

# Midterm

## Part I

### Step 1:

#### - Create a Storage Account on Microsoft Azure

The screenshot displays the Azure portal interface for a newly created Storage Account. The left-hand navigation pane lists various services, with 'Storage browser' and 'Data storage' expanded. The main content area is divided into several sections:

- Essentials:** Provides key information about the account, including the Resource group (hello-world), Location (East US), Subscription (Azure Pass - Sponsorship), Subscription ID, Disk state (Available), and Tags.
- Properties:** A tab showing detailed settings for the storage account, categorized by service type:
  - Blob service:** Includes settings for Hierarchical namespace (Disabled), Default access tier (Hot), Blob public access (Enabled), Blob soft delete (Enabled (7 days)), Container soft delete (Enabled (7 days)), Versioning (Disabled), Change feed (Disabled), NFS v3 (Disabled), and Allow cross-tenant replication (Enabled).
  - File service:** Includes settings for Large file share (Disabled), Active Directory (Not configured), Default share-level permissions (Disabled), Soft delete (Enabled (7 days)), and Share capacity (5 TiB).
  - Queue service:** Includes CMK support (Disabled).
- Security:** A section detailing security configurations:
  - Require secure transfer for REST API operations:** Enabled
  - Storage account key access:** Enabled
  - Minimum TLS version:** Version 1.2
  - Infrastructure encryption:** Disabled
- Networking:** A section detailing network configurations:
  - Allow access from:** All networks
  - Number of private endpoint connections:** 0
  - Network routing:** Microsoft network routing
  - Access for trusted Microsoft services:** Yes
  - Endpoint type:** Standard

### Install Azure Storage extension in Microsoft Visual Studio Code

## We create a Static Website

The screenshot shows the Azure portal interface for a storage account named 'helloworld777'. The left sidebar contains a navigation menu with two main sections: 'Security + networking' and 'Data management'. Under 'Security + networking', there are links for Networking, Azure CDN, Access keys, Shared access signature, Encryption, and Microsoft Defender for Cloud. Under 'Data management', there are links for Redundancy, Data protection, Object replication, Blob inventory, Static website (which is highlighted), and Lifecycle management. The main content area is titled 'helloworld777 | Static website' and includes a 'Storage account' label. At the top of the main area, there are buttons for 'Save', 'Discard', and 'Give feedback'. Below these, a message states: 'Enabling static websites on the blob service allows you to host static content. Webpages may in sync with files at the primary endpoint. [Learn more](#)'. The 'Static website' section shows a toggle switch set to 'Enabled'. Below this, a message says: 'An Azure Storage container has been created to host your static website. [View](#)'. The 'Primary endpoint' is displayed as 'https://helloworld777.z13.web.core.windows.net/'. The 'Index document name' is set to 'index.html' and the 'Error document path' is set to '404.html'.

helloworld777 | Static website ☆ ...  
Storage account

Search << Save Discard Give feedback

**Security + networking**

- Networking
- Azure CDN
- Access keys
- Shared access signature
- Encryption
- Microsoft Defender for Cloud

**Data management**

- Redundancy
- Data protection
- Object replication
- Blob inventory
- Static website**
- Lifecycle management

Enabling static websites on the blob service allows you to host static content. Webpages may in sync with files at the primary endpoint. [Learn more](#)

Static website

Disabled Enabled

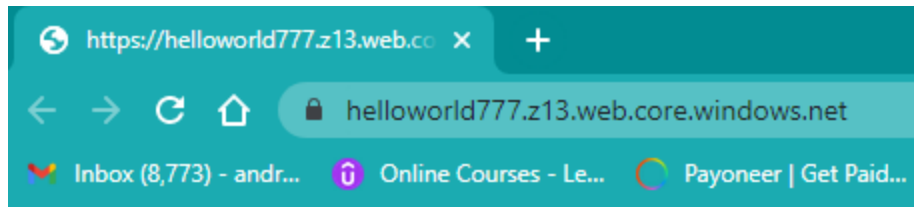
An Azure Storage container has been created to host your static website. [View](#)

Primary endpoint ⓘ  
https://helloworld777.z13.web.core.windows.net/

Index document name ⓘ  
index.html

Error document path ⓘ  
404.html

In the final step, we navigate to the static website domain:



# Hello World!

## Part II

We create a Virtual Machine with Ubuntu image installed

Home > CreateVm-canonical.0001-com-ubuntu-server-focal-2-20230331175524 | Overview >

**myVM** Virtual machine

Search < Connect > Start < Restart < Stop < Capture < Delete < Refresh < Open in mobile < Feedback < CLI / PS

