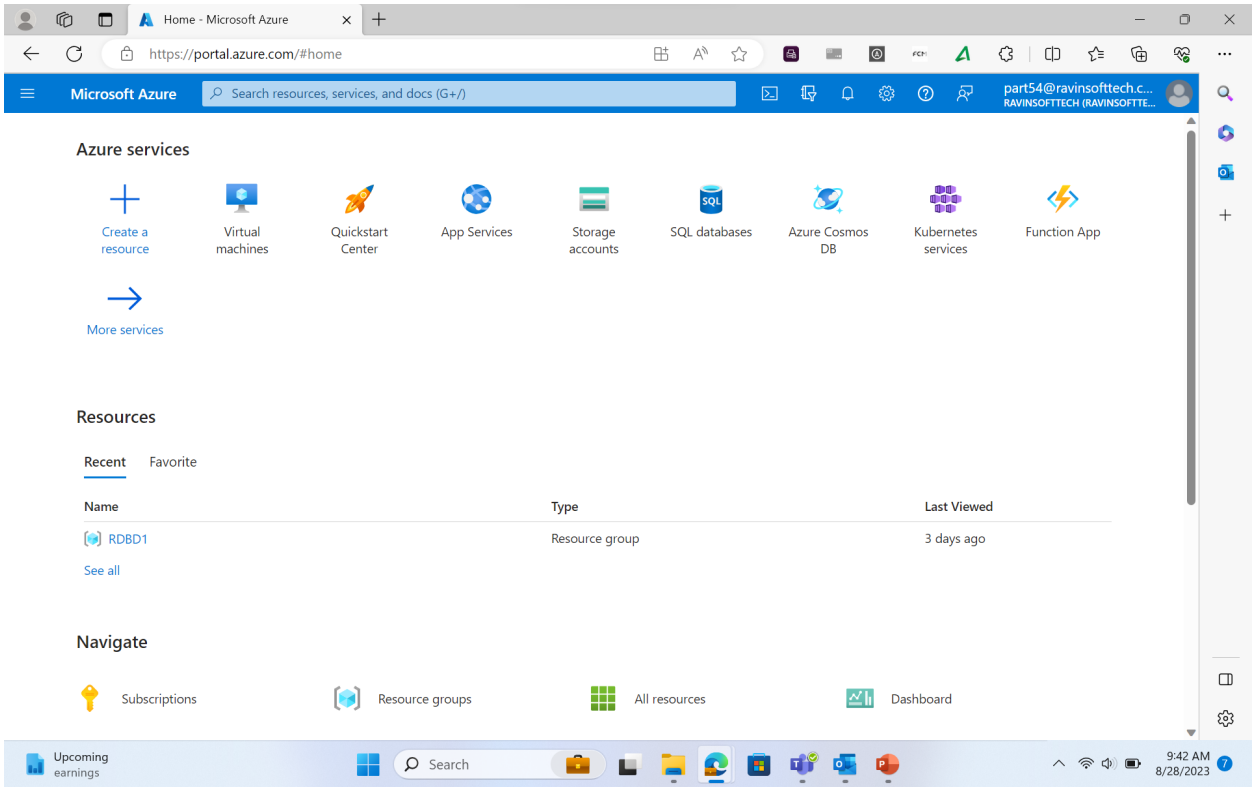
CASE STUDY

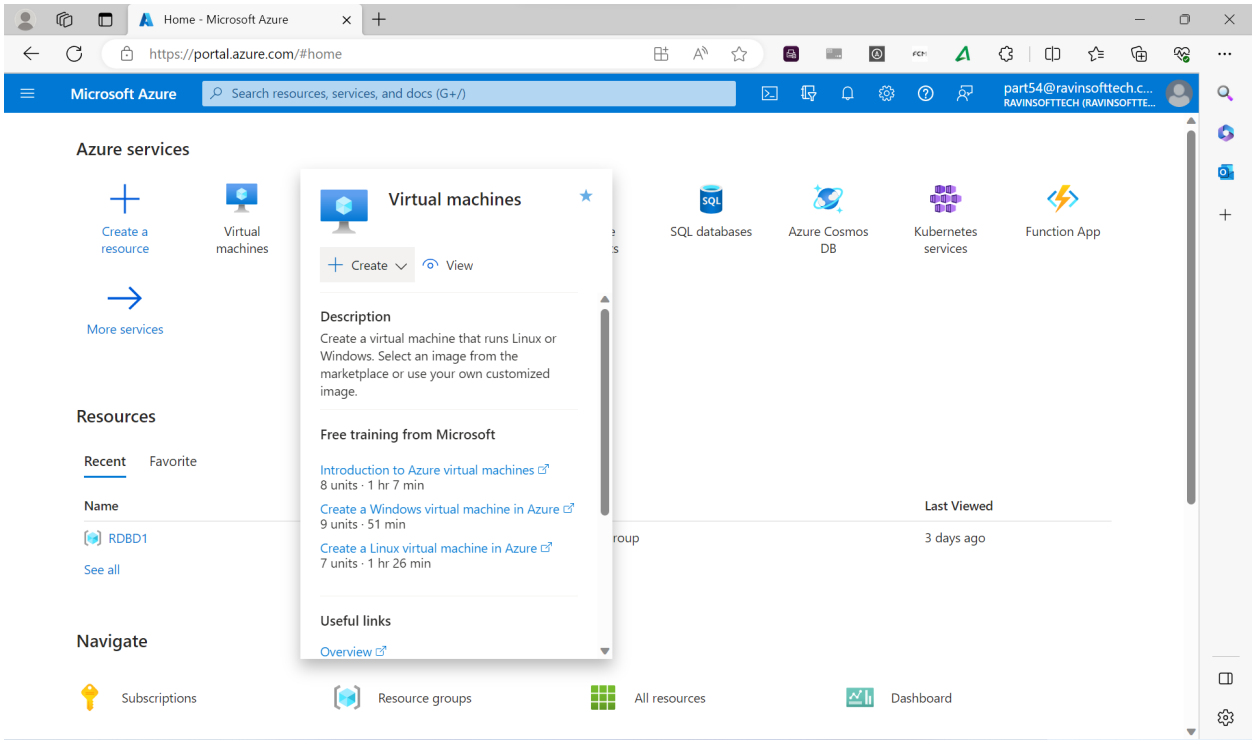
Scenario: Streamline Solutions Inc. - Optimizing Software Deployment

Problem Statement: Implementing a Seamless CI/CD Workflow for a Spring Boot Application using Azure Boards, Azure, Git, Maven, Docker, Github, Github Actions

