## What is Pipeline

* Pipeline in DevOps is a set of process(automated or can be triggered manually)which is used to make available your project code to users.

## What is Azure Pipeline

* Azure Pipeline is a cloud service that we use to automatically builds and tests project code and make it available to other users.
* Azure Pipelines supports continuous integration (CI) and continuous delivery (CD) to continuously test, build, and deploy your code.
* [Azure Pipelines](https://azure.microsoft.com/services/devops/pipelines/) offers cloud-hosted pipelines for Linux, macOS, and Windows
* It works with just about any language or project type.
* Azure Pipelines combines continuous integration (CI) and continuous delivery (CD) to test and build your code and ship it to any target.

## Process in Pipeline

* Pipeline in Azure DevOps is designed as per project need.
* We can increase or decrease numbers of steps while designing the pipeline.

Test

Repo

Deploy

Build

## Languages

You can use many languages with Azure Pipelines, including Python, Java, JavaScript, PHP, Ruby, C#, C++, and Go.

## Application types

You can use Azure Pipelines with most application types, such as Java, JavaScript, Node.js, Python, .NET, C++, Go, PHP, and XCode.

## Version control systems

* your source code must be in a version control system.
* Azure Pipelines integrates with
  + GitHub
  + GitHub Enterprise
  + Azure Repos Git & TFVC
  + Bitbucket Cloud
  + Subversion

## Deployment targets

* Azure Pipelines to deploy your code to multiple targets.
* Targets include
  + Virtual machines
  + Container registries
  + Azure Service
  + Any Cloud targe
  + Any on-premises

## Package formats

To produce packages that can be consumed by others, you can publish NuGet, npm, or Maven packages to the built-in package management repository in Azure Pipelines. You also can use any other package management repository of your choice.

## Pricing

* If you use public projects, Azure Pipelines is free.
* If you use private projects, you can run up to 1,800 minutes (30 hours) of pipeline jobs for free every month.

## What is CI & CD in pipelines

## What is Continuous Integration (CI)

* Continuous Integration (CI) is the practice used by development teams of automating merging and testing code.
* Implementing CI helps to catch bugs early in the development cycle, which makes them less expensive to fix.
* Automated tests execute as part of the CI process to ensure quality.

## What is Continuous Delivery (CD)

* Continuous Delivery (CD) is a process by which code is built, tested, and deployed to one or more test and production environments.
* Continuous delivery automatically deploys and tests code in multiple stages to help drive quality.
* Deploying and testing in multiple environments increases quality.

| **Continuous integration (CI)** | **Continuous delivery (CD)** |
| --- | --- |
| - Increase code coverage - Build faster by splitting test and build runs - Automatically ensure you don't ship broken code - Run tests continually | - Automatically deploy code to production - Ensure deployment targets have latest code - Use tested code from CI process |

When CI & CD are triggered

* Manually: Anytime you can run the CI,CD pipeline to build and test your code.
* Automatically:
  + On each commit(every time when we push the code to repo)
  + On a fix interval
  + At a particular time

## Why should I use Azure Pipelines?

Implementing CI and CD pipelines helps to ensure consistent and quality code that's readily available to users. And, Azure Pipelines provides a quick, easy, and safe way to automate building your projects and making them available to users.

Azure Pipelines supports the following scenarios:

* Works with any language or platform
* Deploys to different types of targets at the same time
* Integrates with Azure deployments
* Builds on Windows, Linux, or Mac machines
* Integrates with GitHub
* Works with open-source projects.

