

# **Assignment 1- Azure Basic**

Course: MIS 6363.005

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## Task 1:

The screenshot shows the Microsoft Azure portal interface for creating a virtual machine. At the top, there's a blue header bar with the Microsoft Azure logo and a search bar. Below the header, the breadcrumb navigation shows 'Home > Virtual machines > Create a virtual machine'. The main content area has a green validation message box containing a checkmark icon and the text 'Validation passed'. Below this, there are three buttons: 'Help me create a low cost VM', 'Help me create a VM optimized for high availability', and 'Help me choose the right VM size for my workload'. A horizontal navigation bar below these buttons includes links for 'Basics', 'Disks', 'Networking', 'Management', 'Monitoring', 'Advanced', 'Tags', and 'Review + create', with 'Review + create' being underlined to indicate it's the current step. The 'Price' section shows '1 X Standard DS1 v2 by Microsoft' and a price of '0.0570 USD/hr'. It also mentions 'Subscription credits apply' and provides links for 'Terms of use' and 'Privacy policy'. The 'Pricing for other VM sizes' link is highlighted with a blue border. At the bottom, there's a 'TERMS' section with a detailed legal notice about agreeing to terms and conditions. Finally, there are two input fields: 'Name' containing 'Anamika Das' and 'Preferred e-mail address' containing 'axd240045@utdallas.edu'.

## Basics

Subscription	Azure for Students
Resource group	rg-axd240045
Virtual machine name	vm-axd240045
Region	East US 2
Availability options	No infrastructure redundancy required
Zone options	Self-selected zone
Security type	Standard
Image	Ubuntu Server 24.04 LTS - Gen2
VM architecture	x64
Size	Standard DS1 v2 (1 vcpu, 3.5 GiB memory)
Enable Hibernation	No
Authentication type	Password
Username	Anamika
Public inbound ports	SSH, HTTP, HTTPS
Azure Spot	No

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## Disks

OS disk size	Image default
OS disk type	Standard SSD LRS
Use managed disks	Yes
Delete OS disk with VM	Enabled
Ephemeral OS disk	No

## Networking

Virtual network	(new) vm-axd240045-vnet
Subnet	(new) default (10.0.0.0/24)
Public IP	(new) vm-axd240045-ip
Accelerated networking	On
Place this virtual machine behind an existing load balancing solution?	No
Delete public IP and NIC when VM is deleted	Enabled

## **Management**

Microsoft Defender for Cloud	Basic (free)
System assigned managed identity	Off
Login with Microsoft Entra ID	Off
Auto-shutdown	On
Backup	Disabled
Enable hotpatch	Off
Patch orchestration options	Image Default

## **Monitoring**

Alerts	Off
Boot diagnostics	On
Enable OS guest diagnostics	Off
Enable application health monitoring	Off

## **Tags**

Assignment	1 (Auto-shutdown schedule)
Assignment	1 (Availability set)
Assignment	1 (Disk)
Assignment	1 (Network interface)
Assignment	1 (Network security group)
Assignment	1 (Public IP address)
Assignment	1 (Recovery Services vault)
Assignment	1 (SQL Virtual Machine)
Assignment	1 (SSH key)
Assignment	1 (Storage account)
Assignment	1 (Virtual machine)
Assignment	1 (Virtual machine extension)
Assignment	1 (Virtual network)

## Task 2a:

The screenshot shows the Microsoft Azure Overview page for a deployment named "CreateVm-canonical.ubuntu-24\_04-lts-server-20241018125517". The status bar at the top indicates "Your deployment is complete". The main content area displays deployment details, including a table of resources created:

Resource	Type	Status
shutdown-computevm-v	Microsoft.DevTestLab/virtualmachines	Created
vm-axd240045	Microsoft.Compute/virtualmachines	OK
vm-axd240045-ip	Microsoft.Network/networkInterfaces	Created
vm-axd240045-nsg	Microsoft.Network/networkSecurityGroups	OK
vm-axd240045-vnet	Microsoft.Network/virtualNetworks	OK
vm-axd240045-vnet	Microsoft.Network/publicIPAddresses	OK

The Notifications sidebar on the right shows a successful deployment message: "Deployment 'CreateVm-canonical.ubuntu-24\_04-lts-server-20241018125517' to resource group 'rg-axd240045' was successful." A "Cost Management" section provides budget-related information.

