IMPLEMENTING AND CONFIGURING AZURE STORAGE AND BLOB SERVICES

Report submitted to the SASTRA Deemed to be University
in partial fulfillment of the requirements
for the award of the degree of

BITCIT801**: PROJECT WORK**

Submitted by

SAI KIRUTHIKA S

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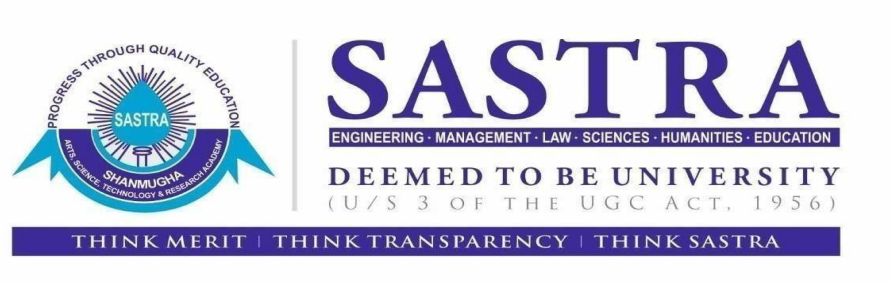
Information Technology

June 2021



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Bonafide Certificate

This is to certify that the project report titled "**Implementing and Configuring Azure Storage and Blob Storage** submitted in partial fulfillment of the requirements for the award of the degree of B.Tech. Information Technology to the SASTRA Deemed to be University, is a bona-fide record of the work done by **Ms. Sai Kiruthika. S**(Reg. No. 121015085) during the final semester of the academic year 2020-21, in the **School of Computing**, under my supervision. This report has not formed the basis for the award of any degree, diploma, associateship, fellowship, or other similar title to any candidate of any University.

Signature of Project Supervisor	**:**	
Name with Affiliation	**:**	Manoj Kumar Ragupathi, Senior Software Engineer, Tech Mahindra
Date	**:**	29/06/2021

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Declaration

I declare that the project report titled "**Implementing and Configuring Azure Storage and Blob Services"** submitted by me is an original work done by me under the guidance of **Manoj Kumar Ragupathi, Senior Software Engineer** during the final semester of the academic year 2020-21, in the **School of Computing**. The work is original and wherever I have used materials from other sources, I have given due credit and cited them in the text of the report. This report has not formed the basis for the award of any degree, diploma, associateship, fellowship, or other similar title to any candidate of any University.

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Name of the candidate(s) : Sai Kiruthika. S(Reg.No -121015085)

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June 08, 2021

To,
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Subject: Internship Completion Certificate

This is to certify that **S. Sai Kiruthika** (Associate ID – **C92824**) has completed internship program with Tech Mahindra Ltd. (From **04/03/2021** to **14/05/2021**). She worked on the project titled **Azure Cloud Internship** Under the guidance **Krithika Natarajan**.

Yours sincerely,
For Tech Mahindra Limited,

Vinay Agrawal
Head- Business
HR

Acknowledgements

I would like to thank our Honorable Chancellor **Prof. R. Sethuraman** for providing us with an opportunity and the necessary infrastructure for carrying out this project as a part of our curriculum.

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Abbreviations

IOT	Internet of Things
SAS	Shared Access storage
GUI	Graphical user Interface
IAAS	Infrastructure as a service
PAAS	Platform as a service
SAAS	Software as a service

ABSTRACT

Cloud Computing is one the emerging technologies in which today's Information Technology companies are working with. Cloud Computing provides various services like storage, infrastructure, servers, databases and many other through internet as pay as you go model. In other words, it's like paying for the services what we use from other's data center. I have done many tasks over Azure cloud and one of the major tasks which are given to me in my intern period is to Implement and to Configure Azure Storage File.

This project was implemented with three tasks namely Implement authorization of Azure Storage blobs by shared access signatures, by Azure Active Directory, file shares by access keys and many more tasks using Microsoft Azure Portal. Creation of different apps which is present inside the azure was also learnt and implemented during my internship period.

Keywords: Cloud Computing, Azure, Blob Services

Specific contribution:

1. Created a Virtual machine using Azure Portal.
2. Created different Shared Access Signature and getting the URL for connection.

Specific learning:

1. Learnt about different types of storage and how to connect it with SAS URL.
2. Learnt completely how to use Microsoft Azure Portal and its features.

CHAPTER 1

INTRODUCTION

Cloud computing is the on-demand access of PC framework assets, especially the storage (distributed storage) and processing capabilities of information, without the need for users to directly manage dynamically. This term is commonly used to explain a server farm of resources which is used by many clients and it can be accessed by anyone over internet. In today's world Cloud computing has huge, overwhelming ability and market in Information Technology. Microsoft Azure Cloud is used to achieve my tasks in my internship

1.1 Microsoft Azure:

Microsoft is one of the cloud providers and it has a cloud product called as Azure which is used for testing, building, deploying, managing apps and services through Microsoft data centers. It has 3 major components called as Infrastructure as a Service (IAAS), Platform as a Service (PAAS), Software as a Service (SAAS). In addition, it also supports many different programming languages, tools, and frameworks. Azure uses a large scale virtualization at Microsoft data centers worldwide and it offers more than 600 services that enable you to do everything from running your existing applications on virtual machines, to exploring new software paradigms, such as intelligent bots and mixed reality.

1.2 Azure portal:

Azure portal is a web-based application that provides many services which is commonly used by many companies to do their work. Using Azure portal GUI is used for managing azure subscription. We can also:

We can build many applications, manage our resource's and it is also very secure in all means for deployment

1.Create custom dashboards for the availability of variety of resources.

2.Configure accessibility options for the best experience.