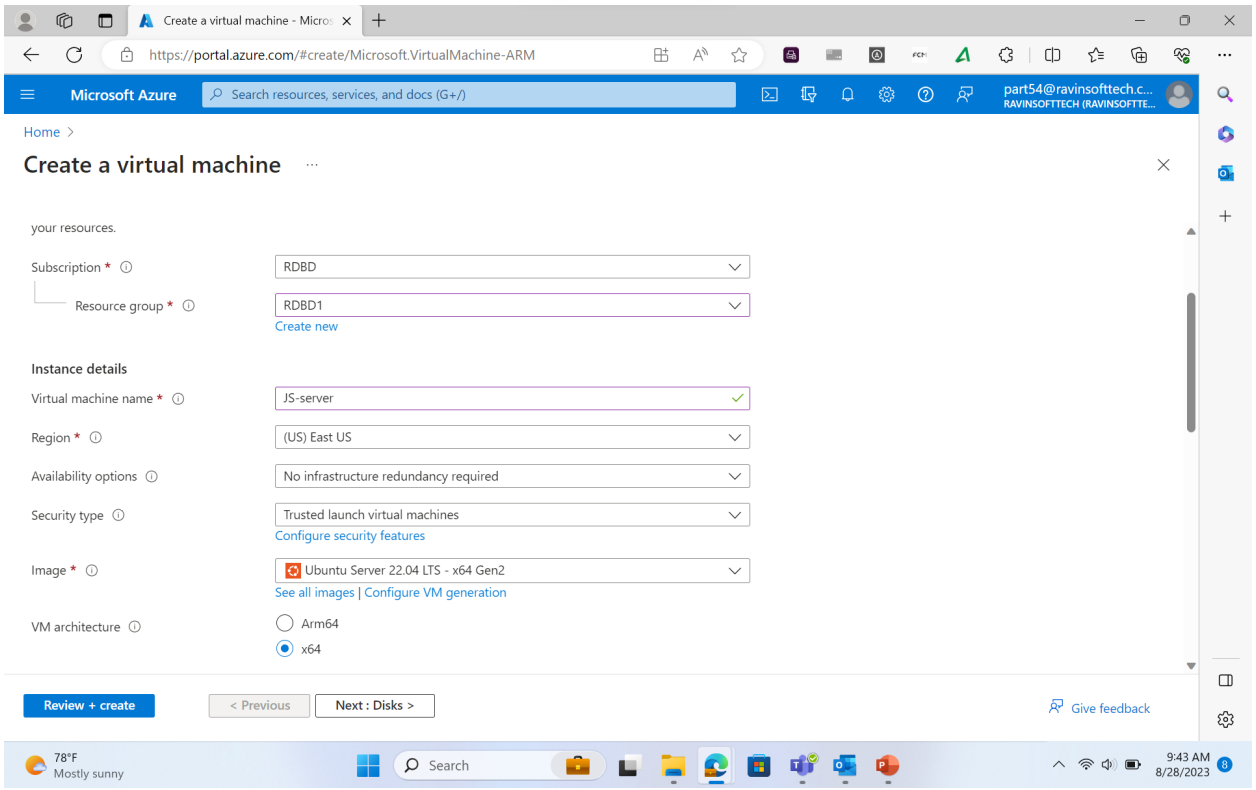
Step 1: Azure VM Configuration

Create a Virtual Machine on Microsoft Azure

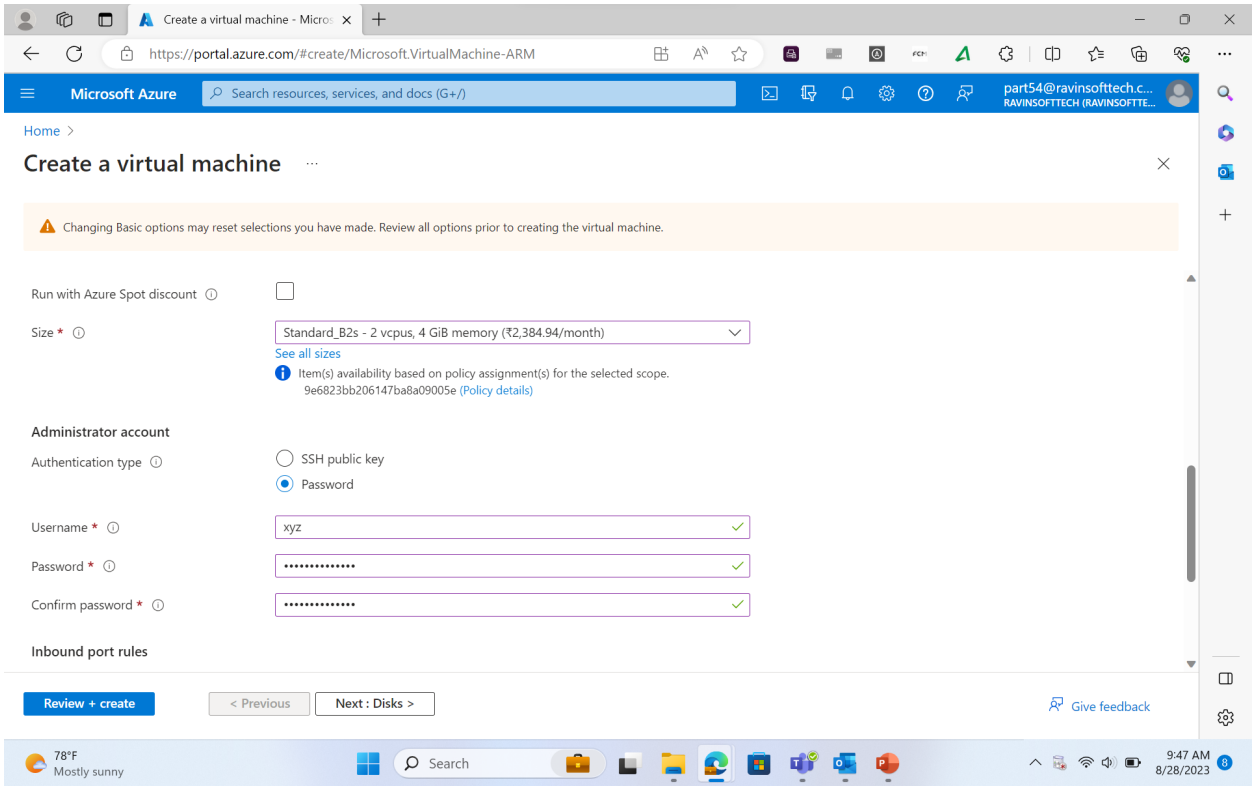


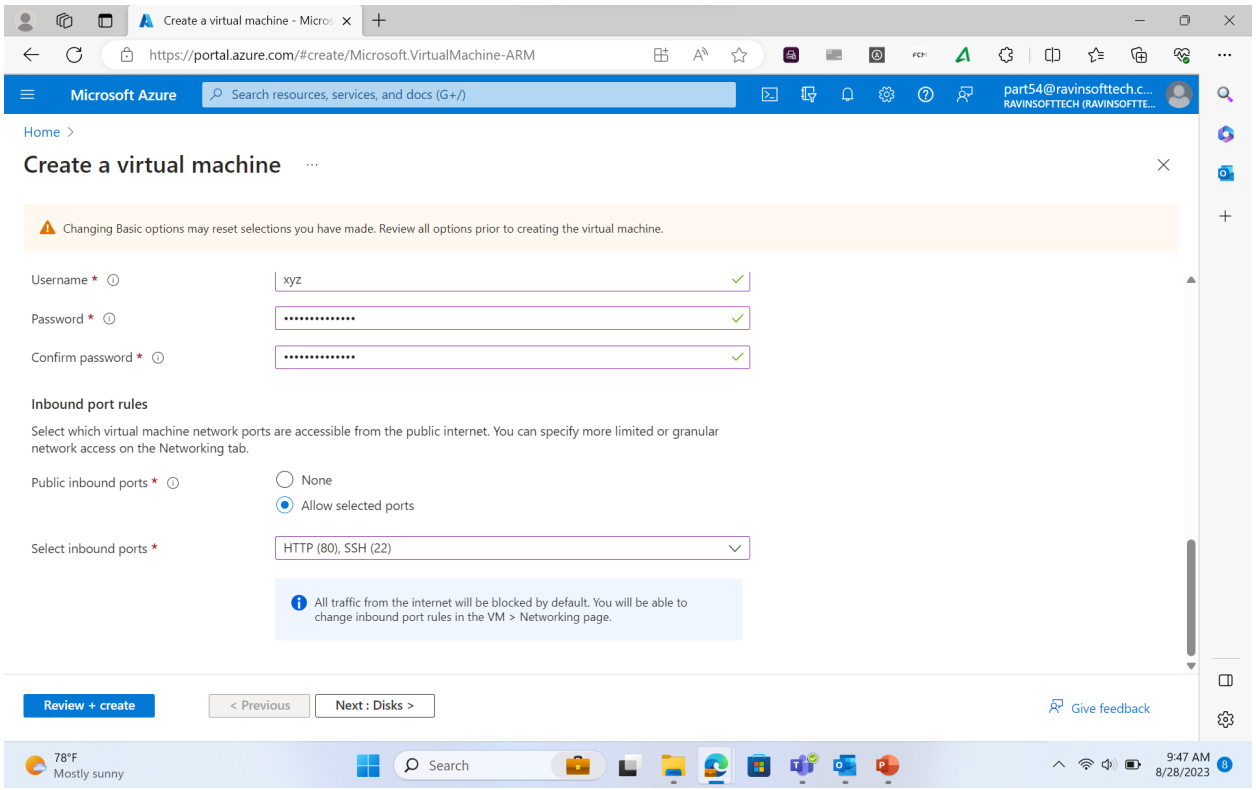


Create a virtual machine with image - Ubuntu Server 22.04

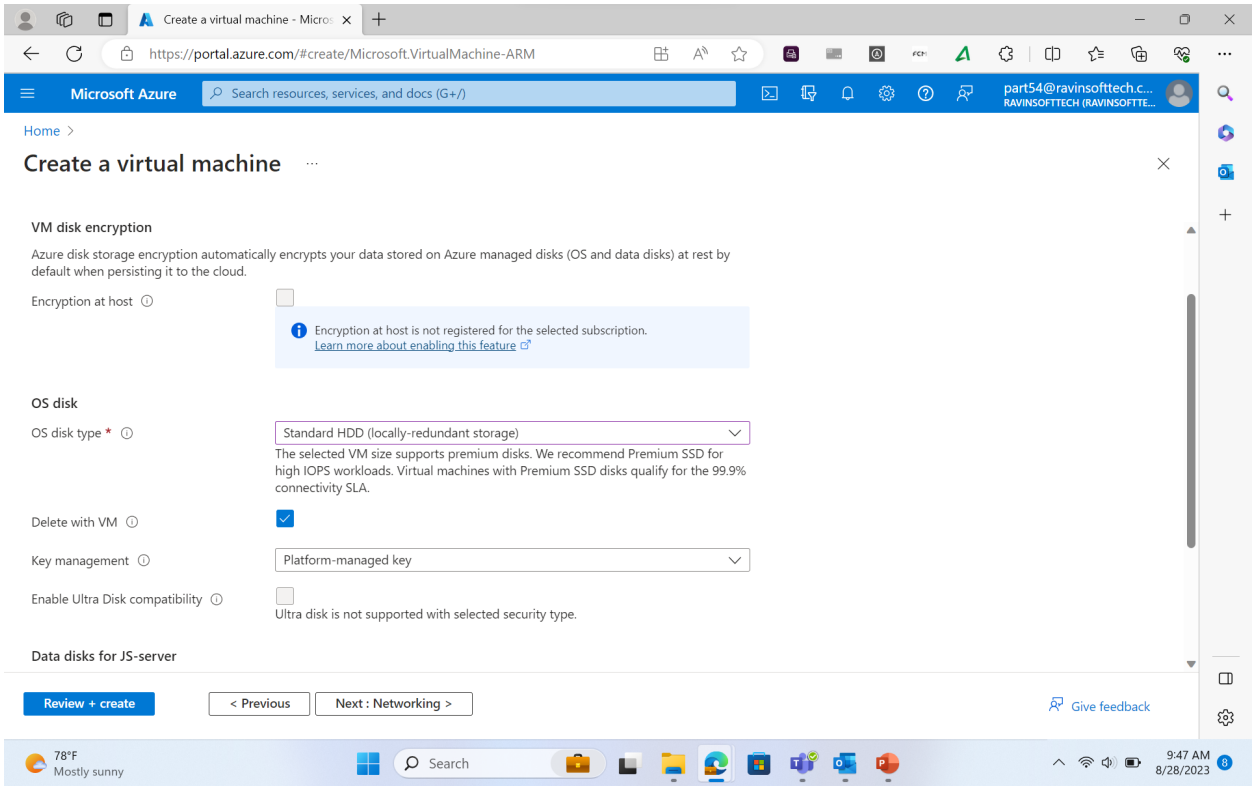


Select Size as B2s and create username and password for your machine

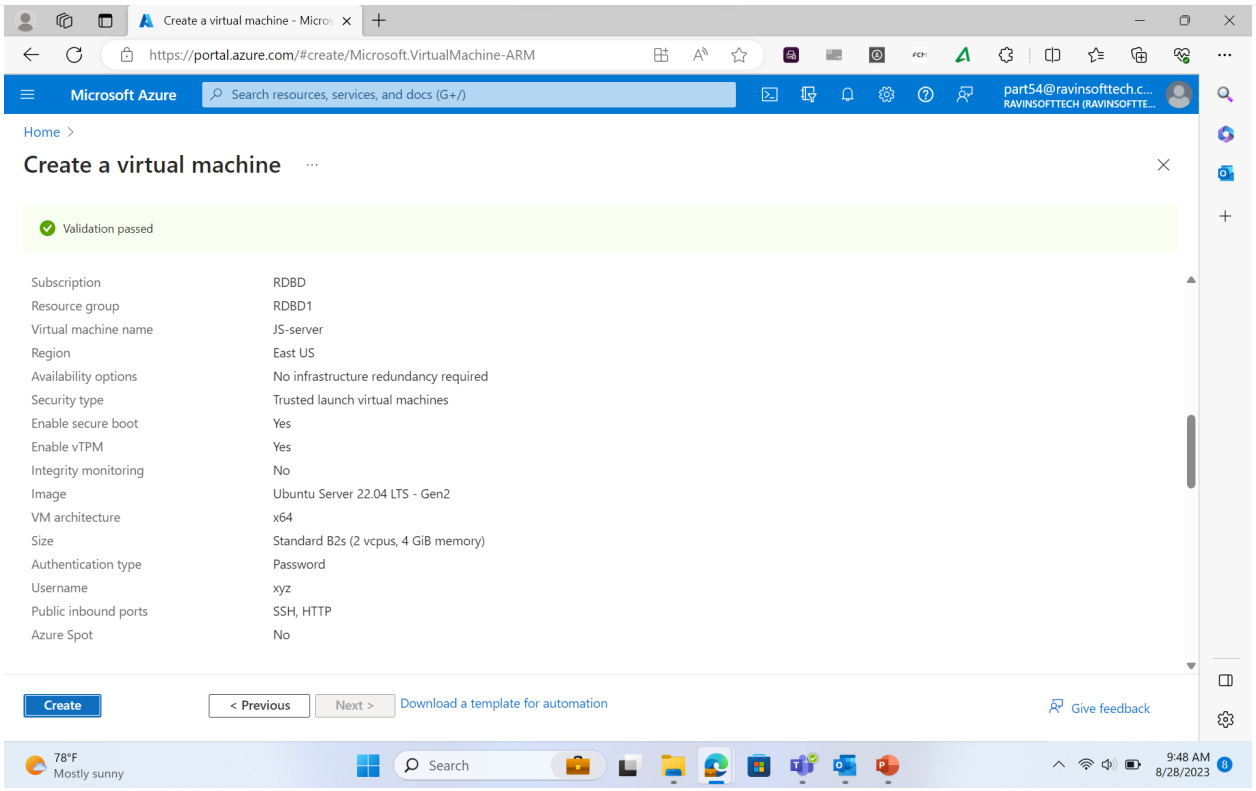


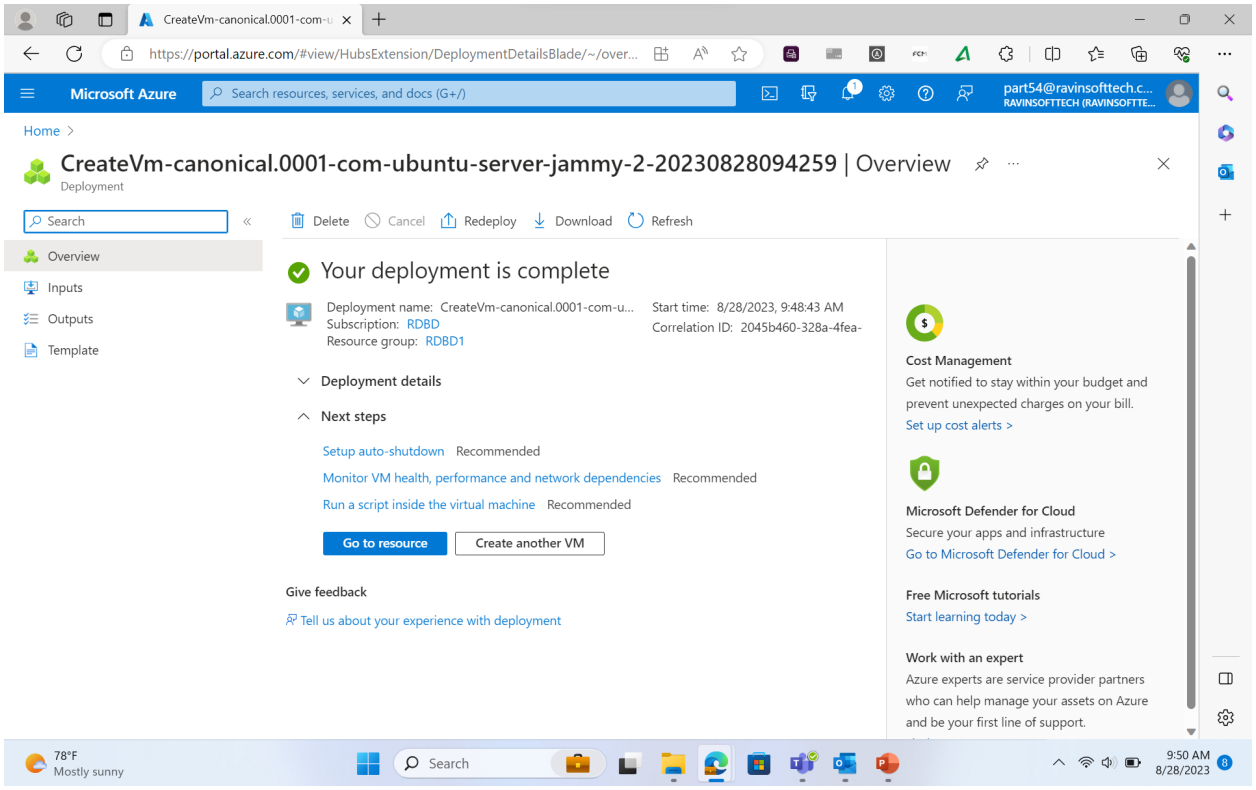


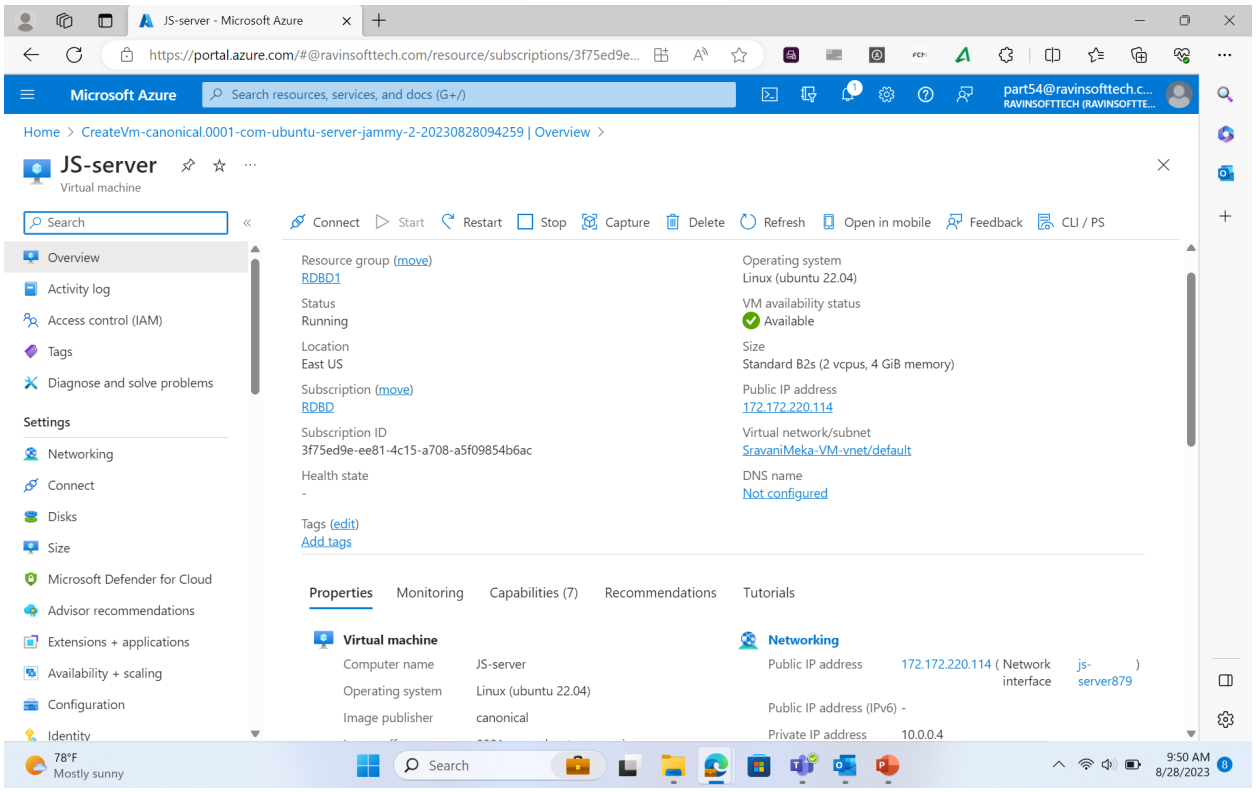
Click on disks, and select Standard HDD as OS disk type