## Task 2b:

The screenshot shows the Microsoft Azure Resource Group overview for "rg-axd240045". Key details include:

- Subscription (move) : Azure for Students
- Subscription ID : f78a76c5-d1c4-483e-9ad1-09b9b0871586
- Tags (edit) : Assignment : 1
- Deployments : 1 Succeeded
- Location : East US 2

The "Resources" tab is selected, displaying a list of 6 records:

Name	Type	Location
vm-axd240045	Virtual machine	East US 2
vm-axd240045-ip	Public IP address	East US 2
vm-axd240045-nsg	Network security group	East US 2
vm-axd240045-vnet	Virtual network	East US 2
vm-axd240045-vnet	Network Interface	East US 2

Navigation controls at the bottom include "Page 1 of 1" and "Give feedback".

## Task 3:

Home > Resource groups > rg-axd240045 >

**vm-axd240045** ✘ ☆ ...

Virtual machine

Connect ▾ Start ▾ Restart ▾ Stop ▾ Hibernate ▾ Capture ▾ Delete ▾ Refresh ▾ Open in mobile ▾ Feedback ▾ CLI / PS

Properties Monitoring Capabilities (7) Recommendations Tutorials

**Virtual machine**

Computer name	vm-axd240045
Operating system	Linux (ubuntu 24.04)
VM generation	V2
VM architecture	x64
Agent status	Ready
Agent version	2.12.0.2
Hibernation	Disabled
Host group	-
Host	-
Proximity placement group	-
Colocation status	N/A
Capacity reservation group	-
Disk controller type	SCSI

**Azure Spot**

Azure Spot	-
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**Networking**

Public IP address	172.172.8.77 ( Network interface vm-axd240045868 )
Public IP address (IPv6)	-
Private IP address	10.0.0.4
Private IP address (IPv6)	-
Virtual network/subnet	vm-axd240045-vnet/default
DNS name	Configure

**Size**

Size	Standard DS1 v2
vCPUs	1
RAM	3.5 GiB

**Source image details**

Source image publisher	canonical
Source image offer	ubuntu-24_04-lts
Source image plan	server

Home > Resource groups > rg-axd240045 >

**vm-axd240045** ✘ ☆ ...

Virtual machine

Connect ▾ Start ▾ Restart ▾ Stop ▾ Hibernate ▾ Capture ▾ Delete ▾ Refresh ▾ Open in mobile ▾ Feedback ▾ CLI / PS

**Azure Spot**

Azure Spot	-
Azure Spot eviction policy	-

**Availability + scaling**

Availability zone (edit)	-
Availability set	-
Scale Set	-

**Security**

Security type	Standard
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**Health monitoring**

Health monitoring	Not enabled
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**Extensions + applications**

Extensions	-
Applications	-

**Disk**

OS disk	vm-axd240045_OsDisk_1_0e8dc9da7e0f4d139c4ab56cc23c18e4
Encryption at host	Disabled
Azure disk encryption	Not enabled
Ephemeral OS disk	N/A
Data disks	0

**Auto-shutdown**

Auto-shutdown	Enabled
Scheduled shutdown	10:00 PM (Central Standard Time)

## Task 4:

```
Anamika@vm-axd240045:~ + ~
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-1015-azure x86_64)

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

System information as of Fri Oct 18 19:31:49 UTC 2024

 System load:  0.08          Processes:           123
 Usage of /:   5.1% of 28.02GB  Users logged in:     0
 Memory usage: 9%            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

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.

Anamika@vm-axd240045:~$ ping google.com
PING google.com (142.251.111.102) 56(84) bytes of data.
64 bytes from bk-in-f102.1e100.net (142.251.111.102): icmp_seq=1 ttl=53 time=6.49 ms
64 bytes from bk-in-f102.1e100.net (142.251.111.102): icmp_seq=2 ttl=53 time=6.65 ms
64 bytes from bk-in-f102.1e100.net (142.251.111.102): icmp_seq=3 ttl=53 time=6.64 ms
64 bytes from bk-in-f102.1e100.net (142.251.111.102): icmp_seq=4 ttl=53 time=6.60 ms
```

```
Anamika@vm-axd240045:~$ ping yahoo.com
PING yahoo.com (98.137.11.163) 56(84) bytes of data.
64 bytes from media-router-fp74.prod.media.vip.gq1.yahoo.com (98.137.11.163): icmp_seq=1 ttl=43 time=66.5 ms
64 bytes from media-router-fp74.prod.media.vip.gq1.yahoo.com (98.137.11.163): icmp_seq=2 ttl=43 time=66.7 ms
64 bytes from media-router-fp74.prod.media.vip.gq1.yahoo.com (98.137.11.163): icmp_seq=3 ttl=43 time=66.8 ms
64 bytes from media-router-fp74.prod.media.vip.gq1.yahoo.com (98.137.11.163): icmp_seq=4 ttl=43 time=66.5 ms
64 bytes from media-router-fp74.prod.media.vip.gq1.yahoo.com (98.137.11.163): icmp_seq=5 ttl=43 time=66.6 ms
```

