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Deep or Anshu

Good Morning Everyone

Welcome to DFE CI-CD Intermediate
Training

Start Time - 09:45 AM

Waiting for audience

5 modules from QA

Azure DevOps - End to end knowledge on how DevOps works

Azure DevOps - One man army

- Project Management - Jira**
- GitHub - Version control**
- CI-CD**
- Docker- deployments -**

PaaS - App Service or Web App

Job - Collection of tasks - run in sequence

- clone the git repo, copying the data to a file, creating a directory

How do you want to pay -

Please complete the lab 00 and 01 -

Agile Planning and Portfolio Management with Azure Boards

Link in chat window

BREAK

Start Time - 03:20 PM

Azure DevOps:

1. Agile project management
2. Creating a project.
 - a. Creating a web-app/App Service
 - b. Creating a app using .net and visual studio - Windows VM with VS
 - One click deployment
3. Save the project to GitHub
 - a. Upload project to GitHub using VS
4. Enable CD
5. Create pipeline for CI

EOD - 11Oct - Completed lab0,1:

Creating a web-app/App Service

QA - Environments and Containers

EOD - 12 Oct - Complete our web application(basic) - Deploy to Github

QA - Infrastructure Consistency and Pipeline

EOD - 13 Oct - Enable CD in our application

QA - Pipeline Snippet Generator
EOD - 14 Oct - Enable CI with pipelines
QA - Credentials i.e. Complete CI-CD
Intermediate

Pipeline - Jenkinsfile:

- What we want to run ,
execute or delete
- Scripts - configurations or
commands

```
Pipeline:{  
  agent : any,  
  Stages:{  
    Stage:{  
      Step:{  
        sh ""  
      }  
    }  
  }  
}
```

Please complete tutorial for Jenkins
Certificate

Available on QA Community

Agenda: CD with GitHub and Azure

Continuous Deployment :

We will deploy our code to Live
environment

daily/ twice or thrice a day/weekly/
monthly

Java Application or 10 VM with load balancer:

10 times more time to deploy our changes

CD - Deploy our code to live env -
Integrate GitHub and Azure App Service

Automating the deployment - CD

Please complete Continuous
Deployment

Hands on practice -

1. Integrate GitHub and Azure App Service
2. Verify CD by making a change on GitHub

The same workflow - CD

- Testing my deployment
- CI - My automated test cases are verified

Continuous Integration - hand in hand

Only for those who delete App Service -
Create a new VM and Give config for CD

Already have the app service:

Left hand side menu: Deployment Centre

Process of creating a pipeline - CI

- DevOps project in pipeline - UI - Github repo, .net,

It will create a .yaml(script) -

- Classic editor - Simplified UI for more options

Button to activate classic editor

Process of creating a pipeline - CI

Azure DevOps Demo Generator - a sample pipeline is also created

Azure DevOps Organization - Project from DevOps Demo Generator

1. De-activating CI in the sample pipeline -
 1. Go to current pipeline
 2. Select edit on the right top
 3. Select Triggers tab and disable the checkbox for **Enable continuous integration**
 4. Click the arrow next to save and queue and select **save**
 5. **Click save again**
2. Create a new pipeline
 1. Connect - Source control - **GitHub** - **Repo** - Branch
 2. Configure - ASP.Net core project
 3. Review changes with .yaml file - script - auto-generated

Any module on QA - Community - Extra support - Python/linux/ Flask/ CI-CD

Today:

Demo - Go a little slow with options

Tomorrow:

Allocation time for you to complete

QA - Credentials - Last

CI - creating a pipeline - Allocating you time to execute CI

EXTRA:

1. Python and flask App creation with VM - Linux

Application - E-Commerce

We are working on Sign In page:

1. Leave username blank - Verified
2. Leave password blank - Verified
3. Username is correct not password
-
4. Username is wrong but password is correct -

5. Special character in username?
6. Special character in password?

Product Page:

1. What if I add to cart? Does inventory change>
2. Do the images load
3. Does the delivery speed check works
- 4.
- 5.
- 6.