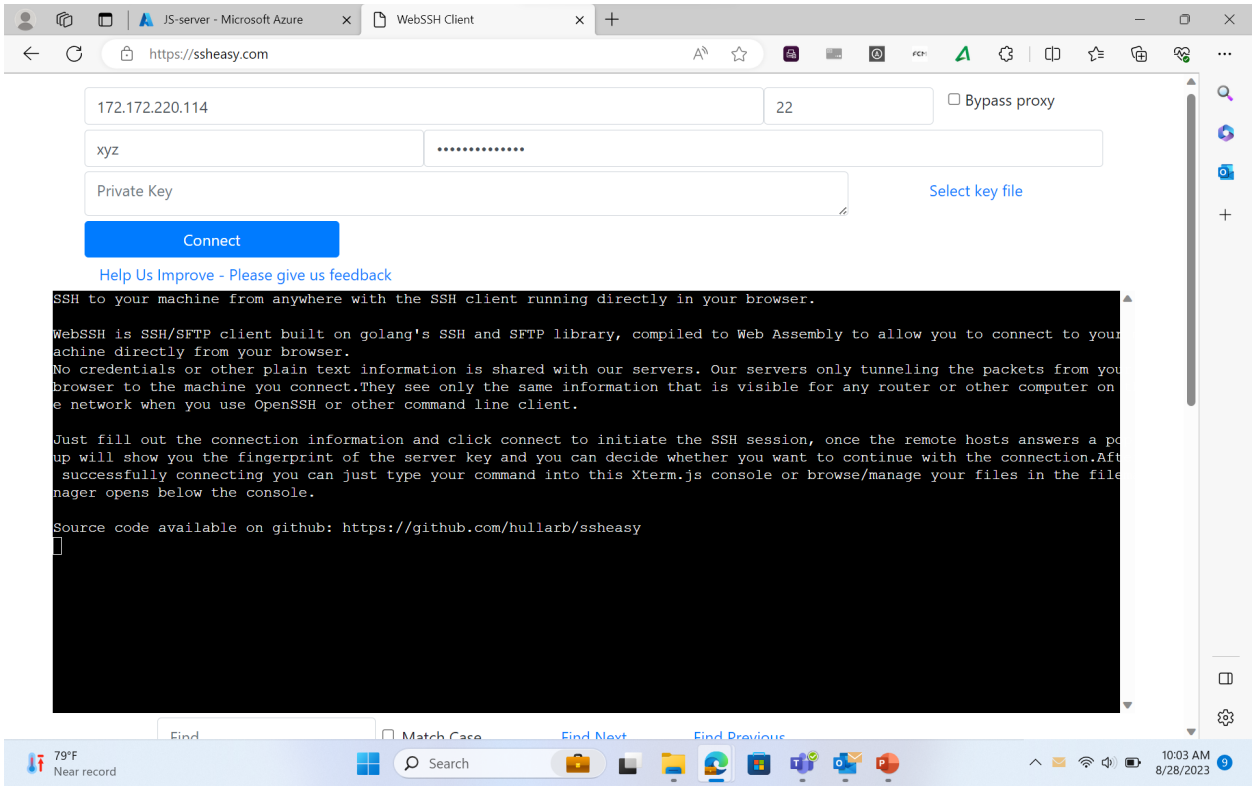
Click on Review and create and then create.

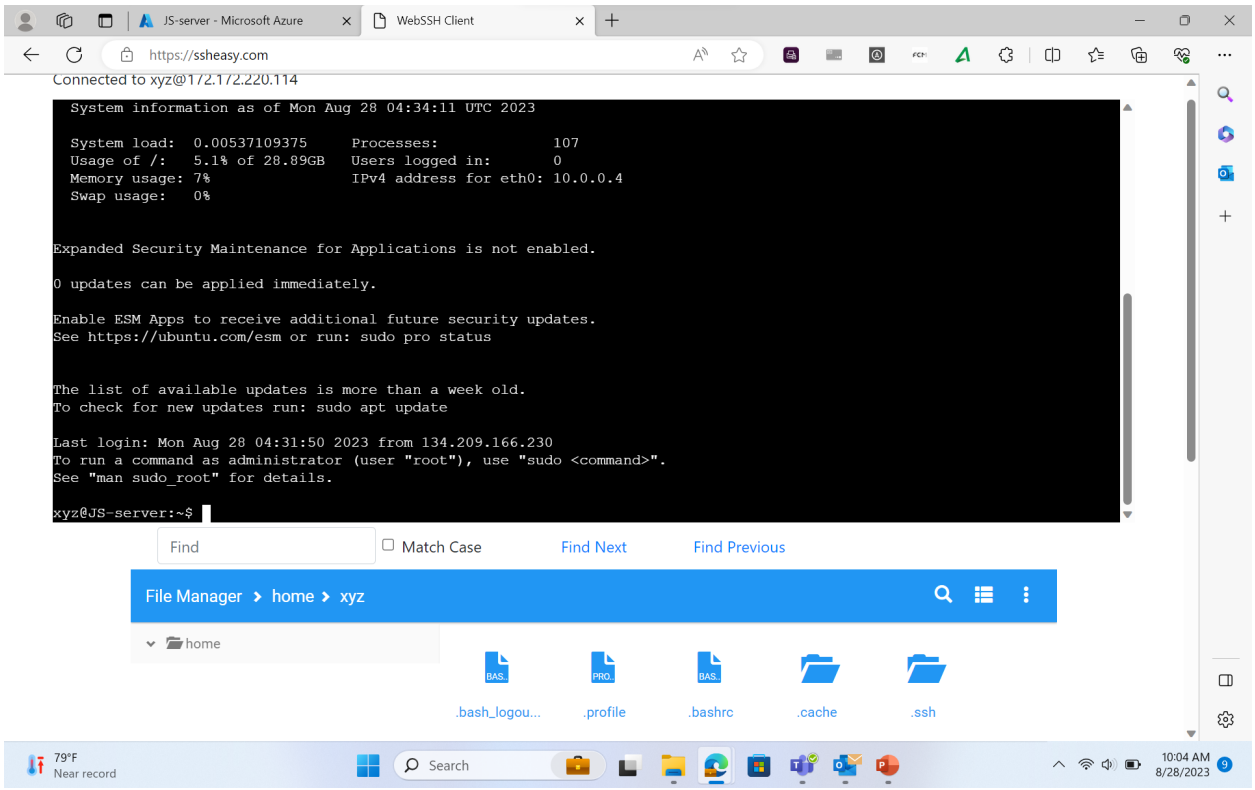


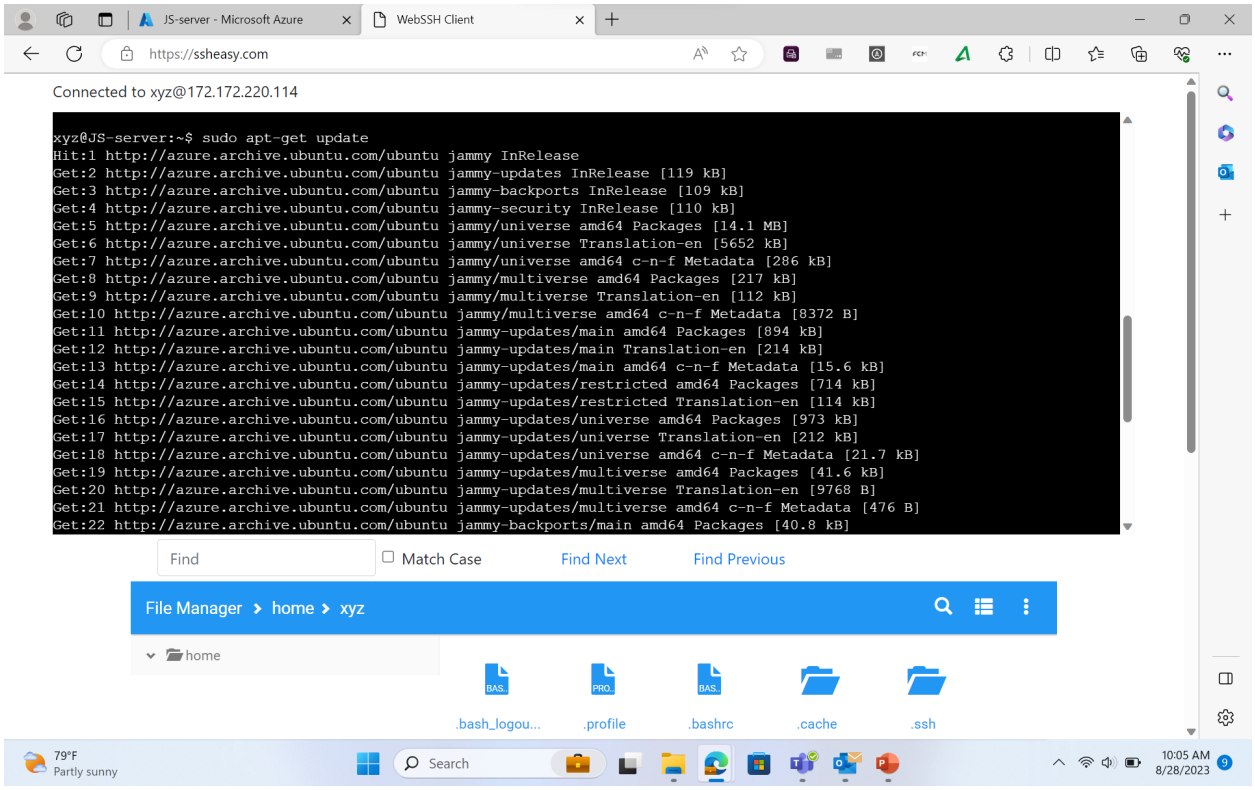




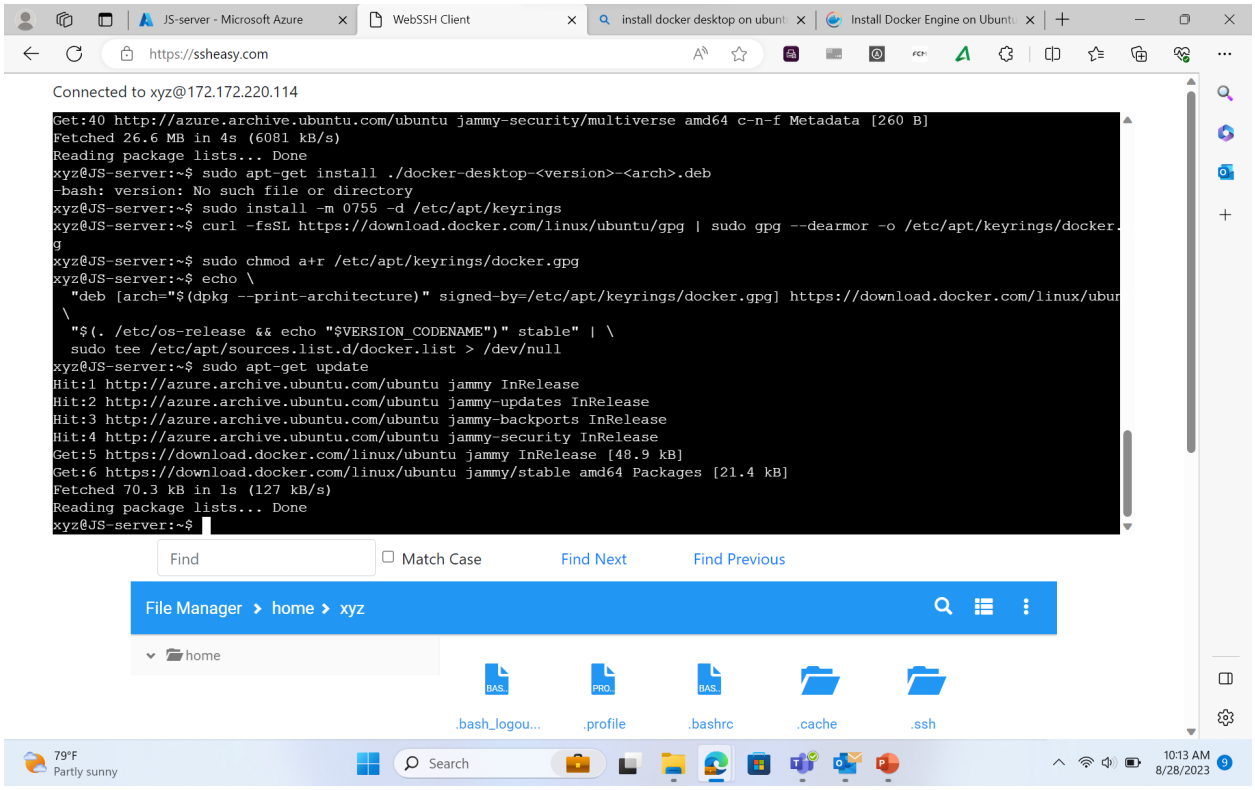
Open ssheasy.com and put public IP address as host to connect.
Also put username and password, and connect.