**Task 5:** I created a new VM as I was unable to access the Apache2 server from the browser on the previous one. After some troubleshooting, I was finally able to access the web server from the browser using the new VM's public IP: 137.116.70.101.

The screenshot shows the Microsoft Azure portal interface. The main title bar says "Microsoft Azure". Below it, the URL bar says "Search resources, services, and docs (G+)" and the user info "axd240045@utdallas.edu THE UNIVERSITY OF TEXAS AT D...". The main content area shows a virtual machine named "vm-axd240045". The left sidebar has sections like Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Connect, Networking, Network settings, Load balancing, Application security groups, Network manager, Settings, Disks, Extensions + applications, and Operating system. The right panel shows the "Properties" tab for the virtual machine. It includes sections for Virtual machine (Computer name: vm-axd240045, Operating system: Linux (ubuntu 24.04), VM generation: V2, VM architecture: x64, Agent status: Ready, Agent version: 2.12.0.2, Hibernation: Disabled, Host group: -, Host: -, Proximity placement group: -, Colocation status: N/A, Capacity reservation group: -), Networking (Public IP address: 137.116.70.101, Public IP address (IPv6): -, Private IP address: 10.0.0.4, Private IP address (IPv6): -, Virtual network/subnet: vm-axd240045-vnet/default, DNS name: Configure), and Size (Size: Standard D2s v3, vCPUs: 2, RAM: 8 GiB). There is also a "Source image details" section.

```
Anamika@vm-axd240045:~$ sudo ufw allow 'Apache'
sudo ufw reload
Skipping adding existing rule
(v6)
Firewall not enabled (skipping reload)
Anamika@vm-axd240045:~$ sudo ufw enable
Command may disrupt existing ssh connections. Proceed with operation (y|n)? y
Firewall is active and enabled on system startup
Anamika@vm-axd240045:~$ sudo ufw allow 'Apache'
sudo ufw reload
Skipping adding existing rule
(v6)
Firewall reloaded
Anamika@vm-axd240045:~$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
  Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)
  Active: active (running) since Fri 2024-10-18 23:40:51 UTC; 3h 29min ago
    Docs: https://httpd.apache.org/docs/2.4/
   Main PID: 2687 (apache2)
      Tasks: 55 (limit: 9519)
     Memory: 7.4M (peak: 7.9M)
        CPU: 849ms
      CGroup: /system.slice/apache2.service
          ├─2687 /usr/sbin/apache2 -k start
          ├─2690 /usr/sbin/apache2 -k start
          └─2691 /usr/sbin/apache2 -k start

Oct 18 23:40:51 vm-axd240045 systemd[1]: Starting apache2.service - The Apache HTTP Server...
Oct 18 23:40:51 vm-axd240045 systemd[1]: Started apache2.service - The Apache HTTP Server.
Anamika@vm-axd240045:~$ curl http://localhost
```

← → ⌛ Not secure 137.116.70.101

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All Bookmarks

The screenshot shows a web browser window with the URL 137.116.70.101. The page title is "Apache2 Default Page". It features the Ubuntu logo and the text "It works!". Below this, there is a detailed configuration overview section:

This is the default welcome page used to test the correct operation of the Apache2 server after installation on Ubuntu systems. It is based on the equivalent page on Debian, from which the Ubuntu Apache packaging is derived. If you can read this page, it means that the Apache HTTP server installed at this site is working properly. You should **replace this file** (located at /var/www/html/index.html) before continuing to operate your HTTP server.

If you are a normal user of this web site and don't know what this page is about, this probably means that the site is currently unavailable due to maintenance. If the problem persists, please contact the site's administrator.

**Configuration Overview**

Ubuntu's Apache2 default configuration is different from the upstream default configuration, and split into several files optimized for interaction with Ubuntu tools. The configuration system is **fully documented in /usr/share/doc/apache2/README.Debian.gz**. Refer to this for the full documentation. Documentation for the web server itself can be found by accessing the **manual** if the apache2-doc package was installed on this server.

