



# Understanding Azure

## Beginner's Guide



- Gourav Jain

# Understanding Azure: A Beginner's Guide

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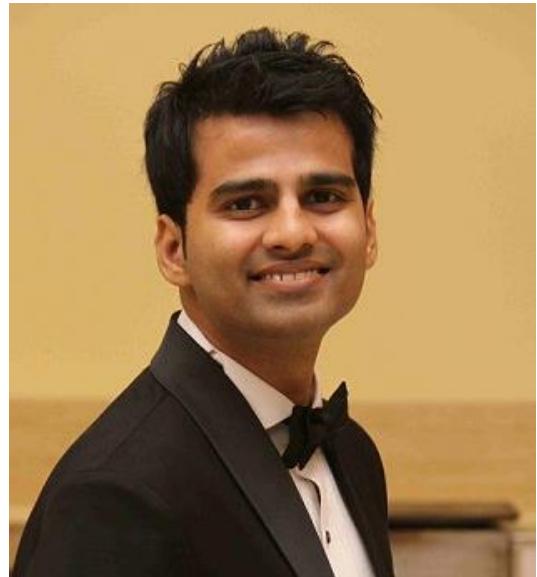
**Gourav Jain**  
(Author, Speaker, and Technology Lover)

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## About The Author

Gourav Jain is working as "Senior Consultant" at Xebia and loves programming along with software designing. He has over 7 years of experience working on Microsoft technologies, open source software's, cloud and databases etc. He believes in using technology to make life "simple" by solving complex problems. He dears to contribute into the community through his writing and speaking.



## Acknowledgement

Gourav Jain would like to dedicate this book to his father (**Mr. Sushil Kumar Jain**), mother (**Mrs. Saroj Jain**), sister (**Mrs. Mukta Jain**) and brother-in-law (**Mr. Priyank Jain**) for the inspiration and support.

**Gourav Jain**  
(Author, Speaker, and Technology Lover)

# 1. Getting Started with Azure

## What is Windows Azure?

- Windows Azure is an internet-scale cloud service platform hosted in Microsoft data centres
- It is flexible and interoperable platform that can be used to build new applications to run from the cloud or enhance the existing applications with cloud-based capabilities.
- It reduces the need for up-front technology purchases, and enables developers to quickly and easily create applications running in the cloud by using their existing skills with the Microsoft Visual Studio development environment and the Microsoft .NET Framework.

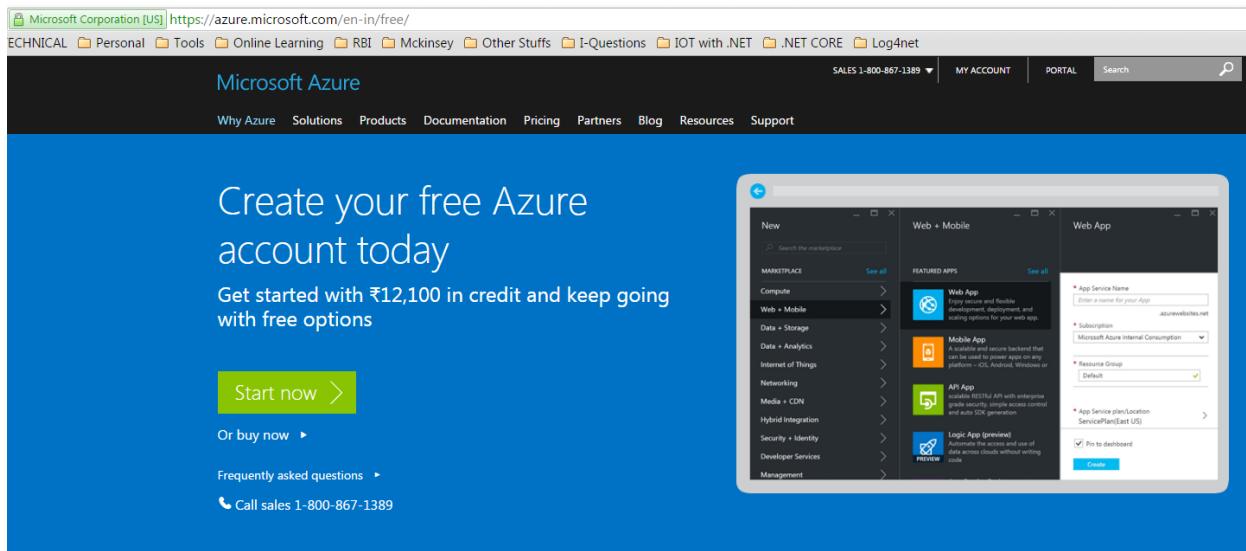
## Why Azure?