I make a change on Github

- Creates a workflow:
 1. Build
 2. Test
 - 3 Deploy to production/app service

IaaS vs PaaS vs SaaS

IaaS - Virtual Machine

PaaS - App Service - We are creating

SaaS - Microsoft 365 suite

App Service - Runtime/Installation - Lift

and shift

- No installation required
- No operating system to be selected
- No need to worry for runtime

environment

Dropdown - What we want to deploy
PHP, Python, C#, Ruby,

Python application - Compile app and
run - python3 app.py
Python3 —cov - Unit Test

Python - Create app
Unit Testing -
Jenkins - Ubuntu VM

.net - c#

Java application - maven is used for
compiling and then running my server -
Runtime

Python - Flask
Python3 app.py

Nginx - server runs our code after
compiling -
Tomcat -

GitHub repo -
Local project in python

Templates
 index.html
App.py
Routes.py
test.py

IP:80
Jenkins -IP:8080
Ip:5000
Flask - local -

For all queries -

- We will cover in breaks or at the end of session
- 30 mins for any questions or queries

Covering 1 module with Jenkins -
Complete till where we are done

Application - E-Commerce, Social
Media or IoT Application

1. Requirement Gathering - Note down

what we want to create

1. Functionality Documents
2. How our application will look - Sign In page, Dashboard,
2. Database Schema - Tables and Testing record
3. Development -
 1. Front-end(HTML/CSS/Javascript)
 2. Backend - Logic - where I connect with Database: Python, Java, .NET
4. Testing phase:
 1. Unit Testing - Pytest - I consider all possibilities where the code might not work
 1. As a developer I test the application myself
 2. Testing Team - Verifying Test cases- The code reaches the live env after verification
5. Deployment - Make app available to end user

50000 concurrent users - total user

accessing the website at the same time

LOAD BALANCER

VM	VM	VM	VM	VM
VM	VM	VM	VM	VM

Parallel processing

Deployment:

1. Create 10 VM with same config
5 mins per Vm - 50 mins
CLI - Declarative - Scripts which
will have the code for 10VM
10-15 mins
Removes the possibility of
human error

IaaS vs PaaS vs SaaS

IaaS - Virtual Machine

PaaS - App Service - We are creating -
Docker Container

SaaS - Microsoft 365 suite

App Service - Runtime/Installation - Lift and shift

- No installation required
- No operating system to be selected
- No need to worry for runtime environment

Docker/Container - Runtime/Installation

- No installation required
- No operating system to be selected
- No need to worry for runtime environment
- All my code with running app is deployed

LOAD

BALANCER

CON	CON	CON
CON	CON	CON

Docker Swarm

Kubernetes - Azure Kubernetes Service
- GKE

Please complete the Deployment on
GitHub with Windows VM

Available on QA Community

DevOps, Machine Learning, Power
Platform, Data engineering - PIPELINES
We are automating all the tasks

Creating of a VM with Visual Studio -
Creating a basic app with .NET -
- One click deployment
- Deploy on GitHub

CI-CD works in Azure - DevOps Pipelines

Development - I create/develop my application - Local machine
- we deploy a vm/app service - To verify that it not only works on my system but also works on the main server or a copy of it

Testing - One level of verification from my testing team - Focus on changes

made

UAT/Staging - User Acceptance Testing

- Client/Decision makers in org

To test and verify the changes before they are deployed

Live/Production - Changes that are verified multiple time

VM - clone the repo from GitHub - git clone repo

- Necessary installation - pip3 install requirement.txt

- Running/compiling this code - python3 app.py

Testing. - python3 test.py —nov

Deployment

docker swarm run 80:80

Example : Sign In page

Username

Password

Address/PinCode

What if :