The configuration layout for an Apache2 web server installation on Ubuntu systems is as follows:

```
/etc/apache2/
|-- apache2.conf
|   '-- ports.conf
|-- mods-enabled
|   '-- *.Load
|       '-- *.conf
|-- conf-enabled
|   '-- *.conf
|-- sites-enabled
|   '-- *.conf
```

## Task 6:

The screenshot shows the Microsoft Azure portal interface for creating a new storage account. The top navigation bar includes the Microsoft Azure logo, a search bar, and a menu icon. Below the navigation, the breadcrumb path indicates the user is at Home > Storage accounts > Create a storage account. The main title is "Create a storage account". A horizontal navigation bar below the title contains links for Basics, Advanced, Networking, Data protection, Encryption, Tags, and Review + create, with "Review + create" being the active tab. A link to "View automation template" is also present. The "Basics" section displays the following configuration details:

Subscription	Azure for Students
Resource group	rg-axd240045
Location	East US 2
Storage account name	axd240045sa
Primary service	Azure Files
Performance	Standard
File share billing	Pay-as-you-go file shares
Replication	Locally-redundant storage (LRS)

The "Advanced" section displays the following settings:

Enable hierarchical namespace	Disabled
Enable SFTP	Disabled
Enable network file system v3	Disabled

## Create a storage account

...

### Networking

Network connectivity	Public endpoint (all networks)
Default routing tier	Microsoft network routing

### Data protection

Point-in-time restore	Disabled
Blob soft delete	Disabled
Container soft delete	Disabled
File share soft delete	Disabled
Versioning	Disabled
Blob change feed	Disabled
Version-level immutability support	Disabled

### Encryption

Encryption type	Microsoft-managed keys (MMK)
Enable support for customer-managed keys	Blobs and files only
Enable infrastructure encryption	Disabled

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The screenshot shows the Microsoft Azure Deployment Overview page for a deployment named "axd240045sa\_1729284632937". The deployment status is "Your deployment is complete". Key details include:

- Deployment name: axd240045sa\_1729284632937
- Start time: 10/18/2024, 3:52:53 PM
- Subscription: Azure for Students
- Resource group: rg-axd240045
- Correlation ID: 9169701c-00a4-4285-b6c4-64e6cd1f6a9d

**Next steps:**

- Go to resource
- Give feedback
- Tell us about your experience with deployment

**Notifications:**

- Deployment succeeded** (17 minutes ago): Deployment "axd240045sa\_1729284632937" to resource group "rg-axd240045" was successful.
- Deployment succeeded** (3 hours ago): Deployment "CreateVm-canonical.ubuntu-24.04-lts-server-20241018t25517" to resource group "rg-axd240045" was successful.

## Task 7:

The screenshot shows the Microsoft Azure File Share Overview page for "axdfileshare". The file share type is SMB File share. The left sidebar includes:

- Search
- Overview
- Diagnose and solve problems
- Access Control (IAM)
- Browse
- Operations

**Essentials:**

- Share URL: https://axd240045sa.file.core.windows.net/axdfile...
- Redundancy: Locally-redundant storage (LRS)
- Configuration modified: 10/18/2024, 4:23:31 PM

**Properties:**

Size	Feature status
Maximum storage (GiB): 102400	Soft delete: 7 days
Used storage capacity (GiB): 0	Large file shares: Enabled
Access tier	

**Notifications:**

- Successfully created storage file share** (a few seconds ago): Backup is not enabled for file share 'axdfileshare'. Click here to enable.
- Deployment succeeded** (30 minutes ago): Deployment "axd240045sa\_1729284632937" to resource group "rg-axd240045" was successful.
- Deployment succeeded** (3 hours ago): Deployment "CreateVm-canonical.ubuntu-24.04-lts-server-20241018t25517" to resource group "rg-axd240045" was successful.