**Overview**

- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems
- Settings
  - Networking
  - Connect
  - Disks
  - Size
  - Microsoft Defender for Cloud
  - Advisor recommendations
  - Extensions + applications
  - Continuous delivery
  - Availability + scaling
  - Configuration
  - Identity
  - Properties
  - Locks
- Operations
  - Bastion
  - Auto-shutdown
  - Backup
  - Disaster recovery
  - Updates
  - Inventory

**Essentials**

Resource group (move)	: myVM	Operating system	: Linux (ubuntu 20.04)
Status	: Running	Size	: Standard D51 v2 (1 vcpu, 3.5 GiB memory)
Location	: East US	Public IP address	: 20.163.165.32
Subscription (move)	: Azure Pass - Sponsorship	Virtual network/subnet	: myVM-vnet/default
Subscription ID	: 836f56df-cca0-4866-b552-adbe26a742da	DNS name	: Not configured
Tags (edit)	: Click here to add tags		

**Properties** Monitoring Capabilities (7) Recommendations Tutorials

**Virtual machine**

Computer name	myVM
Health state	-
Operating system	Linux (ubuntu 20.04)
Publisher	canonical
Offer	0001-com-ubuntu-server-focal
Plan	20_04-lts-gen2
VM generation	V2
VM architecture	x64
Agent status	Ready
Agent version	2.9.0.4
Host group	None
Host	-
Proximity placement group	-
Colocation status	N/A
Capacity reservation group	-

**Availability + scaling**

Availability zone	-
Availability set	-

**Networking**

Public IP address	20.163.165.32 ( Network interface myvm183 )
Public IP address (IPv6)	-
Private IP address	10.1.0.4
Private IP address (IPv6)	-
Virtual network/subnet	myVM-vnet/default
DNS name	Configure

**Size**

Size	Standard D51 v2
vCPUs	1
RAM	3.5 GiB

**Disk**

OS disk	myVM_disk1_b8b#472a81340918897b4c13e58ba6f
Encryption at host	Disabled
Azure disk encryption	Not enabled
Ephemeral OS disk	N/A
Data disks	0

**Auto-shutdown**



Establish a connection via SSH to the Virtual Machine:

```
PS C:\WINDOWS\system32> ssh -i C:\Users\hp\Desktop azureuser@20.163.248.0
Load key "C:\\Users\\hp\\Desktop": Operation not supported on socket
azureuser@20.163.248.0: Permission denied (publickey).
PS C:\WINDOWS\system32> ssh -i C:\Users\hp\.ssh\id_rsa azureuser@20.163.165.32
The authenticity of host '20.163.165.32 (20.163.165.32)' can't be established.
ED25519 key fingerprint is SHA256:SQovj7WR4aiKAaM3BdvoCHonBfXTYHPsftRSbhkSCo8.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '20.163.165.32' (ED25519) to the list of known hosts.
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1035-azure x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Fri Mar 31 16:04:56 UTC 2023

System load:  0.0               Processes:            119
Usage of /:   5.3% of 28.89GB    Users logged in:     0
Memory usage: 8%               IPv4 address for eth0: 10.1.0.4
Swap usage:   0%

 * Introducing Expanded Security Maintenance for Applications.
   Receive updates to over 25,000 software packages with your
   Ubuntu Pro subscription. Free for personal use.

   https://ubuntu.com/azure/pro

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 programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

azureuser@myVM:~$
```

