CTSE - Lab 01 - 2023

Sunday, April 23, 2023

Introduction to Cloud Computing via Azure Portal

Objective:

The objective of this lab assignment is to introduce Microsoft Azure Cloud Computing and the various services provided by the platform.

Instructions:

1. Create an Azure account:

a. Sign up for an Azure account by visiting https://azure.microsoft.com/en-us/free/

b. Follow the instructions to create a free account. Once your free account is created, navigate to https://portal.azure.com and search Subscriptions. There will be a subscription available for you with your free account.

This will be the subscription you will be using for every step forward.

c. Select "Create a resource" and choose "Resource Group". And create a resource group by giving an appropriate name.

Note: Every Resource you create from step 2, should be created inside the resource group you've created above.

2. Create a virtual machine:

a. Navigate to the Azure portal at https://portal.azure.com

b. Select "Create a resource" and choose "Virtual Machine".

c. Choose the appropriate OS and size of the virtual machine.

d. Configure the virtual machine settings, including username, password, and network settings.

e. Click "Create" to deploy the virtual machine.

3. Create a storage account:

a. Navigate to the Azure portal at https://portal.azure.com

b. Select "Create a resource" and choose "Storage account".

c. Choose the appropriate settings, including account type, replication type, and storage location.

d. Click "Create" to deploy the storage account.

4. Create a web app:

a. Navigate to the Azure portal at https://portal.azure.com

b. Select "Create a resource" and choose "Web App".

c. Choose the appropriate settings, including app name, subscription, resource group, and OS.

d. Click "Create" to deploy the web app.

5. Monitor and analyze usage:

a. Navigate to the Azure portal at https://portal.azure.com

b. Select "Monitor" to view usage metrics for your virtual machine, storage account, and web app.

c. Observe the data to optimize performance and usage.

6. Clean up resources:

a. Navigate to the Azure portal at https://portal.azure.com

b. Delete all resources created in this lab assignment to avoid unnecessary charges.

c. Delete the resource group you've created in 1. c

Azure Fundamentals Practical Sheet with Sample App

- **Requirements**

Azure account (can be a free trial)

Basic knowledge of a programming language

Sample App Description

We will be building a simple web application using Azure App Service, Azure Blob Storage, Azure Functions, and Azure Cosmos DB. The app will allow users to upload and view photos, as well as rate them using a simple five-star rating system.

- **Setting up Azure Environment**

Step 1:

You can create your free account.
https://azure.microsoft.com/en-us/free/students/

Step 2:

This step introduces the Azure portal, identifies portal page elements, and helps you get familiar with the Azure portal management experience.

https://docs.microsoft.com/en-us/azure/azure-portal/azure-portal-overview

- **Refer the documentation and set up the services mentioned in part 1, part 2, part 3, part 4.**

Part 1: Azure App Service

Create an Azure App Service by following the Azure documentation.

https://learn.microsoft.com/en-us/azure/app-service/

Deploy the sample app to your App Service by following the Azure documentation.

Browse to your deployed application by going to the URL provided in the App Service overview page.

Update the sample app to show a home page with a link to the photo upload page.

Part 2: Azure Blob Storage

Create an Azure Blob Storage by following the Azure documentation.

https://docs.microsoft.com/en-us/azure/storage/blobs/storage-quickstart-blobs-portal

Update the sample app to allow users to upload photos to your Blob Storage by following the Azure documentation.

Display the uploaded photos on the photo gallery page.

Part 3: Azure Functions

Create an Azure Function by following the Azure documentation.

https://learn.microsoft.com/en-us/azure/azure-functions/

Create a new HTTP-triggered function that calculates the average rating for a photo based on user ratings stored in Azure Cosmos DB.

Update the sample app to allow users to rate photos using a simple five-star rating system by calling the Azure Functions.

Display the average rating for each photo on the photo gallery page.

Part 4: Azure Cosmos DB

Create an Azure Cosmos DB account by following the Azure documentation.

https://learn.microsoft.com/en-us/azure/cosmos-db/introduction

Create a new Cosmos DB container to store photo metadata and ratings by following the Azure documentation.

Update the sample app to insert new photo metadata and ratings into the Cosmos DB container when users upload photos or rate them.

Display the photo title, description, and other metadata on the photo gallery page.

CTSE - Lab 03 - 2023

Saturday, May 13, 2023
5:52 AM

Containerize a .NET app: Using Command lines and Visual studio IDE along with Azure

Objective:
In this lab assignment, you will be installing Docker Desktop, creating a Docker container, and containerizing a .NET Core API 5.0 application.

Prerequisites
Docker Desktop
Visual Studio 2022 with the Web Development, Azure Tools workload, and/or .NET Core cross-platform development workload installed.
.NET Core Development Tools for development with .NET Core
To publish to Azure Container Registry, an Azure subscription. Sign up for a free trial.

Step 1: Install Docker Desktop

1. Download and install Docker Desktop for your operating system.
2. Follow the installation instructions and ensure that Docker is running properly.

- Please install Docker Desktop on your machine.

  https://www.docker.com/products/docker-desktop/

- Go to docker hub and create yourself an account.
  https://hub.docker.com/

- Authenticate with Docker CLI with the following command.

```
docker login
```

Step 2: Create a Docker Container and Containerize a .NET app

Given below are two tutorials for you to follow. For the first one, you can use the Azure portal you've created in your first lab assignment.

Publishing to Azure

Please follow up the tutorial below

Docker in Visual Studio: https://learn.microsoft.com/en-us/visualstudio/containers/container-tools?view=vs-2022

Example on local setup

Please follow up the tutorial below.

https://learn.microsoft.com/en-us/dotnet/core/docker/build-container?view=vs-2022&tabs=windows#create-net-app