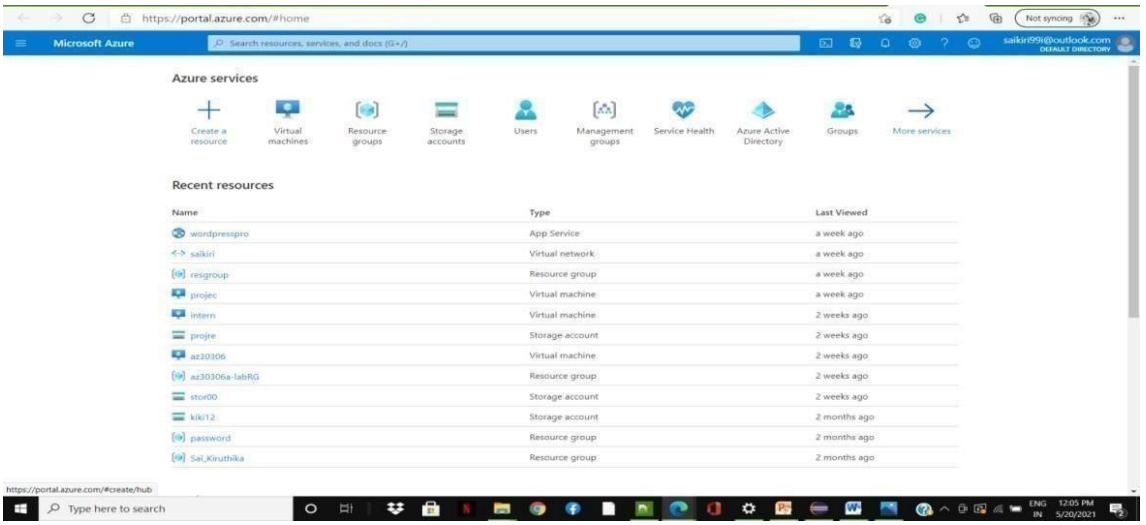


FIG :1.1 -Azure portal

1.3 Azure Services:

There are more than 600 services present in azure portal. The infrastructure designed by the Microsoft consists of many services like Compute, Networks, Storage containers, Mobile apps, Databases like SQL, Web, Internet of Things (IoT), Big data, AI, and DevOps. **Compute** is service which is mainly works with hosting of websites and services and it is a main reason why a company moves towards Azure Cloud. **Networking** is mainly used to link the resources and to provide access to apps. Storage consists of four types of Storage services known as Blob, File, Queue and Table.

Mobile service is used by the developers to create back end services for IOS, ANDROID and WINDOWS APPS in quickly manner. **Databases** are used for storing variety of data types and volumes. **Web** supports to build and host web apps and HTTP based web services. **Internet of Things** (IoT) is an ability of internet which allows any item that's online capable to access valuable information. Big **Data** is the modernized method to analyze and make decision with large amounts of data. Core of **AI** is Machine learning where this technique allows computers to use existing data to forecast future behaviors. **DevOps** is the combination of operation and developers' team where it automates software delivery to provide continuous values to users.

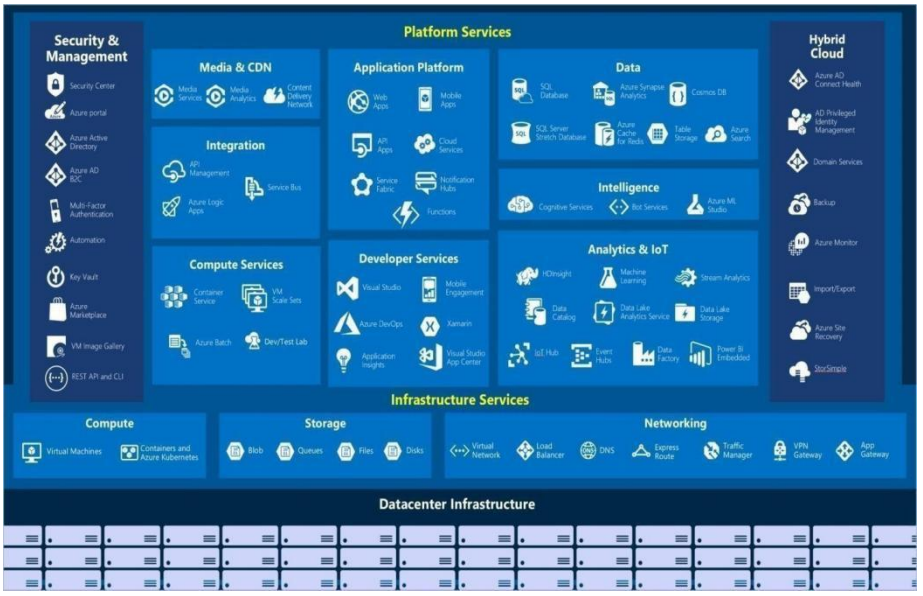


FIG 1.2- Azure services

1.4 Azure subscriptions, management groups, and resources:

Resources:

Resources are the products which are present in cloud for various activities like creating apps, using digital machines, garage, or SQL databases**.**

Resource businesses:

Resources are mixed with internet apps, businesses, which act as a logical area into which Azure resource's like apps, database, project deployment are deployed and managed.

Subscriptions:

A subscription is like a business which collects the consumer money for all the resources they owed and the sources which have been created with the money for using it and for the ones the person used for the project.

Management Groups:

These groups assist you on seeing the access, strategy, and consistence for different memberships. All memberships in an administration naturally acquire the conditions applied to the administration bunch.

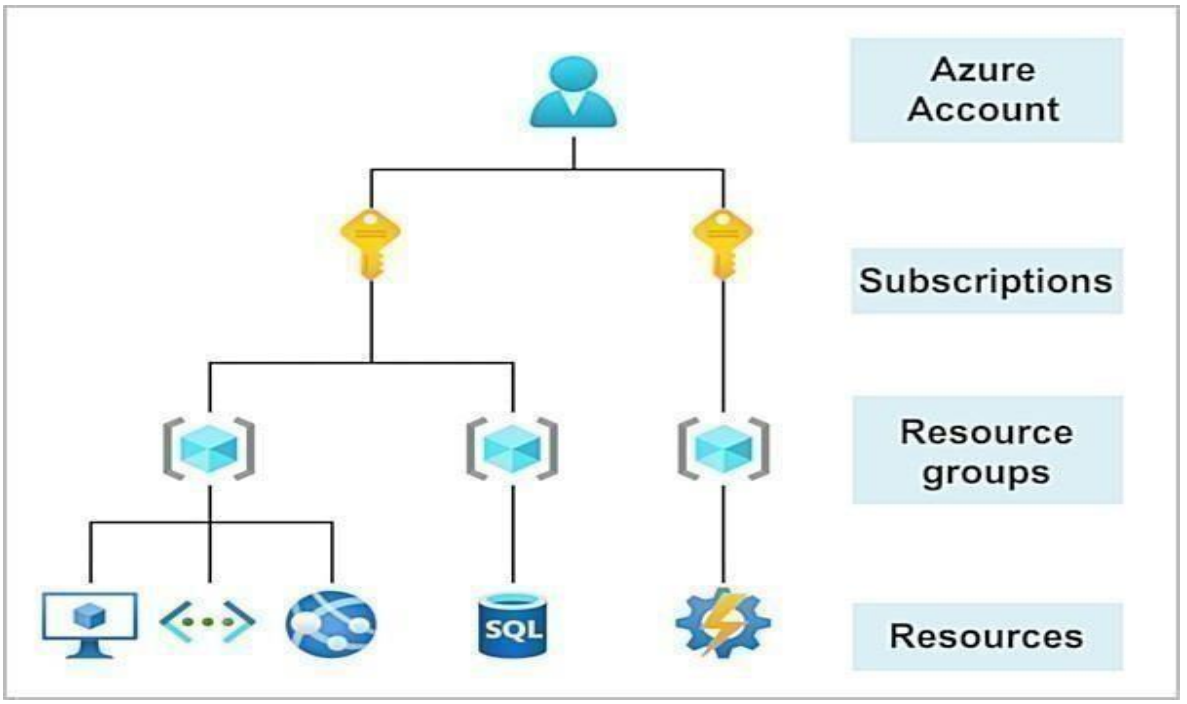


FIG 1.3-Azure Subscriptions

1.5 Importance of Azure:

Microsoft Azure's goal is to provide connectivity, or individual entry, to devices that once cost to run chaos. For example, if you are creating a batch of data sets, Mongo was looking for multifaceted information, such as the ability to build a versatile Linux environment. It took some effort to perform the complex administration, but it was one important part of the condition to have what it needed.