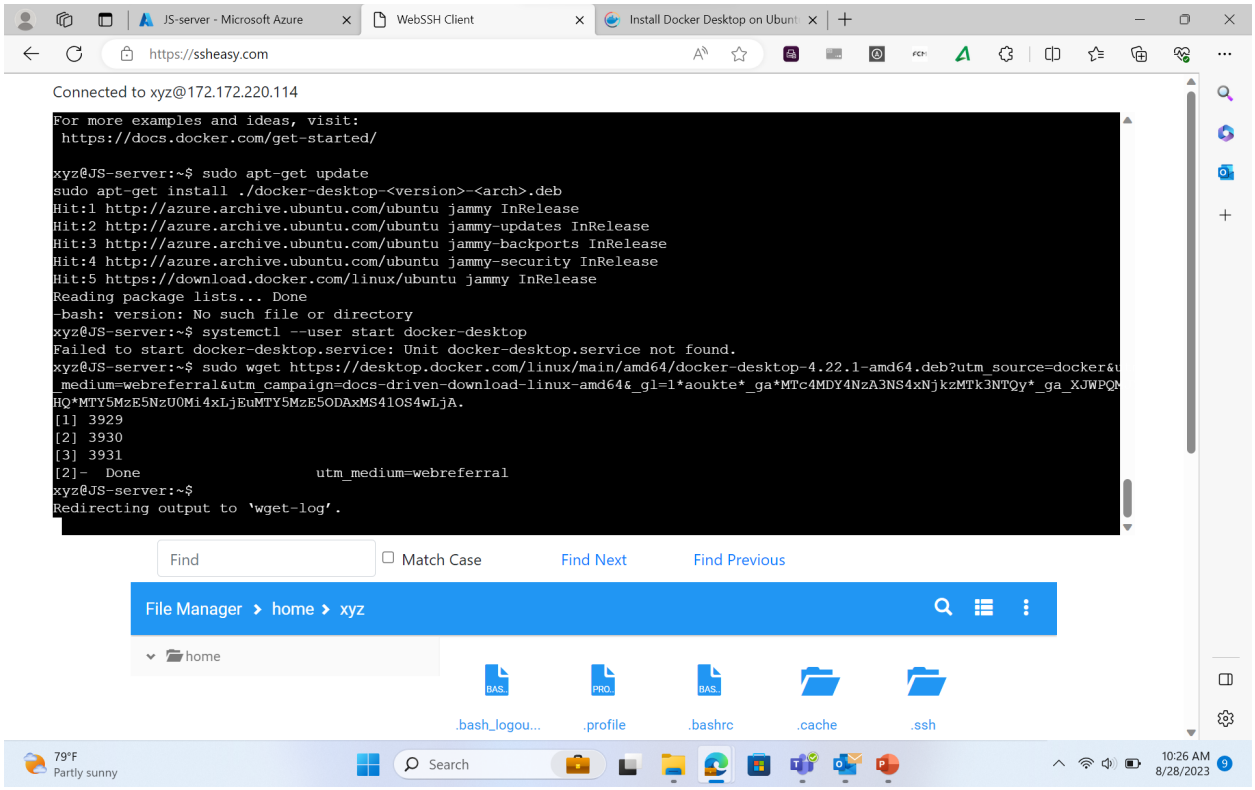

JS-server - Microsoft Azure
WebSSH Client
https://ssheasy.com
172.172.220.114
22
Bypass proxy
xyz
Private Key
Select key file
Connect
Help Us Improve - Please give us feedback
SSH to your machine from anywhere with the SSH client running directly in your browser.
WebSSH is SSH/SFTP client built on golang's SSH and SFTP library, compiled to Web Assembly to allow you to connect to your
achine directly from your browser.
No credentials or other plain text information is shared with our servers. Our servers only tunneling the packets from you
browser to the machine you connect.They see only the same information that is visible for any router or other computer on
e network when you use OpenSSH or other command line client.
Just fill out the connection information and click connect to initiate the SSH session, once the remote hosts answers a p
up will show you the fingerprint of the server key and you can decide whether you want to continue with the connection.Aft
successfully connecting you can just type your command into this Xterm.js console or browse/manage your files in the file
nager opens below the console.
Source code available on github: https://github.com/hullarb/sshеasy
Find
Match Case
Find Next
Find Previous
79°F
Near record
Search
10:03 AM
8/28/2023

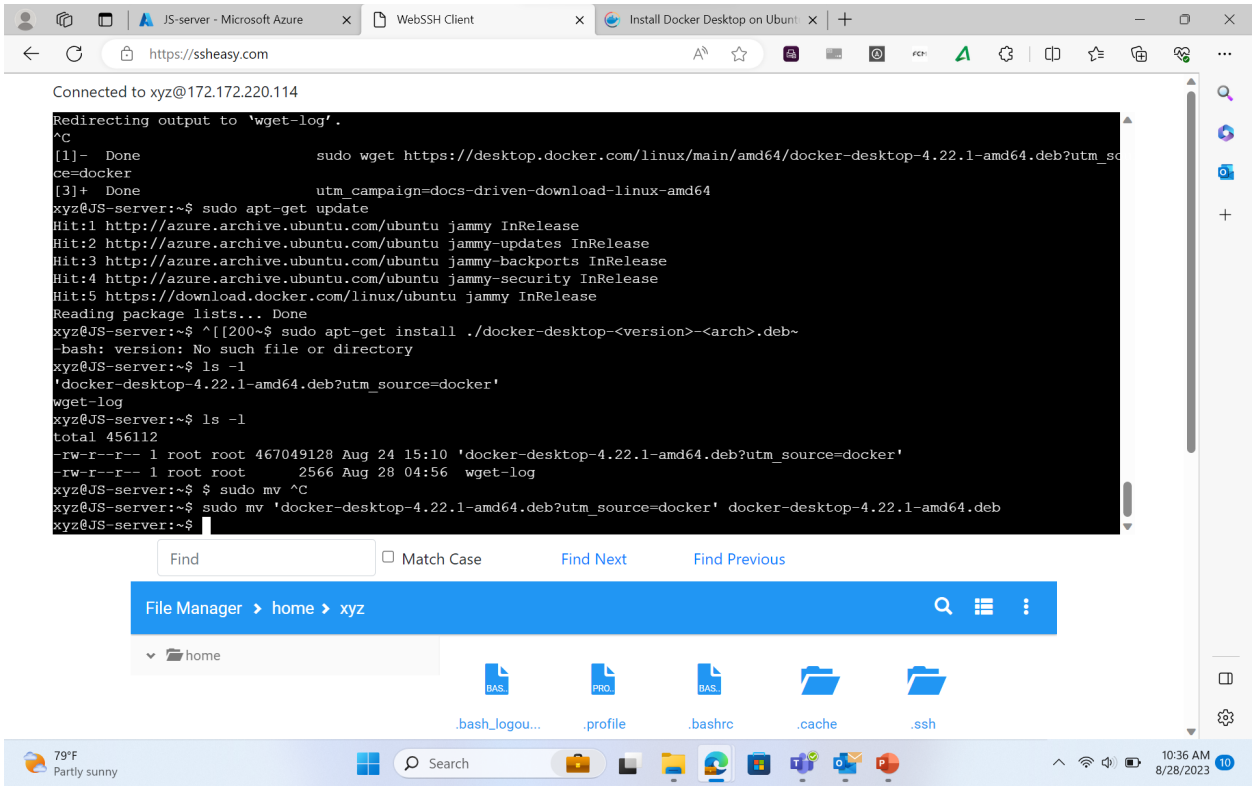

JS-server - Microsoft Azure
WebSSH Client
https://ssheasy.com
Connected to xyz@172.172.220.114
System information as of Mon Aug 28 04:34:11 UTC 2023
System load: 0.00537109375 Processes: 107
Usage of /: 5.1% of 28.89GB Users logged in: 0
Memory usage: 7% IPv4 address for eth0: 10.0.0.4
Swap usage: 0%
Expanded Security Maintenance for Applications is not enabled.
0 updates can be applied immediately.
Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status
The list of available updates is more than a week old.
To check for new updates run: sudo apt update
Last login: Mon Aug 28 04:31:50 2023 from 134.209.166.230
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.
xyz@JS-server:~$
Find
Match Case
Find Next
Find Previous
File Manager
home
xyz
home
.bash_logou...
.profile
.bashrc
.cache
.ssh
79°F
Near record
Search
10:04 AM
8/28/2023

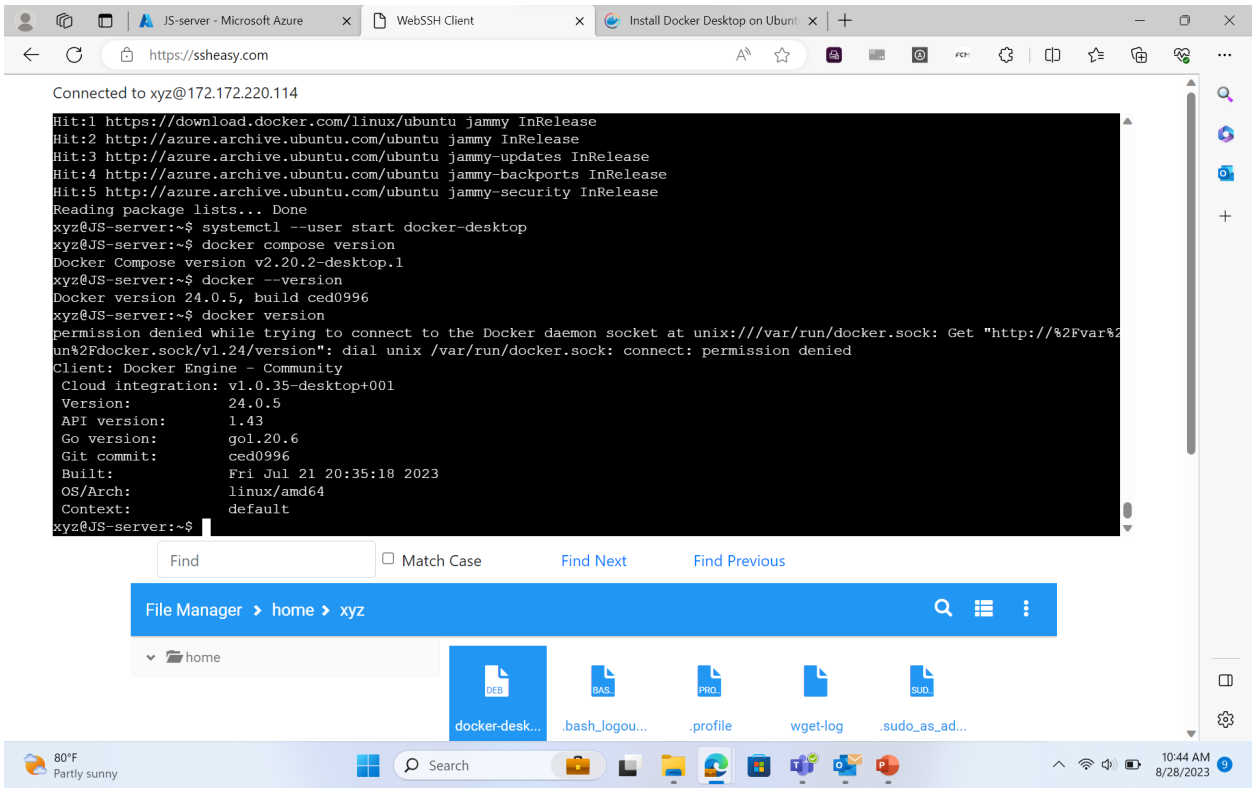


Step 2 : Install Docker Desktop on Ubuntu

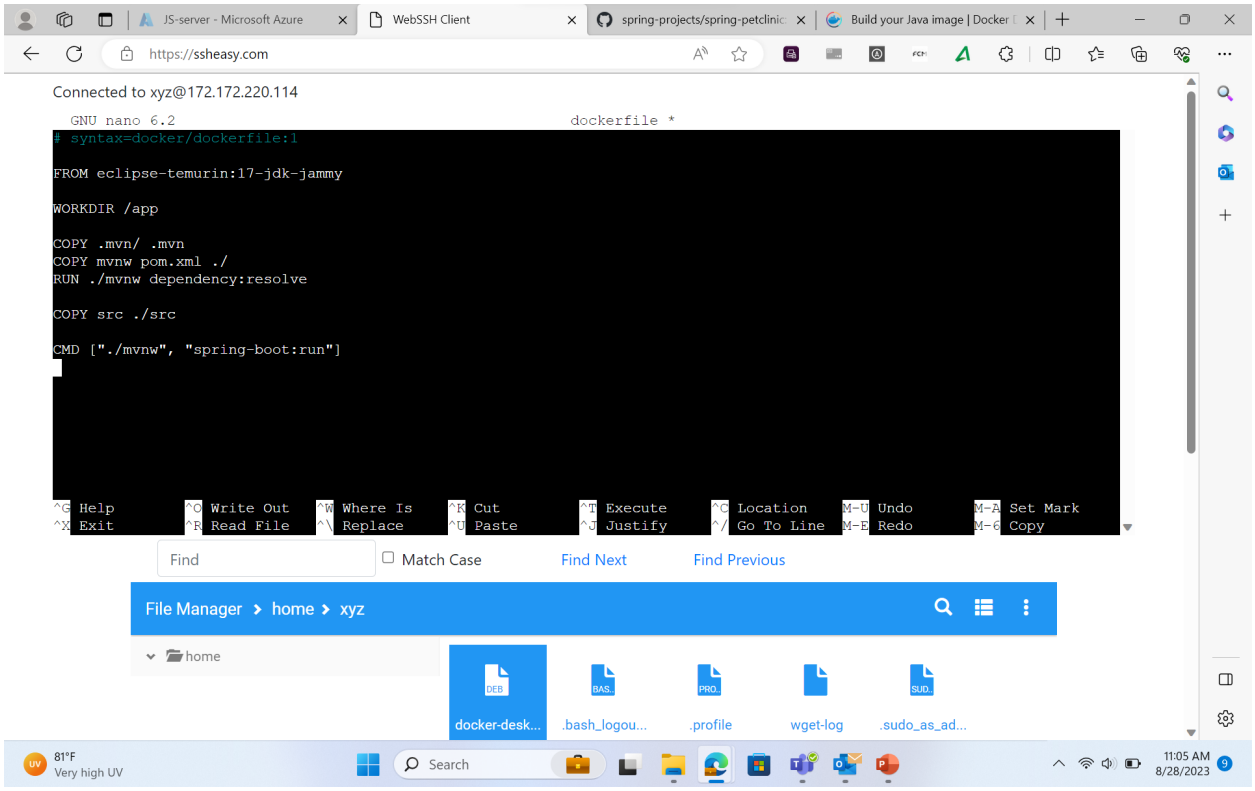

JS-server - Microsoft Azure
WebSSH Client
install docker desktop on ubunt
Install Docker Engine on Ubunt
https://ssheasy.com
Connected to xyz@172.172.220.114
Get:40 http://azure.archive.ubuntu.com/ubuntu jammy-security/multiverse amd64 c-n-f Metadata [260 B]
Fetched 26.6 MB in 4s (6081 kB/s)
Reading package lists... Done
xyz@JS-server:~$ sudo apt-get install ./docker-desktop-<version>-<arch>.deb
-bash: version: No such file or directory
xyz@JS-server:~$ sudo install -m 0755 -d /etc/apt/keyrings
xyz@JS-server:~$ curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo gpg --dearmor -o /etc/apt/keyrings/docker.
g
xyz@JS-server:~$ sudo chmod a+r /etc/apt/keyrings/docker.gpg
xyz@JS-server:~$ echo \
"deb [arch="$(dpkg --print-architecture)" signed-by=/etc/apt/keyrings/docker.gpg] https://download.docker.com/linux/ubur
\
"$(. /etc/os-release && echo "$VERSION_CODENAME")" stable" | \
sudo tee /etc/apt/sources.list.d/docker.list > /dev/null
xyz@JS-server:~$ sudo apt-get update
Hit:1 http://azure.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://azure.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://azure.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:4 http://azure.archive.ubuntu.com/ubuntu jammy-security InRelease
Get:5 https://download.docker.com/linux/ubuntu jammy InRelease [48.9 kB]
Get:6 https://download.docker.com/linux/ubuntu jammy/stable amd64 Packages [21.4 kB]
Fetched 70.3 kB in 1s (127 kB/s)
Reading package lists... Done
xyz@JS-server:~$
Find
Match Case
Find Next
Find Previous
File Manager
home
xyz
home
.bash_logou...
.profile
.bashrc
.cache
.ssh
79°F
Partly sunny
Search
10:13 AM
8/28/2023