## Install Apache web server:

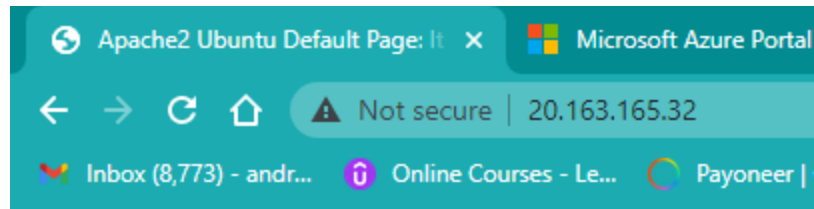
```
azureuser@myVM:~$ sudo apt install apache2-bin
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap libjansson4 liblua5.2-0
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser
The following NEW packages will be installed:
  apache2-bin libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap libjansson4 liblua5.2-0
0 upgraded, 7 newly installed, 0 to remove and 0 not upgraded.
Need to get 1512 kB of archives.
After this operation, 6213 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://azure.archive.ubuntu.com/ubuntu focal/main amd64 libapr1 amd64 1.6.5-1ubuntu1 [91.4 kB]
Get:2 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 libaprutil1 amd64 1.6.1-4ubuntu2.1 [84.9 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 libaprutil1-dbd-sqlite3 amd64 1.6.1-4ubuntu2.1 [10.6 kB]
Get:4 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 libaprutil1-ldap amd64 1.6.1-4ubuntu2.1 [8756 B]
Get:5 http://azure.archive.ubuntu.com/ubuntu focal/main amd64 libjansson4 amd64 2.12-1build1 [28.9 kB]
Get:6 http://azure.archive.ubuntu.com/ubuntu focal/main amd64 liblua5.2-0 amd64 5.2.4-1.1build3 [106 kB]
Get:7 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 apache2-bin amd64 2.4.41-4ubuntu3.14 [1182 kB]
Fetched 1512 kB in 1s (2877 kB/s)
Selecting previously unselected package libapr1:amd64.
(Reading database ... 58689 files and directories currently installed.)
Preparing to unpack .../0-libapr1_1.6.5-1ubuntu1_amd64.deb ...
Unpacking libapr1:amd64 (1.6.5-1ubuntu1) ...
Selecting previously unselected package libaprutil1:amd64.
Preparing to unpack .../1-libaprutil1_1.6.1-4ubuntu2.1_amd64.deb ...
Unpacking libaprutil1:amd64 (1.6.1-4ubuntu2.1) ...
Selecting previously unselected package libaprutil1-dbd-sqlite3:amd64.
Preparing to unpack .../2-libaprutil1-dbd-sqlite3_1.6.1-4ubuntu2.1_amd64.deb ...
Unpacking libaprutil1-dbd-sqlite3:amd64 (1.6.1-4ubuntu2.1) ...
Selecting previously unselected package libaprutil1-ldap:amd64.
Preparing to unpack .../3-libaprutil1-ldap_1.6.1-4ubuntu2.1_amd64.deb ...
Unpacking libaprutil1-ldap:amd64 (1.6.1-4ubuntu2.1) ...
Selecting previously unselected package libjansson4:amd64.
Preparing to unpack .../4-libjansson4_2.12-1build1_amd64.deb ...
Unpacking libjansson4:amd64 (2.12-1build1) ...
Selecting previously unselected package liblua5.2-0:amd64.
Preparing to unpack .../5-liblua5.2-0_5.2.4-1.1build3_amd64.deb ...
Unpacking liblua5.2-0:amd64 (5.2.4-1.1build3) ...
Selecting previously unselected package apache2-bin.
Preparing to unpack .../6-apache2-bin_2.4.41-4ubuntu3.14_amd64.deb ...
Unpacking apache2-bin (2.4.41-4ubuntu3.14) ...
Setting up libapr1:amd64 (1.6.5-1ubuntu1) ...
Setting up libjansson4:amd64 (2.12-1build1) ...
Setting up liblua5.2-0:amd64 (5.2.4-1.1build3) ...
Setting up libaprutil1:amd64 (1.6.1-4ubuntu2.1) ...
Setting up libaprutil1-ldap:amd64 (1.6.1-4ubuntu2.1) ...
Setting up libaprutil1-dbd-sqlite3:amd64 (1.6.1-4ubuntu2.1) ...
Setting up apache2-bin (2.4.41-4ubuntu3.14) ...
Processing triggers for libc-bin (2.31-0ubuntu9.9) ...
Processing triggers for man-db (2.9.1-1) ...
azureuser@myVM:~$
```

## Make sure Apache server is running:

```
Processing triggers for dm (0.10-0ubuntu1) ...
azureuser@myVM:~$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
   Active: active (running) since Fri 2023-03-31 16:23:43 UTC; 28s ago
     Docs: https://httpd.apache.org/docs/2.4/
   Main PID: 2729 (apache2)
    Tasks: 55 (limit: 4095)
   Memory: 9.0M
   CGroup: /system.slice/apache2.service
           └─2729 /usr/sbin/apache2 -k start
             └─2731 /usr/sbin/apache2 -k start
               └─2732 /usr/sbin/apache2 -k start

Mar 31 16:23:43 myVM systemd[1]: Starting The Apache HTTP Server...
Mar 31 16:23:43 myVM systemd[1]: Started The Apache HTTP Server.
azureuser@myVM:~$
```

- The green highlight tells us the server is up and running in our VM



# Hello World!

Providing testing from my cellphone:

18:47

    97% 



20.163.165.32



**Hello World!**