Azure helps us to build an application, transfer, check your applications faster and more efficiently, without having to buy or potentially maintain a basic framework. Sky blue'sintegrated cloud assets are effectively tailored to the exceptional requirements of your organization while meeting all security and integrity requirements.

Why are people trusting their workloads to Microsoft Azure?

Suppose your on-premises server farm has no future. Like its predecessor centralized servers and dial-up modems, it is inferior to its own support server farm era, has been gradually accessed and replaced by a reasonable cloud array. Several important players have sprung up in cloud management areas such as Amazon Web Services (AWS), Permanent Figure Ring Goliath IBM, and iCloud ubiquitous at Apple, which has image memory and melody propensity for numerous mobile phone clients.

Characteristics:

1. Flexibility
2. Cost
3. Application
4. Disaster recovery

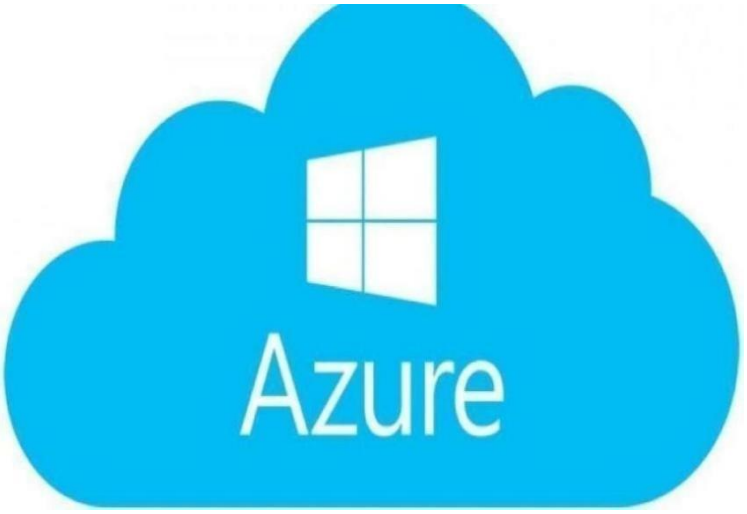


FIG 1.4-Cloud

CHAPTER 2

OBJECTIVE

To accomplish these objectives, the Business will test a range of authentication and authorization mechanisms for Azure Storage resources, including:

1. Using SAS on the customer account and container

2. Configuring blobs in storage container

3. Implementing Azure based authorization

4. Using storage account access keys

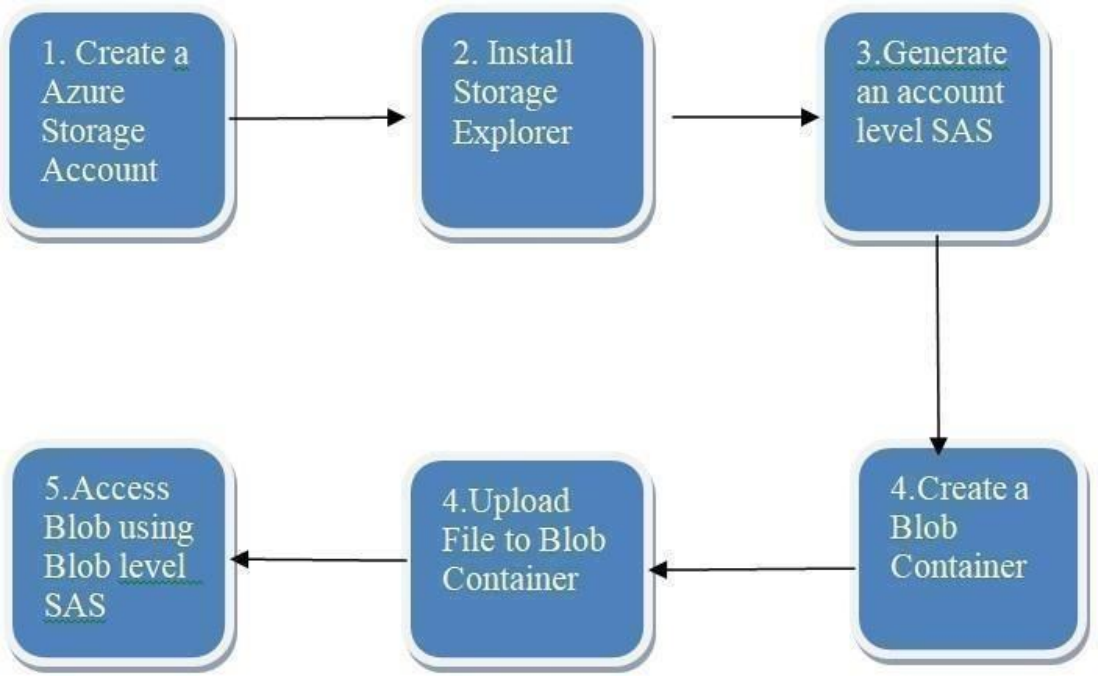
Post Objectives:

1. Understand how to implement the privacy or security in Azure Storage blobs by using SAS
2. Understand how to implement the security of Azure Storage blobs by using Azure Active Directory.
3. Understand how to implement the security of Azure Storage file shares by using access keys.

CHAPTER 3

METHODOLOGY

3.1 Workflow Diagram- I:



1. Create an Azure Storage Account:

The business need is that their storage needs to be stored in Cloud other than on-premises. So, the firstset is to create an azure storage account in azure portal. We must open an option called as Create a resource and in resource group we must create azure storage account.

2. Install Storage Explorer:

We have downloaded a storage explorer for connecting it with the azure cloud to access the resources . It must be downloaded from internet and we can connect the files or other types of storage with SAS key.