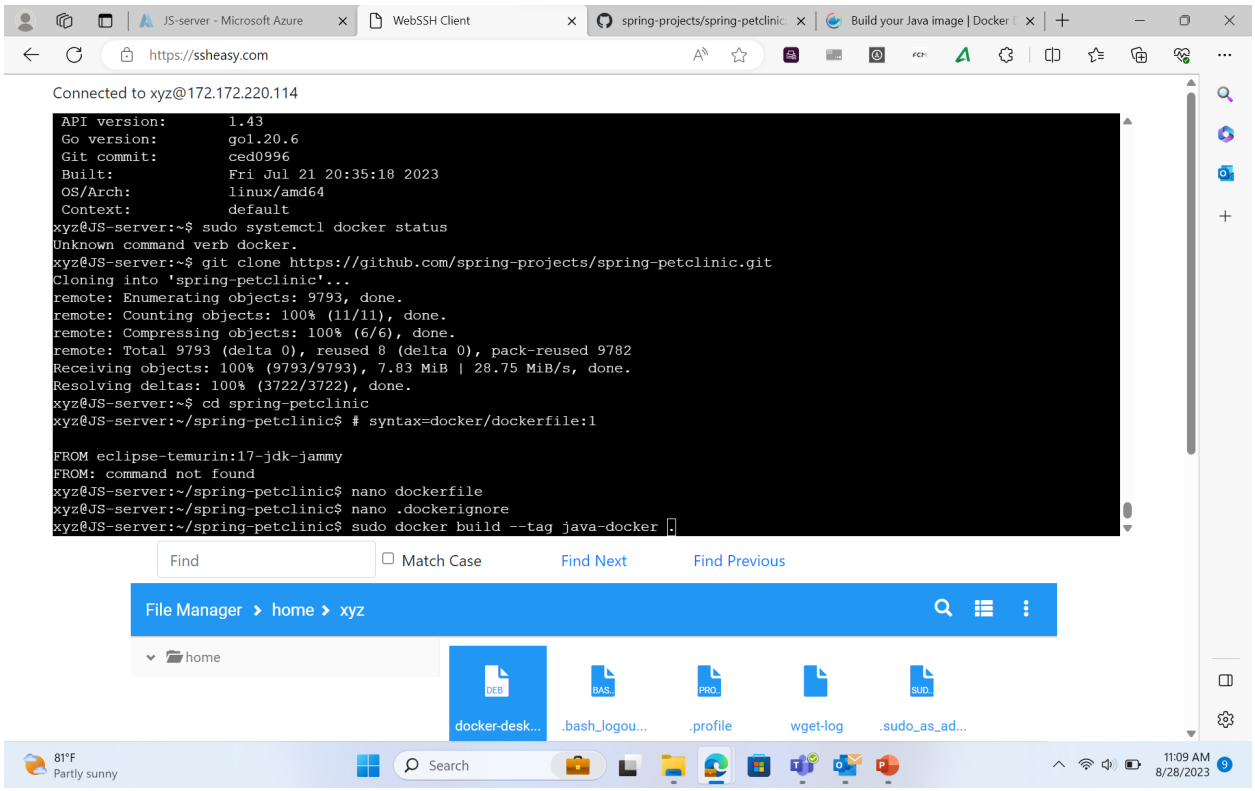

JS-server - Microsoft Azure
WebSSH Client
Install Docker Desktop on Ubunt
https://ssheasy.com
Connected to xyz@172.172.220.114
For more examples and ideas, visit:
https://docs.docker.com/get-started/
xyz@JS-server:~$ sudo apt-get update
sudo apt-get install ./docker-desktop-<version>-<arch>.deb
Hit:1 http://azure.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://azure.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://azure.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:4 http://azure.archive.ubuntu.com/ubuntu jammy-security InRelease
Hit:5 https://download.docker.com/linux/ubuntu jammy InRelease
Reading package lists... Done
-bash: version: No such file or directory
xyz@JS-server:~$ systemctl --user start docker-desktop
Failed to start docker-desktop.service: Unit docker-desktop.service not found.
xyz@JS-server:~$ sudo wget https://desktop.docker.com/linux/main/amd64/docker-desktop-4.22.1-amd64.deb?utm_source=docker&u
_medium=webreferral&utm_campaign=docs-driven-download-linux-amd64&_gl=1*aoukte*_ga*MTc4MDY4NzA3NS4xNjkzMTk3NTQy*_ga_XJWPQM
HQ*MTY5MzE5NzU0Mi4xLjEuMTY5MzE5ODAxMS41OS4wLjA.
[1] 3929
[2] 3930
[3] 3931
[2]- Done utm_medium=webreferral
xyz@JS-server:~$
Redirecting output to 'wget-log'.
Find
Match Case
Find Next
Find Previous
File Manager
home
xyz
home
.bash_logou...
.profile
.bashrc
.cache
.ssh
79°F
Partly sunny
Search
10:26 AM
8/28/2023

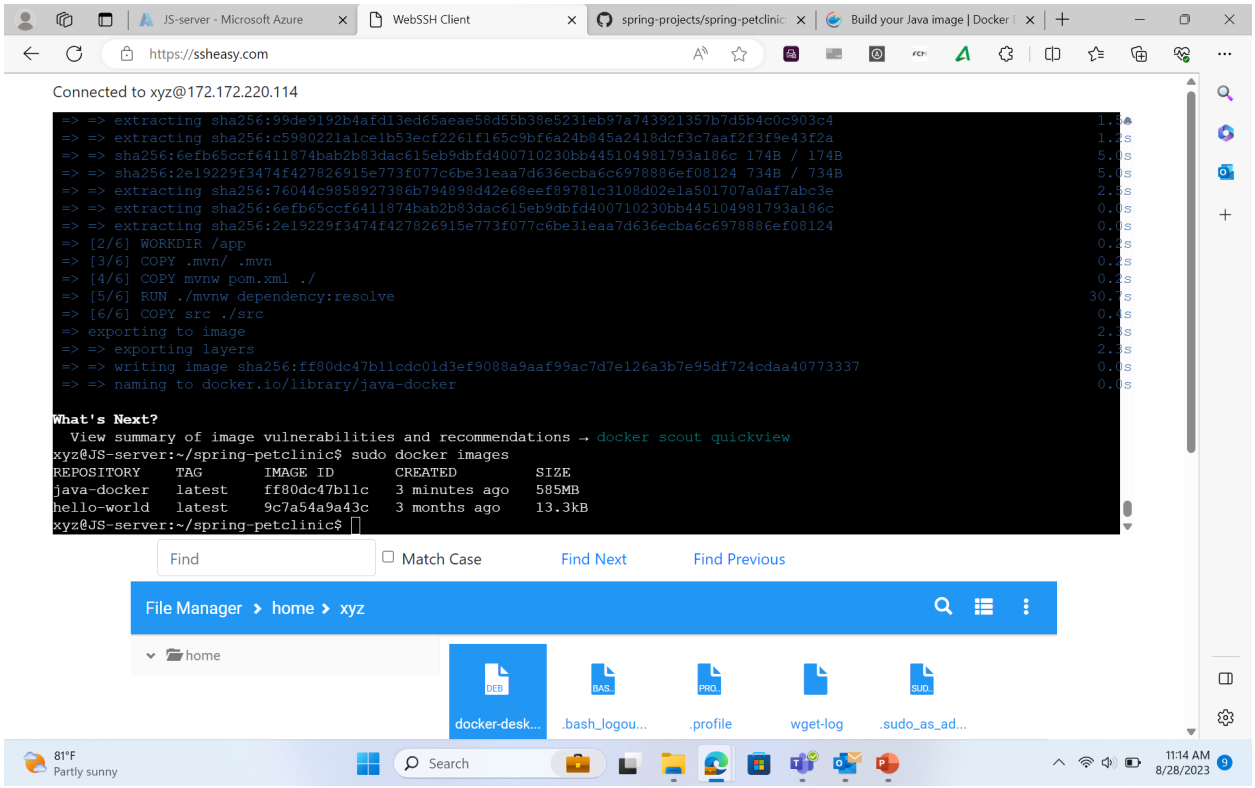

JS-server - Microsoft Azure
WebSSH Client
Install Docker Desktop on Ubunt
https://ssheasy.com
Connected to xyz@172.172.220.114
Redirecting output to 'wget-log'.
^C
[1]- Done   sudo wget https://desktop.docker.com/linux/main/amd64/docker-desktop-4.22.1-amd64.deb?utm_sc
ce=docker
[3]+ Done   utm_campaign=docs-driven-download-linux-amd64
xyz@JS-server:~$ sudo apt-get update
Hit:1 http://azure.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://azure.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://azure.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:4 http://azure.archive.ubuntu.com/ubuntu jammy-security InRelease
Hit:5 https://download.docker.com/linux/ubuntu jammy InRelease
Reading package lists... Done
xyz@JS-server:~$ ^[[200~$ sudo apt-get install ./docker-desktop-<version>-<arch>.deb~
-bash: version: No such file or directory
xyz@JS-server:~$ ls -l
'docker-desktop-4.22.1-amd64.deb?utm_source=docker'
wget-log
xyz@JS-server:~$ ls -l
total 456112
-rw-r--r-- 1 root root 467049128 Aug 24 15:10 'docker-desktop-4.22.1-amd64.deb?utm_source=docker'
-rw-r--r-- 1 root root   2566 Aug 28 04:56 wget-log
xyz@JS-server:~$ $ sudo mv ^C
xyz@JS-server:~$ sudo mv 'docker-desktop-4.22.1-amd64.deb?utm_source=docker' docker-desktop-4.22.1-amd64.deb
xyz@JS-server:~$
Find
Match Case
Find Next
Find Previous
File Manager
home
xyz
home
.bash_logou...
.profile
.bashrc
.cache
.ssh
79°F
Partly sunny
Search
10:36 AM
8/28/2023


JS-server - Microsoft Azure
WebSSH Client
Install Docker Desktop on Ubunt
https://ssheasy.com
Connected to xyz@172.172.220.114
Hit:1 https://download.docker.com/linux/ubuntu jammy InRelease
Hit:2 http://azure.archive.ubuntu.com/ubuntu jammy InRelease
Hit:3 http://azure.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:4 http://azure.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:5 http://azure.archive.ubuntu.com/ubuntu jammy-security InRelease
Reading package lists... Done
xyz@JS-server:~$ systemctl --user start docker-desktop
xyz@JS-server:~$ docker compose version
Docker Compose version v2.20.2-desktop.1
xyz@JS-server:~$ docker --version
Docker version 24.0.5, build ced0996
xyz@JS-server:~$ docker version
permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Get "http://%2Fvar%2
un%2Fdocker.sock/v1.24/version": dial unix /var/run/docker.sock: connect: permission denied
Client: Docker Engine - Community
 Cloud integration: v1.0.35-desktop+001
 Version: 24.0.5
 API version: 1.43
 Go version: go1.20.6
 Git commit: ced0996
 Built: Fri Jul 21 20:35:18 2023
 OS/Arch: linux/amd64
 Context: default
xyz@JS-server:~$
Find
Match Case
Find Next
Find Previous
File Manager
home
xyz
home
docker-desk...
.bash_logou...
.profile
wget-log
.sudo_as_ad...
80°F
Partly sunny
Search
10:44 AM
8/28/2023