- username/password is blank

- username/password has special characters

- username/password doesn't exist

- username matches but not password

Virtual Machine - IaaS

- Install necessary softwares/packages - Flask/nginx/tomcat/python
- I copy my code and test if it works
- Unit Testing or verifying the changes

Container - PaaS

- Installation already done
- Code already available
- App runs automatically

Virtual Machine - Installations - Working

app:

I take an image of this VM - Container image

I will copy the image into a new container

Azure DevOps - End To End

- Azure DevOps - Windows - Automation With App Service

Team of developers and testers working on the Testing

Automate this process

CONTINUOUS INTEGRATION

Deployment - E-Commerce - Millions of users accessing the app

I need to create 10 VMs - Script

Deployment - on all 10 VMs

Automate the process

CONTINUOUS DEPLOYMENT

DevOps - Automate the tedious processes

Load

Balancing

VM VM VM Vm VM VM
VM VM VM VM

Create a VM and Copy code - 5 minutes
to deploy a VM

I create my App on my Local Machine -

We test everything works in UAT
environment - Client or verification

Deployed to production or live env

In DevOps : Automation - 2 ways;

Azure DevOps - Azure DevOps

Organization - Project

Jenkins - Linux Ubuntu

Agile Management - Jira - Create and
manage tasks for the team

Version Control - Create history/version
of all code and merge changes

Team of 10 Developers working on same file -

3 dev -

Dev1 - App.py - Submits the code

Dev2 - copy of app.py - Submit - Code for dev1

Dev3 - copy of app.py- Submit - Code for dev1 and 2 are gone

Version Control : GitHub, BitBucket, SVN -

Focus - Version management and Merge control

Version Management:

E-Commerce Org - Product page - New functionality - user checks a few product

on the second product onwards
- Create a bundle of checked out products to add

This change goes to the Client/

Organization Decision Makers - Took 1 week

This process doesn't look good -
Functionality all good

We have to make changes: 3 days

Changed the UI

Updated the functionality - Added/
removed a few things

Phase 2 goes to the Client:

Consider - Client liked the previous
page better

Will we take another 3-5 days to
complete:

Using GitHub/Version Control: every
time a changes is made:

We keep a copy of whole project -
Rollback to previous version

Version Control - Commenting - What
changes have been made and where

Troubleshoot - Check the commit and

understand -

- Check in which
commit/change the issue arises

Jira - Task Management

GitHub - Code management

Jenkins - CI-CD

Docker for Complex/Critical
Deployments

Please check out the Agile Manifesto

Link in chat window

Please make sure To use ONLY
PERSONAL MICROSOFT ACCOUNT

If you not have one, Kindly create one at
Outlook, link in chat window

DONOT USE STUDENT OR
ORGANISATION ACCOUNTS

Active for 1 month or 100\$

Whichever expires 1st , subscription
disabled

Organisation: Multi Domain -

Amazon.com and AWS

Consider - Immigration website and a
E-Commerce

Immigration website and Web

Application - 20+

Ecommerce - website and Mobile

Application - 20+

1 VM but 6-7 resources - NSG, IP
address, Virtual Network, AI Service,
Database

Every app will have 10+ resources

Delete One website

Delete correct 10+ resource out of
40+

In case:

I miss one out- I will pay till I realise
I delete a wrong resource - App will
stop working

Structure from the start - Any resource I want to create/manage/delete Together, I will create in same resource group

Region:

1. Latency for app - Nearest to my users- Maximum speed
2. Pricing for the compute -
3. Availability of compute

1. Create a Linux Ubuntu Virtual Machine
2. Logging into VM - SSH
 1. CLI - Command Line Interface - Terminal in MAC, Putty in Windows, Azure Cloud Shell
3. Installation of Jenkins
4. Verify the installation - Create user

SSL - Secure Socket Layer - https

Development -http - not secure

MANDATORY: Kindly complete the feedback on Bud

15 question survey