3. Generate an account level SAS:

In azure portal we need to deploy both a virtual machine and a storage account using the specific

configuration which is needed by the business. In this project I have created a storage account under the resource group and in the storage account we have to specify the configurations like location in which we have to select the nearby cloud data center and Replication is selected as GEO- REDUDANT STORAGE (GRS) and performance selected as standard.We have enabled to allow storage key access and blob public access and after the validation is passed for the specific configuration the storage account is created. After creating the storage account, we need to generate an account level SAS which is presented in the left side of the storage account and we need to open that SAS and we need to generate it.

4. **Create a Blob Container:**

In this storage account we must create a blog container which is used to show large amount of data. After creating blog container, we must create a **Role Assignment** for the specific user who is using the project. We can assign up to 2000 role assignment in a storage account. After creating a specific role assignment for the owner as well as people in the project. We can then generate the shared access signature (SAS).

5. **Upload file in a Blob Container:**

We need to upload a large amount of data or video file to be accessed by the owner as well as the people who are working in this project. After uploading the specific file, we can generate a SAS by giving the start date and the location and the expiry date. We can also allow a specific IP address for the people to be viewed and it will be differing for each project according to the business needs. After that we can allow the protocols which is needed for this project. After clicking the generate SAS key the Azure cloud will give the specific SAS key which is needed to be accessed by the people in this project for the future use.

6. **Access Blob using storage container:**

After generating a specific SAS, we need to connect it with an external storage explorer. We need to connect a storage explorer with a Microsoft Azure cloud. After connecting, we need to connect a Blob container by giving a specific SAS key so that only people who are assigned for the project can only view the file and download it for the future purpose. This is how SAS Key in the cloud helps us for secure transmission of data from cloud to on- premises.

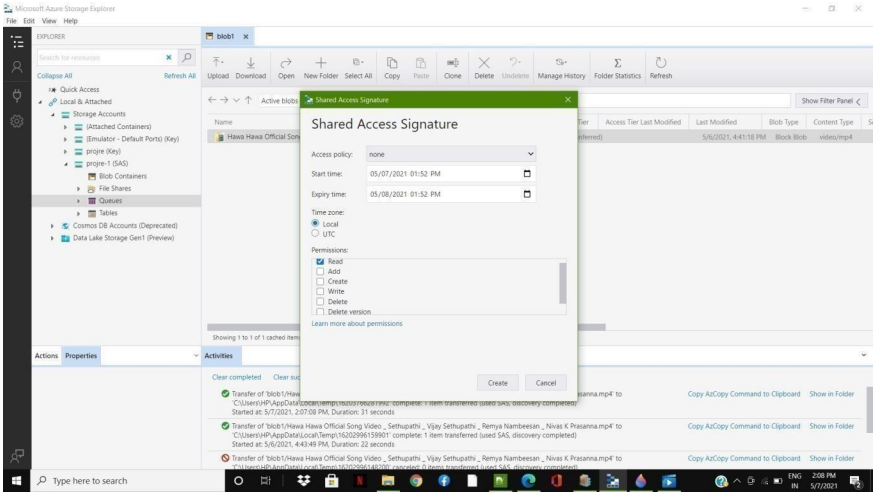
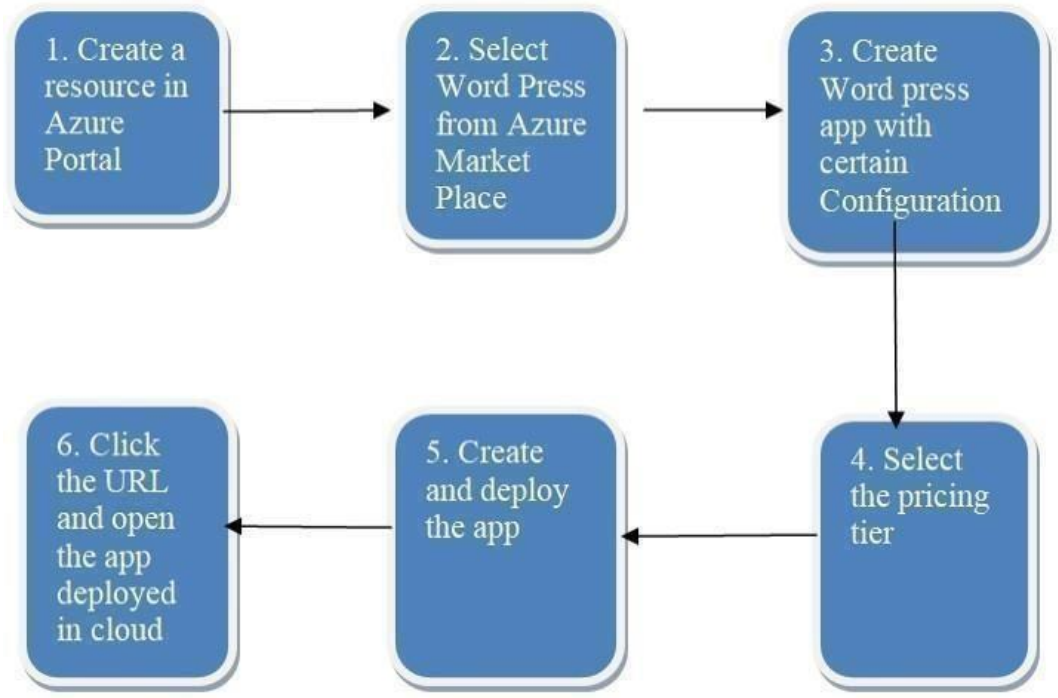


FIG 3.2: Storage Explorer

3.2 Workflow Diagram - II:



1. Create a resource in Azure portal:

Log in to the account by using the person's account details. On the top left of the Azure portal pane, select Create a resource.

2. Select word press from Azure Market place:

We need to go to Azure marketplace and we need to install Word Press, so we can do quick search for it. In the Marketplace box with the listed application options, search Word Press. Select the default Word Press option from the list of options available.

3. Create Word press App with certain configuration:

We need to create unique App name and we should select a subscription as Azure for students and we need to select an existing resource group and we need to select the database provider as MySQL in App. We must select the service plan and the location which is comfortable and near to us and we need to leave the rest configuration as default.

4. Select the Pricing tier:

We must select the pricing tier as S1 Standard in the Azure portal.

5. Create and deploy the App:

After giving these specific configurations we need to check whether the validation is passed and then we must click the option create and Deploy the App. The deployment will takefor several minutes to be deployed.

6. Open the App deployed in the cloud:

Now we need to Copy the URL information by selecting the Copy to clipboard icon at the end of URL. Open a new tab in your browser, paste this URL, and press Enter to browse to your new word press site. You can now configure your WordPress site, and add content and the App is successfully deployed in the cloud.