Step 3 : Building java image on docker

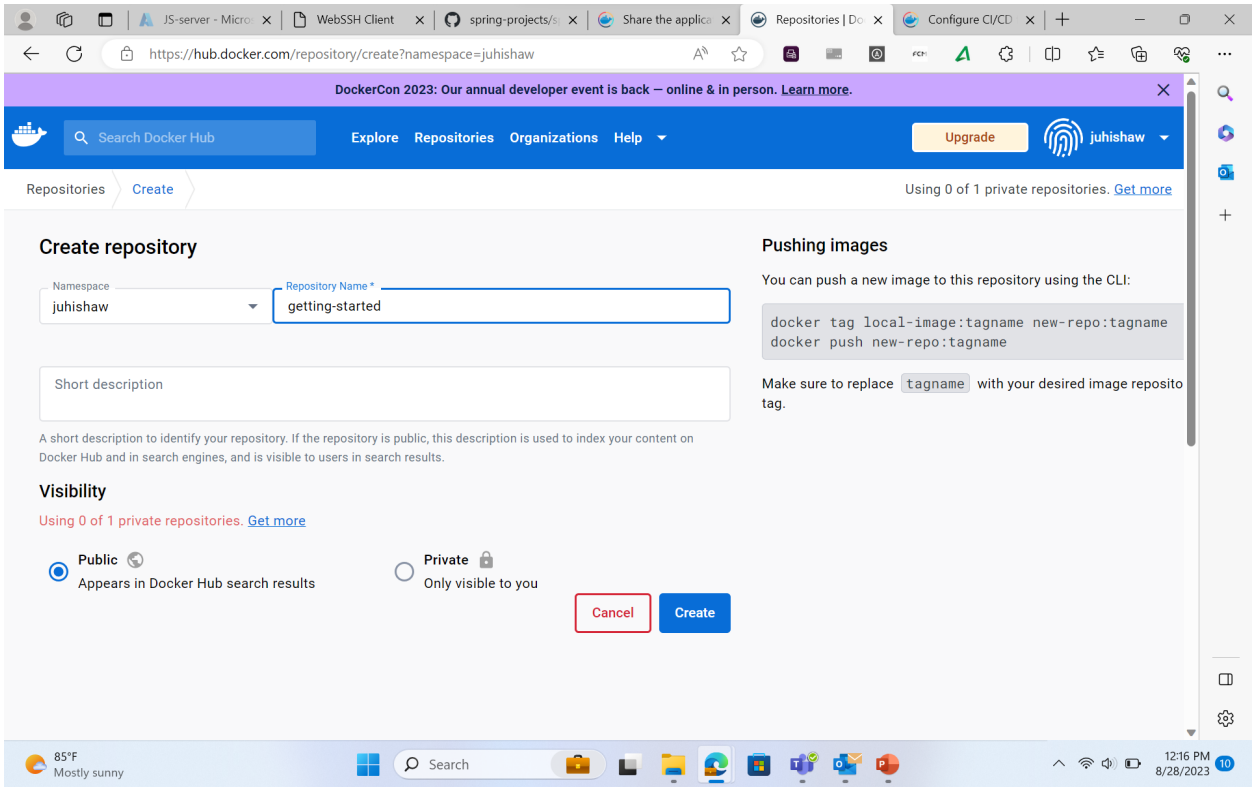




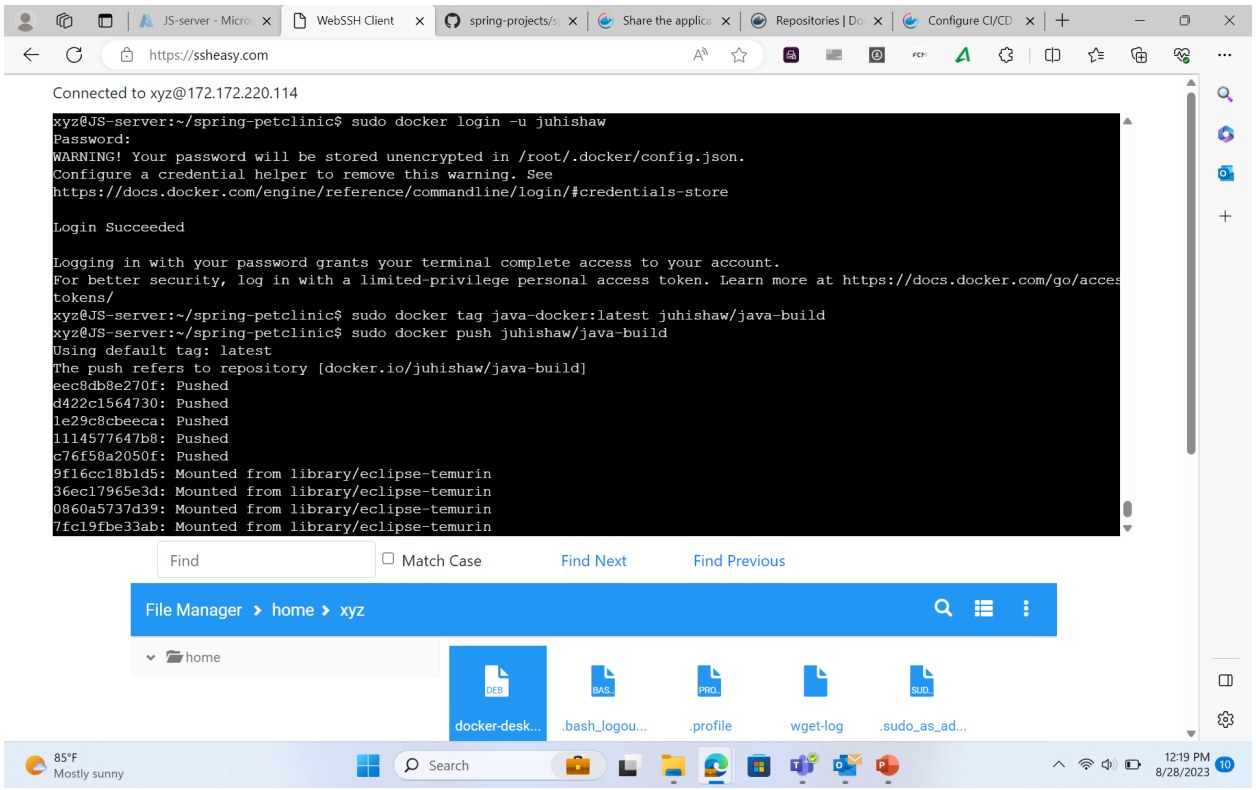


Step 4 : Sharing application to Docker Hub

Sign up to Docker Hub and create repository named as ‘getting-started’



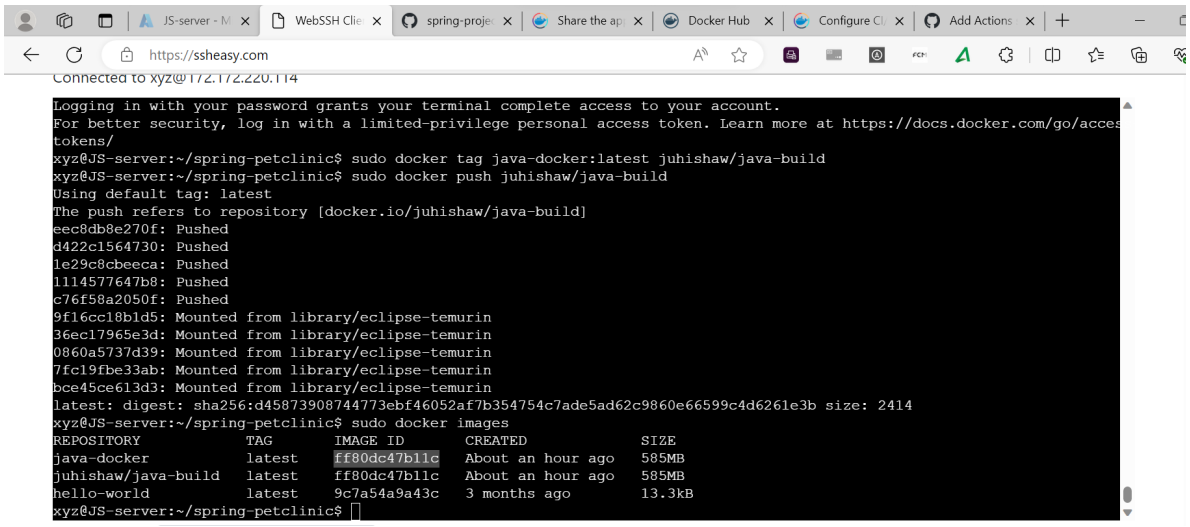
Login into SSHeasy for your docker Hub and push the java image on docker hub.

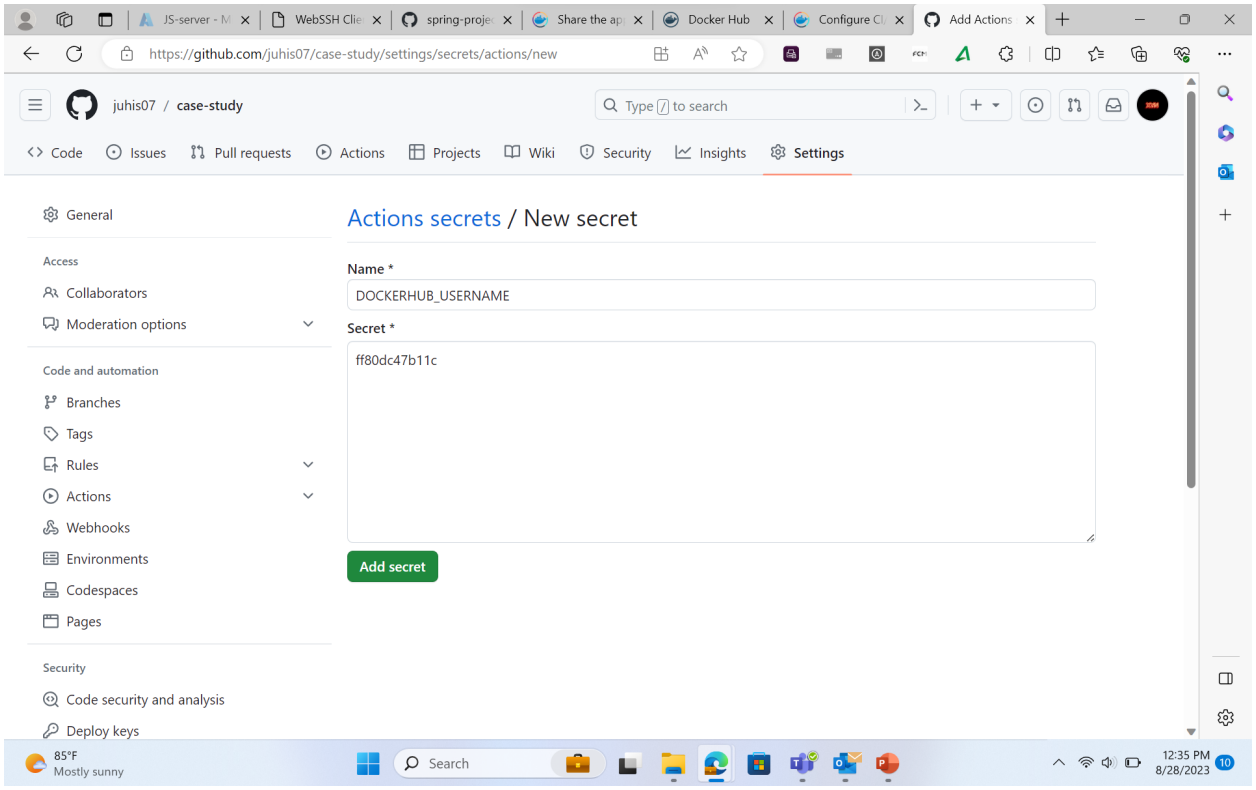


Step 5 : Configure CI/CD for your application

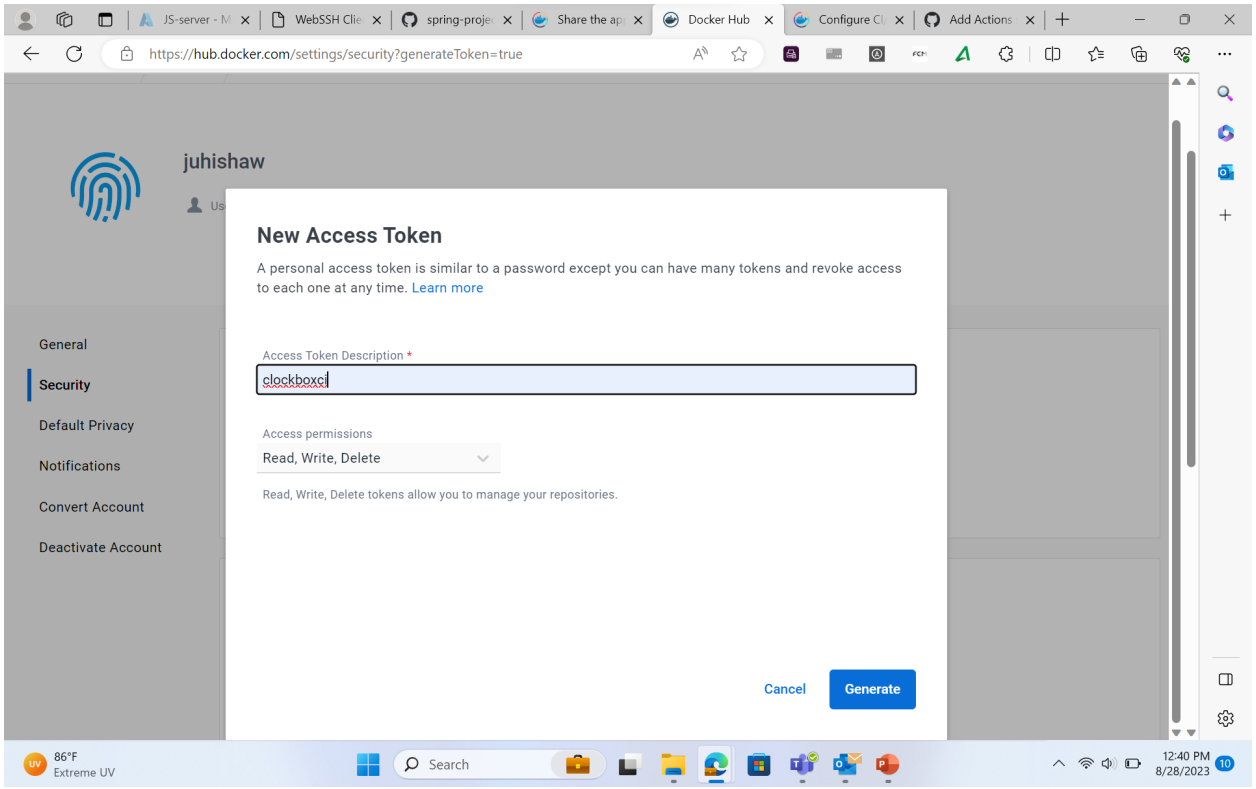
Login to GitHub.Create new repository with template