**Connect**

Windows **Linux** macOS

Mount point: axdfileshare

To connect to this file share from a Linux computer, run this command:

```
sudo mkdir /mnt/axdfileshare
if [ ! -d "/etc/smbcredentials/axd240045sa.cred" ]; then
    sudo mkdir /etc/smbcredentials
fi
if [ ! -f "/etc/smbcredentials/axd240045sa.cred" ]; then
    sudo bash <-c 'echo "username=axd240045sa" >> /etc/smbcredentials/axd240045sa.cred'
    sudo bash <-c 'echo "password=lnGhNv2MvhT+k7j+2XuU7oZ+CmLl+rkq0Pe5BFeQ/u8lPrILPZtLevSsQuN1mis74679gySpHAfh+AStRVF0zQ=" >> /etc/smbcredentials/axd240045sa.cred'
fi
sudo chmod 600 /etc/smbcredentials/axd240045sa.cred

sudo bash -c 'echo "//axd240045sa.file.core.windows.net/axdfileshare /mnt/axdfileshare cifs nofail,credentials=/etc/smbcredentials/axd240045sa.cred,dir_mode=0777,file_mode=0777,serverino,nosharesock,actimeo=30" >> /etc/fstab'
sudo mount -t cifs //axd240045sa.file.core.windows.net/axdfileshare /mnt/axdfileshare -o credentials=/etc/smbcredentials/axd240045sa.cred,dir_mode=0777,file_mode=0777,serverino,nosharesock,actimeo=30
mount: (hint) your fstab has been modified, but systemd still uses
the old version; use 'systemctl daemon-reload' to reload.
```

```
Anamika@vm-axd240045:~$ cd /mnt/axd240045sa
-bash: cd: /mnt/axd240045sa: No such file or directory
Anamika@vm-axd240045:~$ sudo mkdir /mnt/axdfileshare
if [ ! -d "/etc/smbcredentials" ]; then
sudo mkdir /etc/smbcredentials
fi
if [ ! -f "/etc/smbcredentials/axd240045sa.cred" ]; then
    sudo bash -c 'echo "username=axd240045sa" >> /etc/smbcredentials/axd240045sa.cred'
    sudo bash -c 'echo "password=lnGhNv2MvhT+k7j+2XuU7oZ+CmLl+rkq0Pe5BFeQ/u8lPrILPZtLevSsQuN1mis74679gySpHAfh+AStRVF0zQ=" >> /etc/smbcredentials/axd240045sa.cred'
fi
sudo chmod 600 /etc/smbcredentials/axd240045sa.cred

sudo bash -c 'echo "//axd240045sa.file.core.windows.net/axdfileshare /mnt/axdfileshare cifs nofail,credentials=/etc/smbcredentials/axd240045sa.cred,dir_mode=0777,file_mode=0777,serverino,nosharesock,actimeo=30" >> /etc/fstab'
sudo mount -t cifs //axd240045sa.file.core.windows.net/axdfileshare /mnt/axdfileshare -o credentials=/etc/smbcredentials/axd240045sa.cred,dir_mode=0777,file_mode=0777,serverino,nosharesock,actimeo=30
mount: (hint) your fstab has been modified, but systemd still uses
the old version; use 'systemctl daemon-reload' to reload.
Anamika@vm-axd240045:~$ cd /mnt/axdfileshare
Anamika@vm-axd240045:/mnt/axdfileshare$ ls -l
total 7516
drwxrwxrwx 2 root root          0 Oct 18 21:26 CloudComputingLectures
-rwxrwxrwx 1 root root 7696005 Oct 18 23:02 'Intro Cloud Computing - Week 5 Storage 1.pptx'
Anamika@vm-axd240045:/mnt/axdfileshare$
```

## Task 8:

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

axd240045@utdallas.edu THE UNIVERSITY OF TEXAS AT D...

Home > Storage accounts > axd240045sa | Containers > bobcontainer >

**bobcontainer** Container

Overview

Authentication method: Access key (Switch to Microsoft Entra user account)

Location: bobcontainer

Search blobs by prefix (case-insensitive)

Show deleted blobs

Add filter

Name

utd-banner-building.jpg

Properties

URL	https://axd240045sa.blob.core.windows.net/bobcontainer/utd-banner-building.jpg
LAST MODIFIED	10/18/2024, 8:12:59 PM
CREATION TIME	10/18/2024, 8:12:59 PM
VERSION ID	-
TYPE	Block blob
SIZE	204.76 KiB
ACCESS TIER	Hot (Inferred)
ACCESS TIER LAST MODIFIED	N/A
ARCHIVE STATUS	-
REHYDRATE PRIORITY	-
SERVER ENCRYPTED	true
ETAG	0x8DCECFDB2BD869BF
VERSION-LEVEL IMMUTABILITY POLICY	Disabled
CACHE-CONTROL	-
CONTENT-TYPE	image/jpeg
CONTENT-MDS	uvqz/vddQ484JuSjlTqFOg==