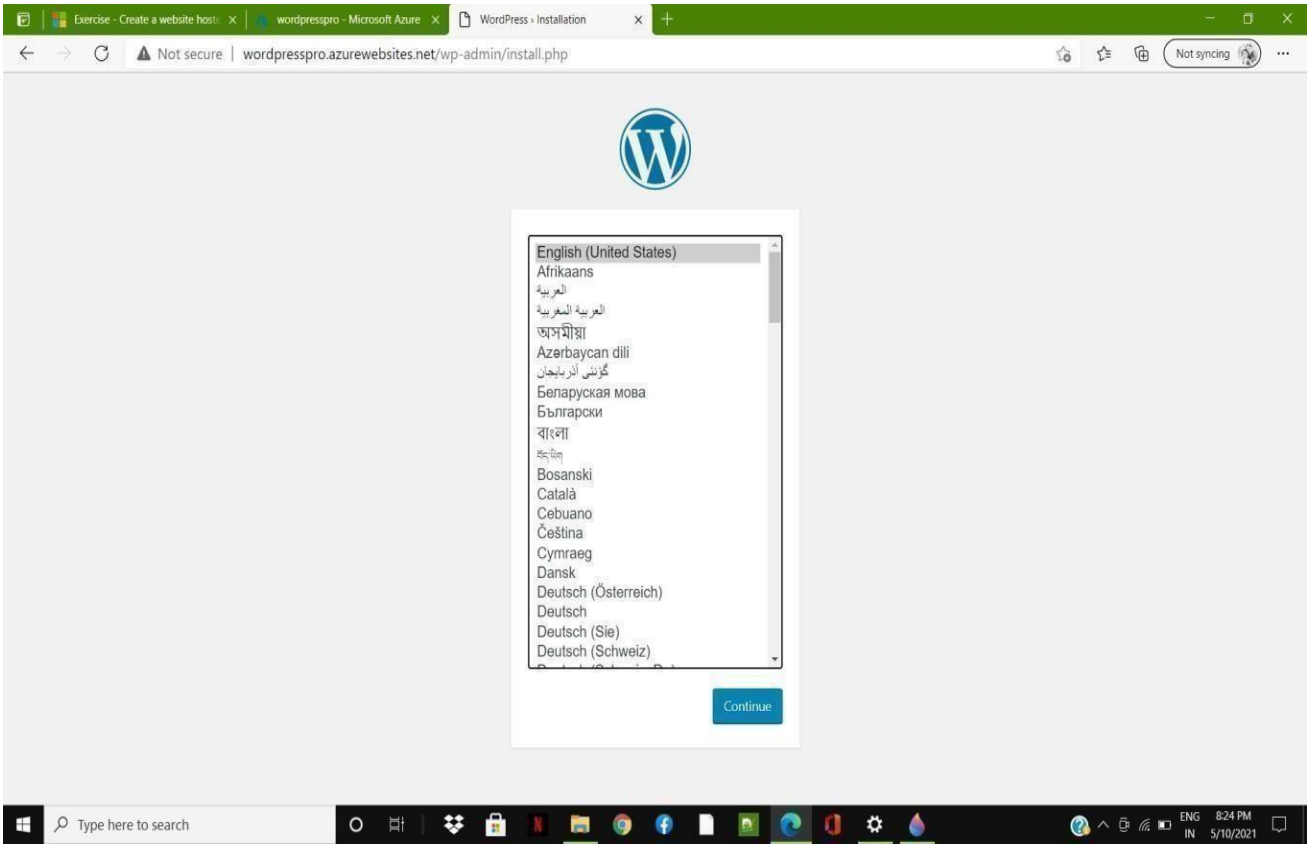


FIG 3.3: URL page

CHAPTER 4

RESULT

SNAPSHOTS:

(i) Task 1 [Implementing Blob storage using SAS]:

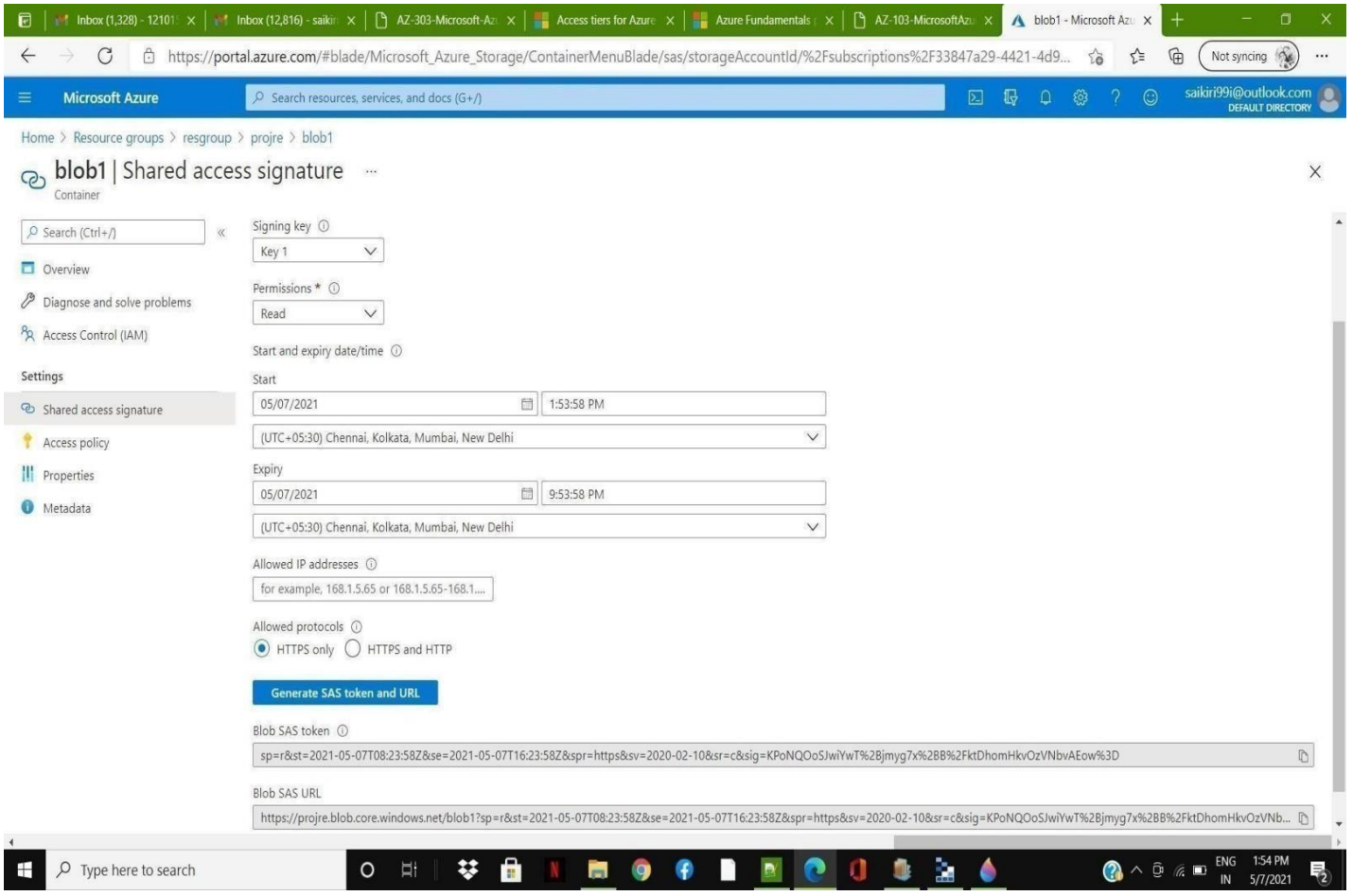


FIG 4.1: Generating Blob SAS in cloud

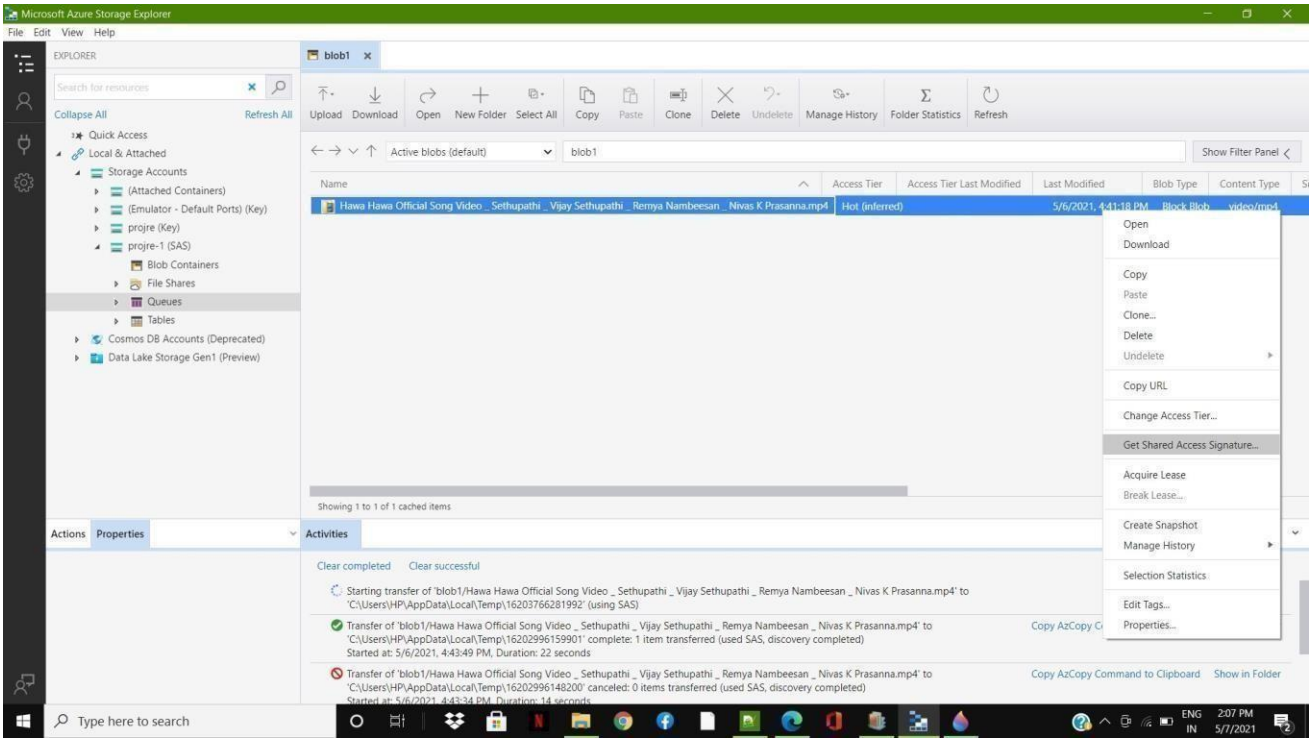


FIG 4.2: Final output of Blob connected in External storage explorer

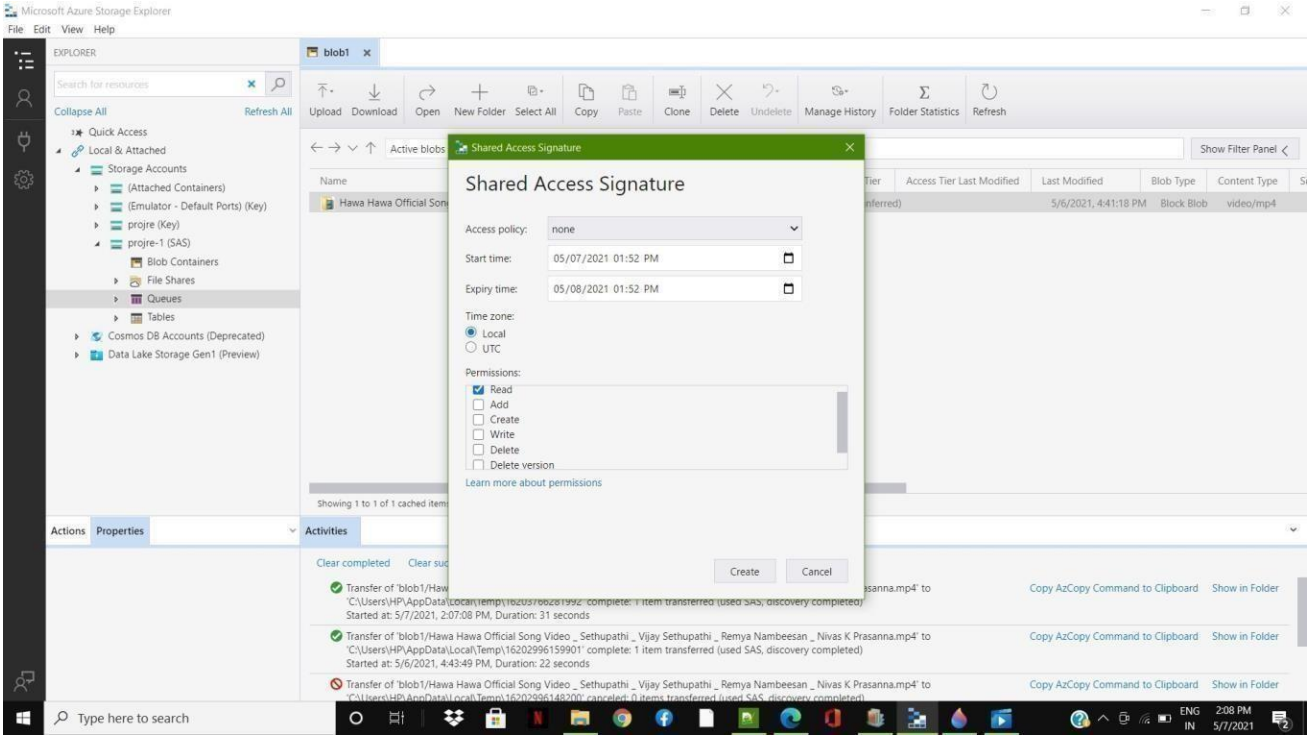


FIG 4.3: Created SAS inside the External storage explorer

(ii) Task 2 [Deploying a word press App in cloud]:

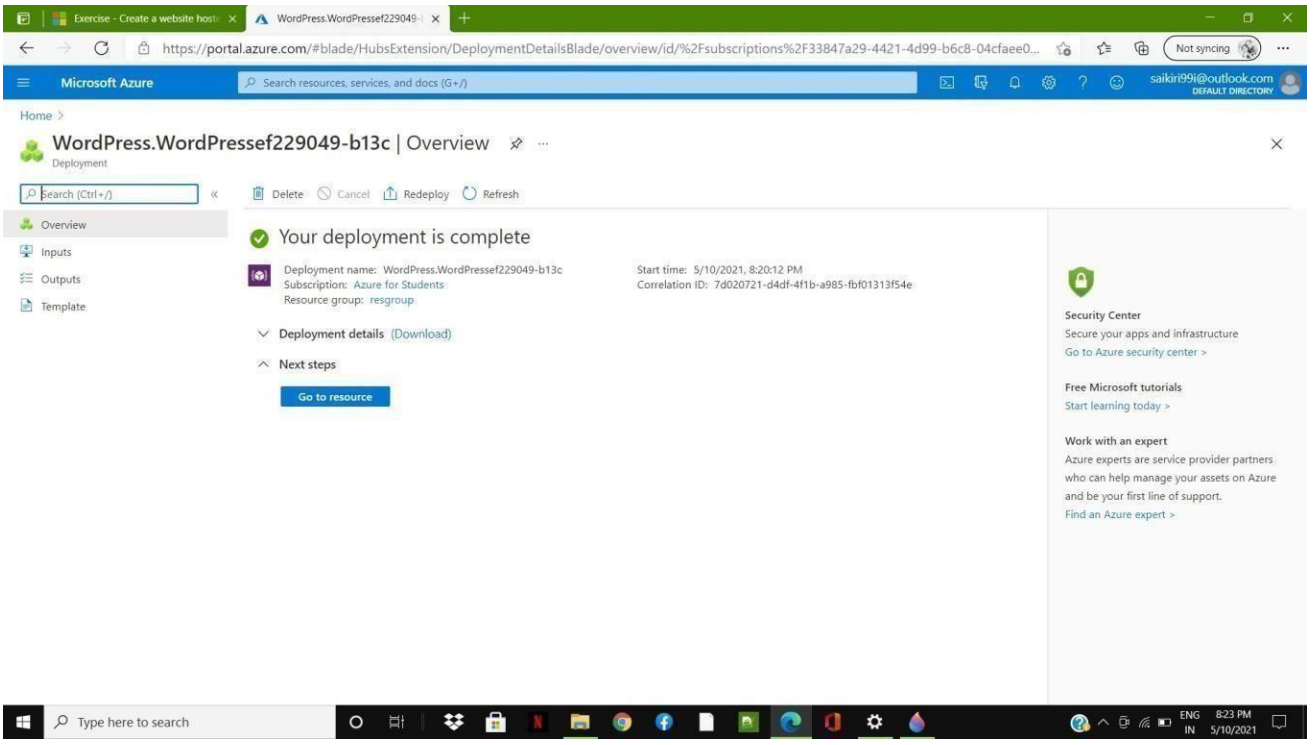


FIG 4.4: After Deploying

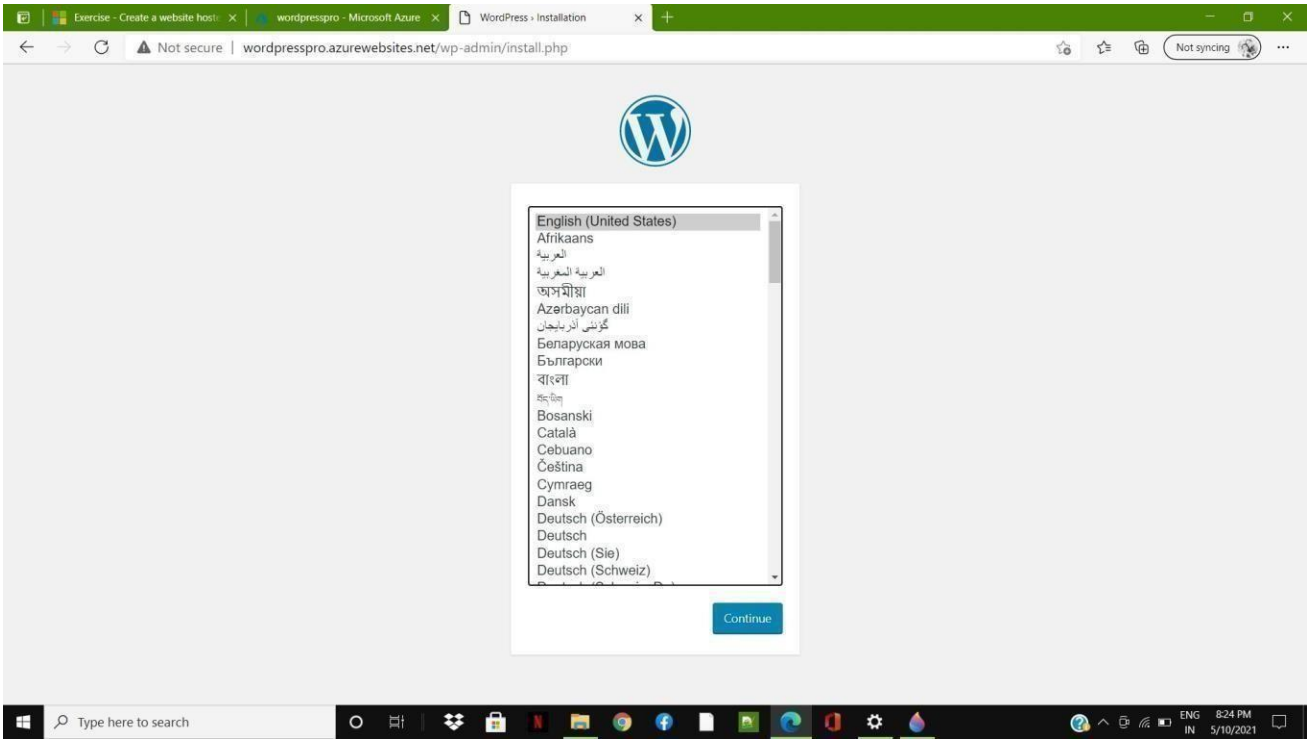


FIG 4.5: After Running the URL

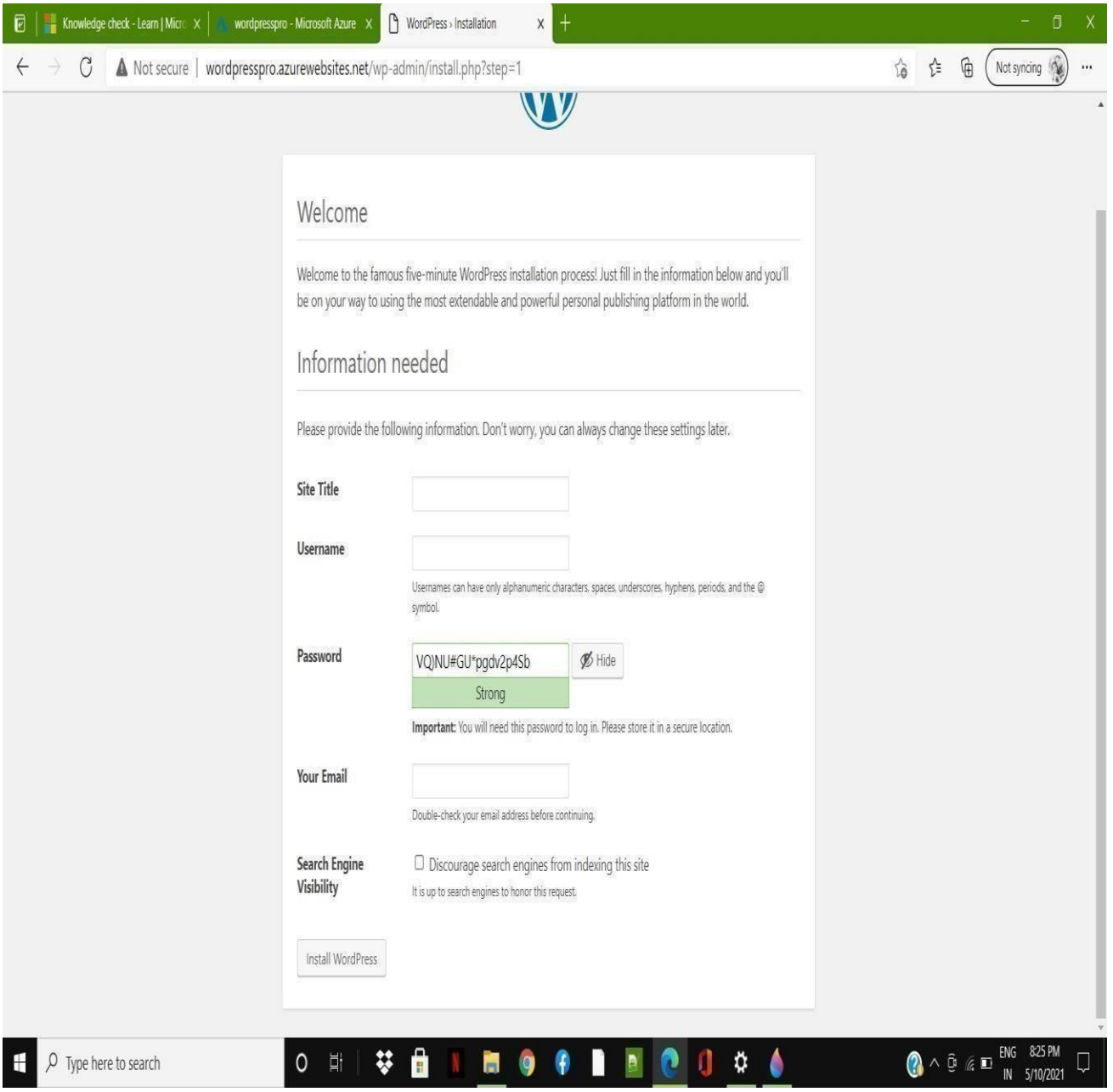


FIG 4.6: Final Output of the App

CHAPTER 5

CONCLUSION

From the implementation of Experiment 1 (Implementing Blob storage by using SAS).

I have accomplished the objectives given by the business and implemented the storage access in both cloud and storage explorer and implemented the following tasks

- Using shared access signatures on the account, container, and object-level
- Configuring access level for blobs in azure portal
- Using storage account access keys

From the implementation of Experiment 2 (Deploying a word press App in cloud).

I have accomplished the objectives given by the business and implemented the app in the cloud for the business use by Creating a word press app and deployed using a URL in Microsoft azure cloud

During my internship period these were the important task given to me and even many more learning's and task were given on equal interval of time and I learnt about cloud and how azure helps my organization in deploying their project.

CHAPTER 6

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CHAPTER 7

APPENDX

7.1: SOURCE CODE:

```
$location = '<Azure region>'
```

```
New-AzSubscriptionDeployment `