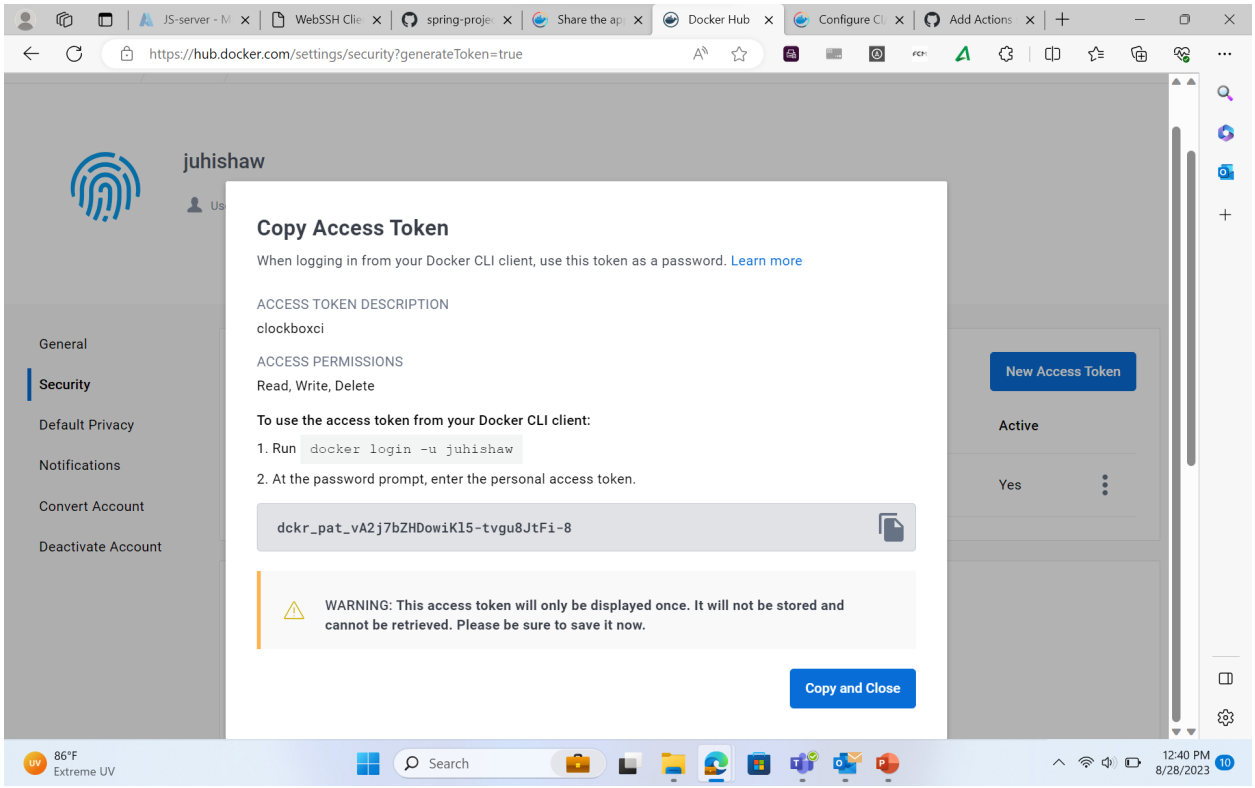
Create new secret on github using the image ID of the file



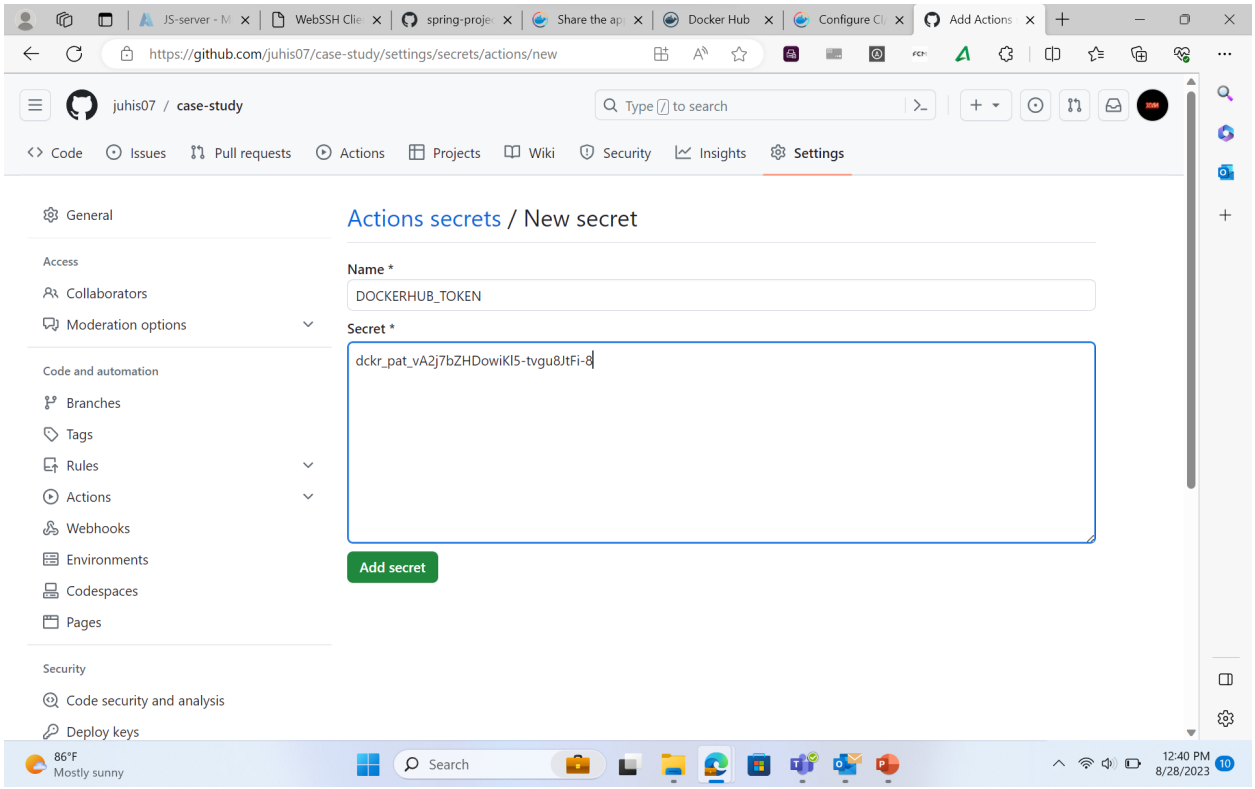


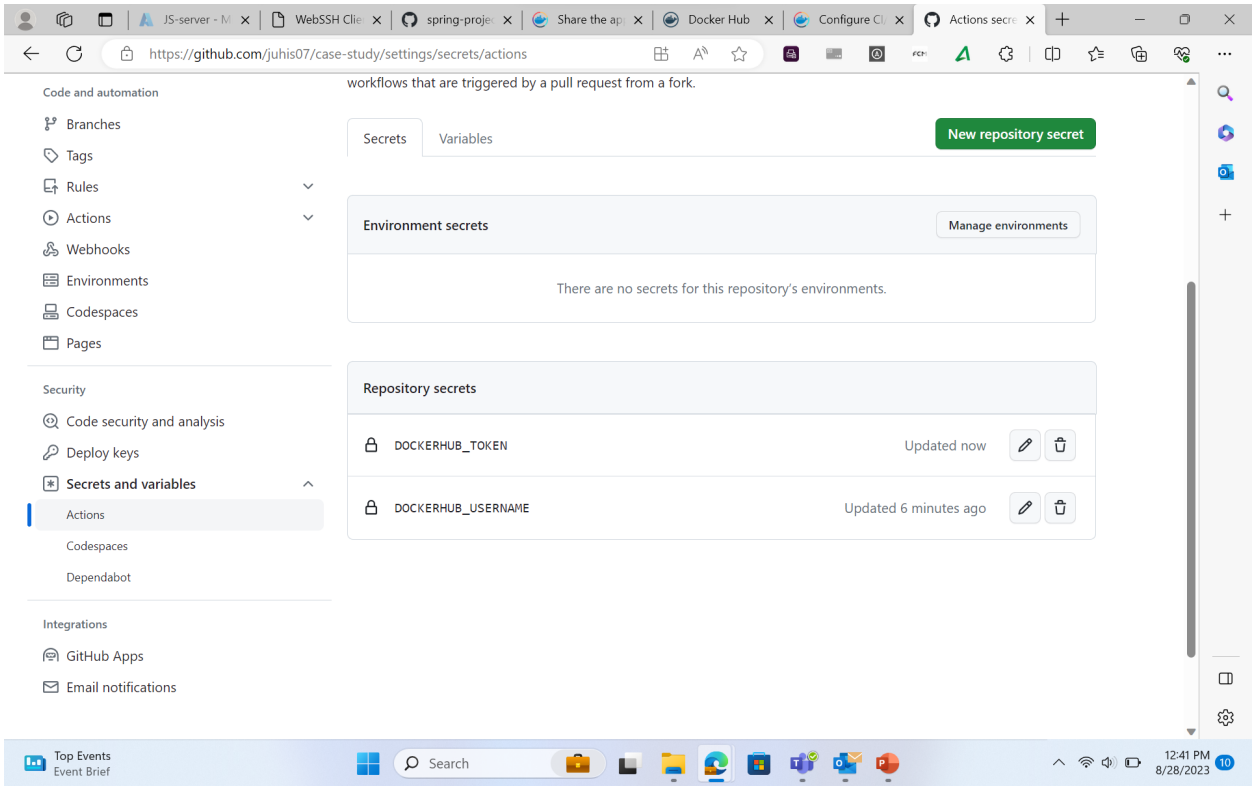
Go to account settings on docker hub and create new access token