  -Location $location `
  -Name az30306subaDeployment `
  -TemplateFile $HOME/azuredeploy30306suba.json `
  -rgLocation $location `
  -rgName 'az30306a-labRG'
```

```
New-AzResourceGroupDeployment `
  -Name az30306rgaDeployment `
  -ResourceGroupName 'az30306a-labRG' `
  -TemplateFile $HOME/azuredeploy30306rga.json `
  -TemplateParameterFile $HOME/azuredeploy30306rga.parameters.json `
  -AsJob
```

```
New-Item -Path './az30306ablob.html'

Set-Content './az30306ablob.html' '<h3>Hello from

$passwordProfile = New-Object -TypeName Microsoft.Open.AzureAD.Model.PasswordProfile

$passwordProfile.Password = 'Pa55w.rd1234' $passwordProfile.ForceChangePasswordNextLogin =
$false New-AzureADUser -AccountEnabled $true -DisplayName 'az30306auser1'-PasswordProfile
$passwordProfile -MailNickName 'az30306auser1' -UserPrincipalName
"az30306auser1@$domainName"
```

```
(Get-AzureADUser -Filter "MailNickName eq 'az30306auser1'").UserPrincipalName
```

```
$passwordProfile = New-Object -TypeName Microsoft.Open.AzureAD.Model.PasswordProfile
$passwordProfile.Password = 'Pa55w.rd1234'
$passwordProfile.ForceChangePasswordNextLogin = $false
New-AzureADUser -AccountEnabled $true -DisplayName 'az30306auser1' -PasswordProfile
$passwordProfile -MailNickName 'az30306auser1' -UserPr
```

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