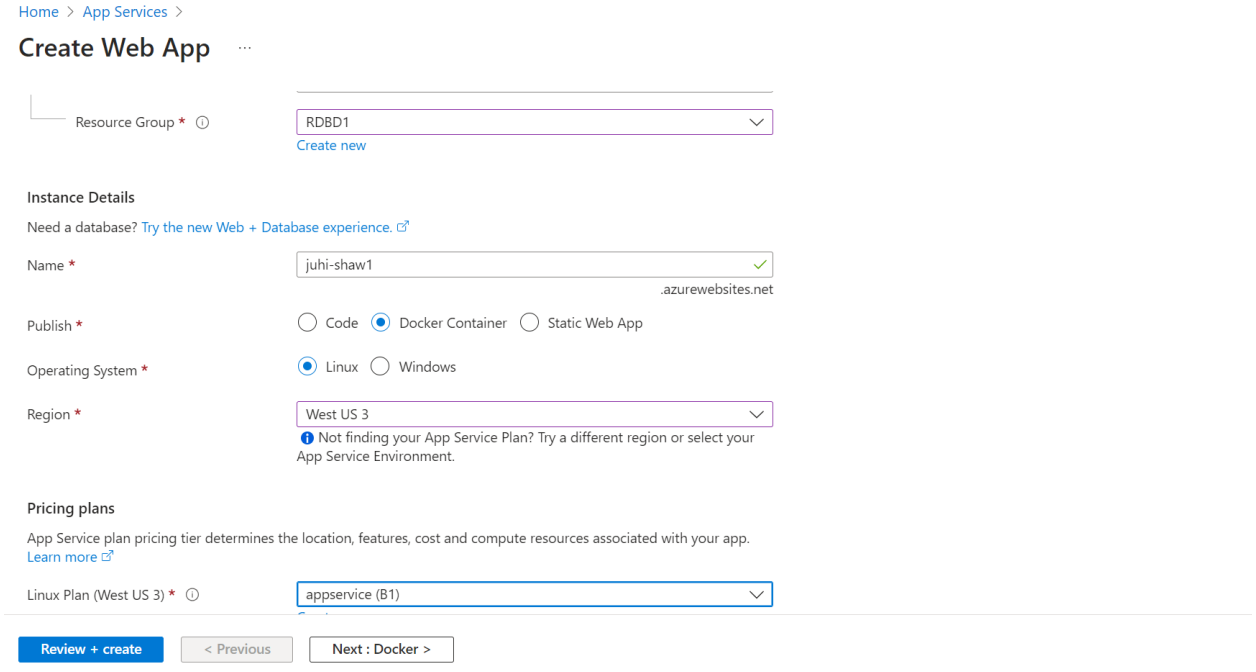


Create new secret with Personal Access Token (PAT) as the secret

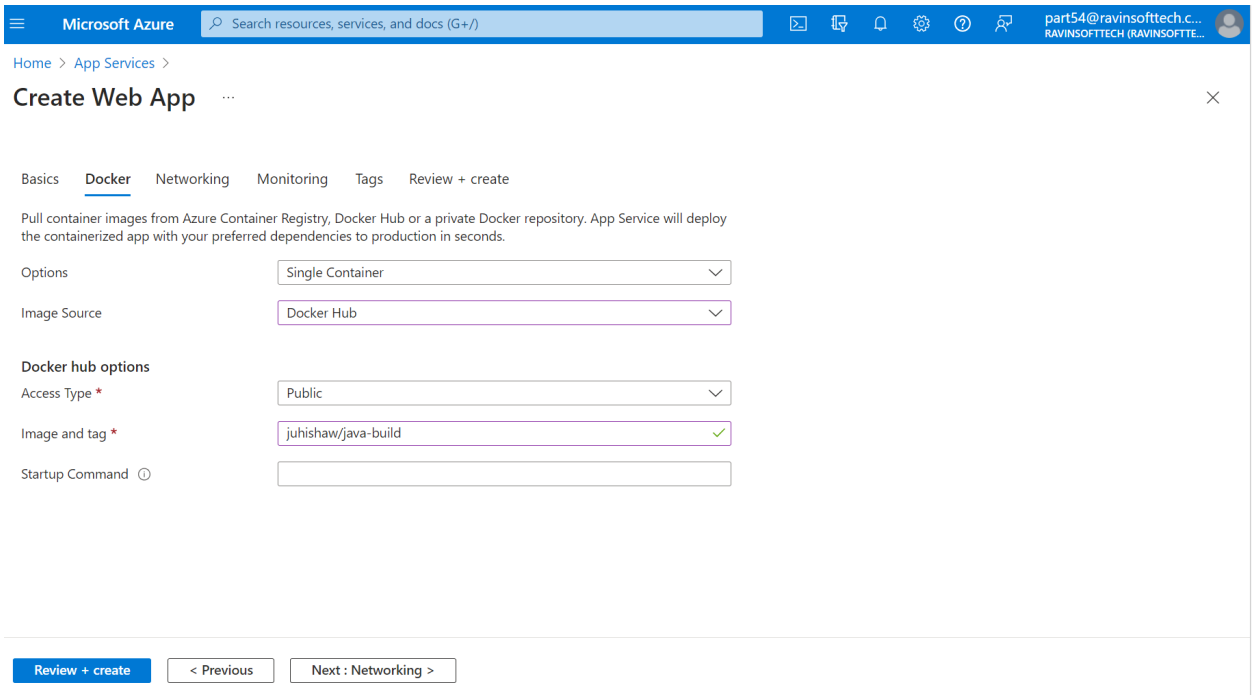




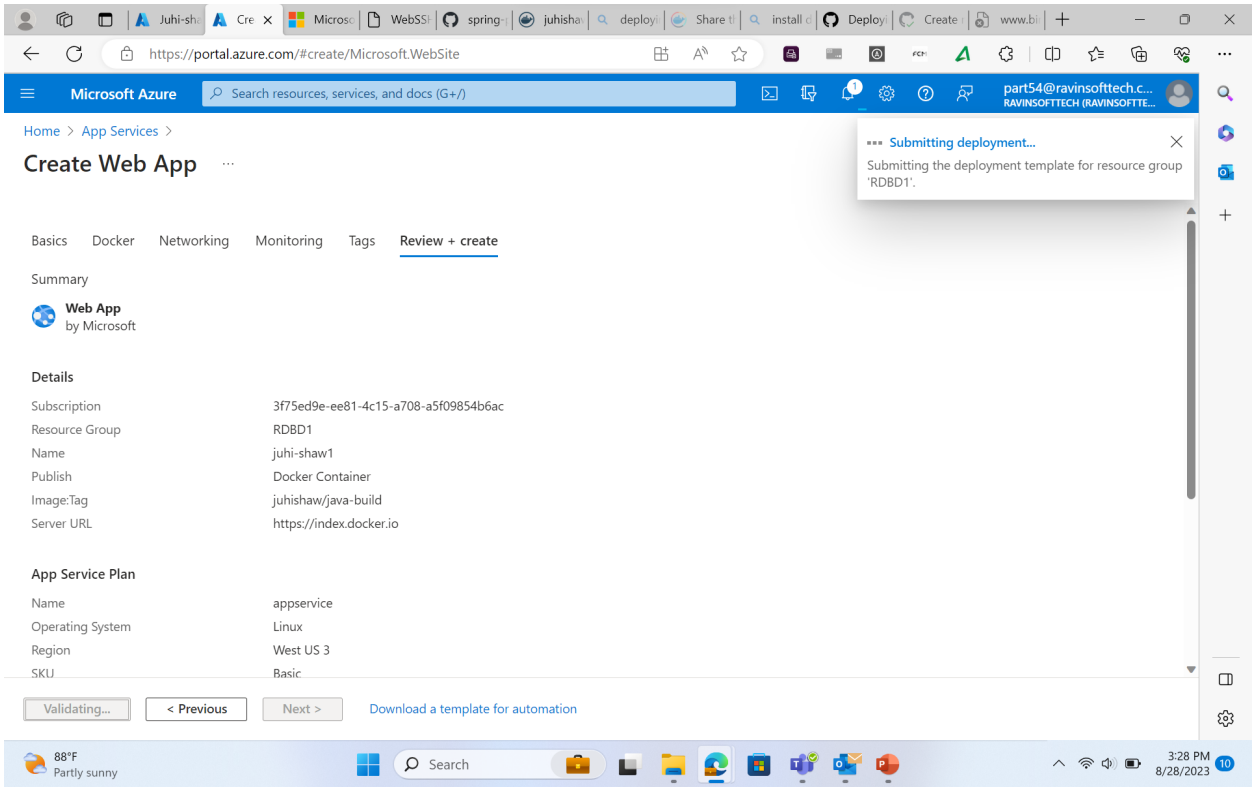
Step 6 : Create Web App on Azure

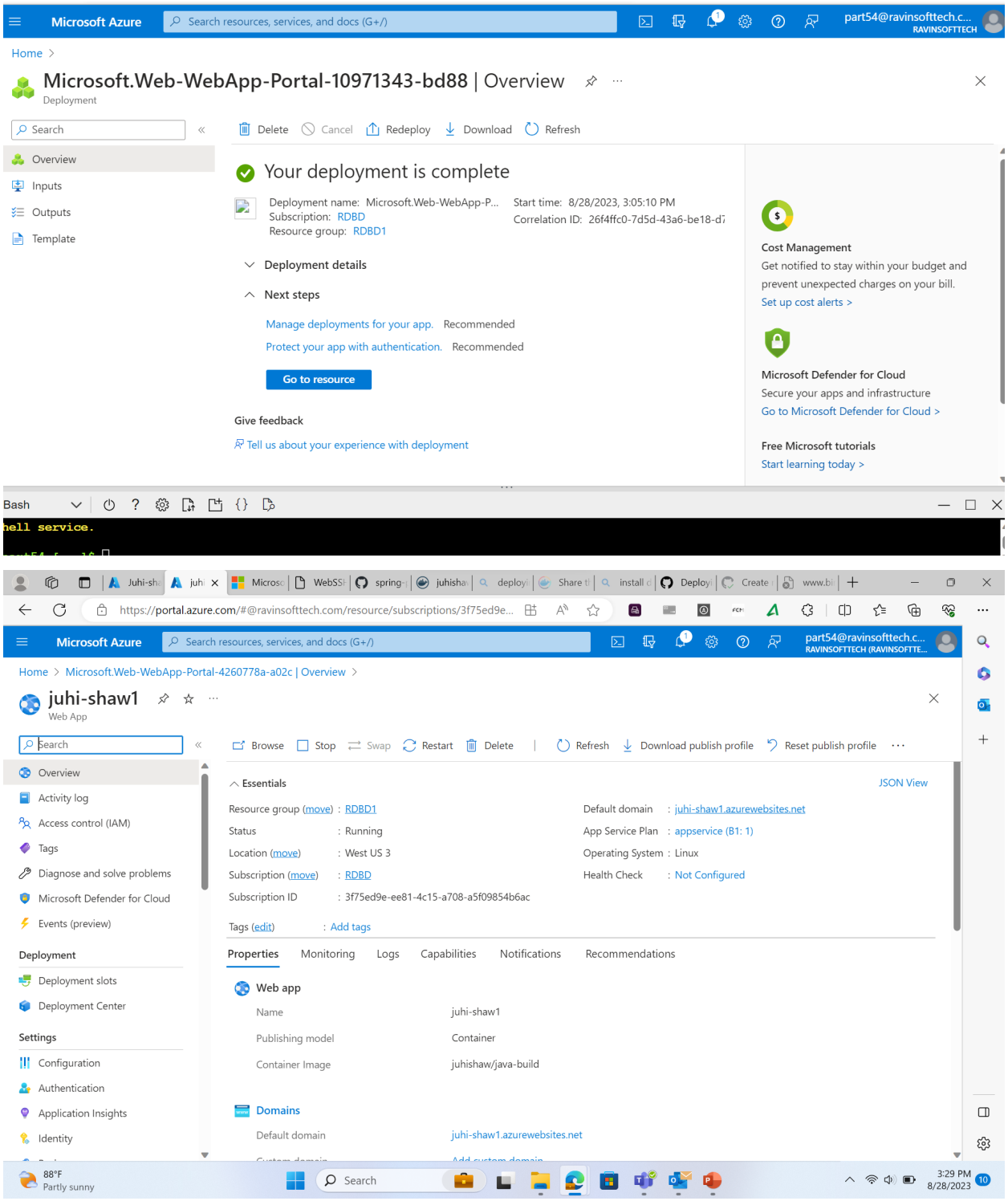


Select Image Source - Docker Hub, Image and Tag from docker repository.

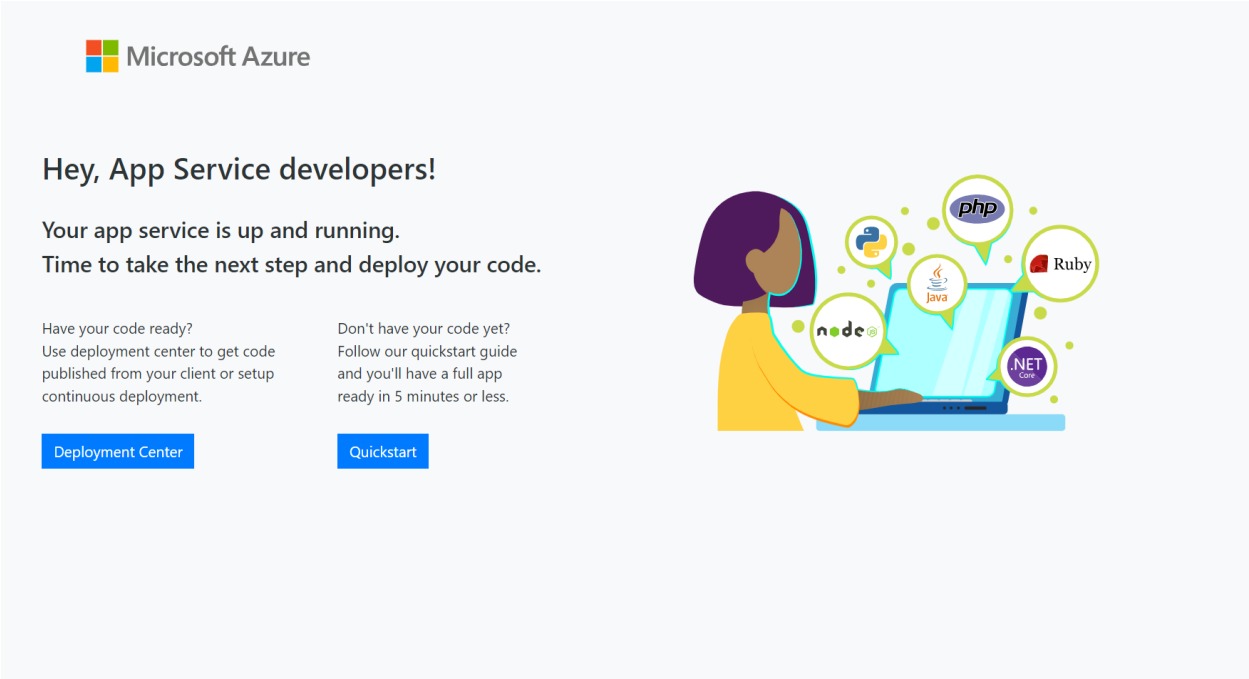


Review and create




Microsoft Azure
Search resources, services, and docs (G+/)
part54@ravinsofttech.c...
RAVINSOFTTECH
Home
Microsoft.Web-WebApp-Portal-10971343-bd88 | Overview
Deployment
Search
Overview
Inputs
Outputs
Template
Delete
Cancel
Redeploy
Download
Refresh
Your deployment is complete
Deployment name: Microsoft.Web-WebApp-P...
Subscription: RDBD
Resource group: RDBD1
Start time: 8/28/2023, 3:05:10 PM
Correlation ID: 26f4ffc0-7d5d-43a6-be18-d7
Deployment details
Next steps
Manage deployments for your app. Recommended
Protect your app with authentication. Recommended
Go to resource
Give feedback
Tell us about your experience with deployment
Cost Management
Get notified to stay within your budget and prevent unexpected charges on your bill.
Set up cost alerts >
Microsoft Defender for Cloud
Secure your apps and infrastructure
Go to Microsoft Defender for Cloud >
Free Microsoft tutorials
Start learning today >
Bash
hell service.
https://portal.azure.com/#@ravinsofttech.com/resource/subscriptions/3f75ed9e...
Microsoft Azure
Search resources, services, and docs (G+/)
part54@ravinsofttech.c...
RAVINSOFTTECH (RAVINSOFTTE...
Home
Microsoft.Web-WebApp-Portal-4260778a-a02c | Overview
juhi-shaw1
Web App
Search
Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems
Microsoft Defender for Cloud
Events (preview)
Deployment
Deployment slots
Deployment Center
Settings
Configuration
Authentication
Application Insights
Identity
Browse
Stop
Swap
Restart
Delete
Refresh
Download publish profile
Reset publish profile
Essentials
JSON View
Resource group (move) : RDBD1
Status : Running
Location (move) : West US 3
Subscription (move) : RDBD
Subscription ID : 3f75ed9e-ee81-4c15-a708-a5f09854b6ac
Default domain : juhi-shaw1.azurewebsites.net
App Service Plan : appservice (B1: 1)
Operating System : Linux
Health Check : Not Configured
Tags (edit) : Add tags
Properties
Monitoring
Logs
Capabilities
Notifications
Recommendations
Web app
Name juhi-shaw1
Publishing model Container
Container Image juhishaw/java-build
Domains
Default domain juhi-shaw1.azurewebsites.net
88°F
Partly sunny
Search
3:29 PM
8/28/2023

Open the default domain link of the web app.



Maven based build process : While installing Maven, we encountered that our machine has java11 and we require java 17.

Cls

clear

sudo apt update

sudo apt install git

sudo apt install maven

sudo apt update

sudo apt-get install ca-certificates curl gnupg

sudo install -m 0755 -d /etc/apt/keyrings

curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo gpg --dearmor -o /etc/apt/keyrings/docker.gpg

sudo chmod a+r /etc/apt/keyrings/docker.gpg

echo "deb [arch="$(dpkg --print-architecture)" signed-by=/etc/apt/keyrings/docker.gpg] https://download.docker.com/linux/ubuntu \

"$(. /etc/os-release && echo "$VERSION_CODENAME")" stable" | sudo tee /etc/apt/sources.list.d/docker.list > /dev/null

sudo apt-get update

sudo apt-get install docker-ce docker-ce-cli containerd.io docker-buildx-plugin docker-compose-plugin

sudo docker run hello-world

systemctl status docker

git clone https://github.com/hrb1989/shell_7_foundation_Java_Spring.git

cd shell_7_foundation_Java_Spring

mvn install -DskipTests

sudo apt install -y openjdk-17-jdk

mvn install -DskipTests

* docker build -t <name> -f /home/azureuser/shell_7_foundation_Java_Spring/Dockerfile

vi Dockerfile

docker build --tag praket-docker:latest .

sudo docker build --tag juhi-docker:latest .

sudo docker login

sudo docker images

sudo docker tag juhi-docker:latest juhi.sh25/juhi-docker

sudo docker push juhi.sh25/juhi-docker