- **Get more done**
  - Any developer or IT professional can be productive with Azure. The integrated tools, pre-built templates, and managed services make it easier to build and manage enterprise using skills you already have and technologies you already know.
- **Extend your existing IT**
  - It easily integrates with your existing IT environment through the largest network of secure private connections, hybrid database, and storage solutions — so your assets stay right where you need them.
- **Scale as you need, pay as you go**
  - It's pay-as-you-go service and can quickly scale up or down to match the demand, so you only pay for what you use.
- **Protect your data**
  - Microsoft has made an industry-leading commitment to the protection and privacy of your data using Azure.
- **Run your apps anywhere**
  - It runs on a worldwide network of Microsoft-managed data centers across 26 regions—more countries and regions than Amazon Web Services and Google Cloud combined.
- **Make smarter decisions**
  - Azure's predictive analytics services including Machine Learning, Cortana Analytics, and Stream Analytics, are redefining business intelligence. Make smarter decisions, improve customer service, and uncover new business possibilities from your structured, unstructured, and streaming IoT data.

## Create Azure account

### Steps to be followed -

- Go to the URL: <https://Azure.microsoft.com/en-in/free/> and click on “Start Now”.



The screenshot shows the Microsoft Azure landing page for creating a free account. The main heading is "Create your free Azure account today". Below it, a sub-headline says "Get started with ₹12,100 in credit and keep going with free options". There is a prominent green "Start now >" button. To the right, a large modal window titled "New" is open, showing the "Marketplace" and "FEATURED APPS" sections. Under "FEATURED APPS", there are four items: "Web App" (selected), "Mobile App", "API App", and "Logic App (preview)". Each item has a brief description and configuration options like "App Service Name", "Subscription", "Resource Group", and "App Service plan/Location".

- Sign-In to the application using your **Microsoft account** credentials (Create one if you don't have).

## Sign in

Microsoft account [What's this?](#)

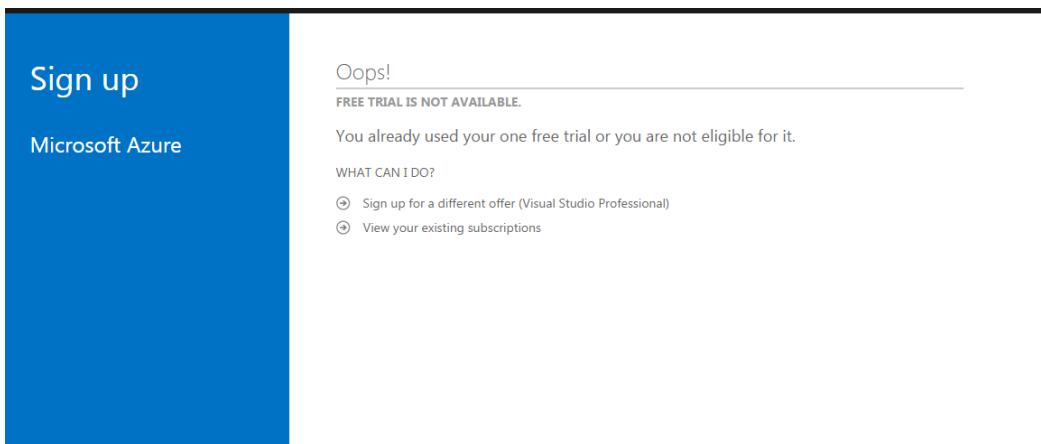
  

  
 Keep me signed in
  

**Sign in**

[Can't access your account?](#)  
[Sign in with a single-use code](#)

- Choose the **free trial account** option (Not visible in my case as I have already created it) and create one by giving your card details.



**Sign up**

**Microsoft Azure**

**Oops!**

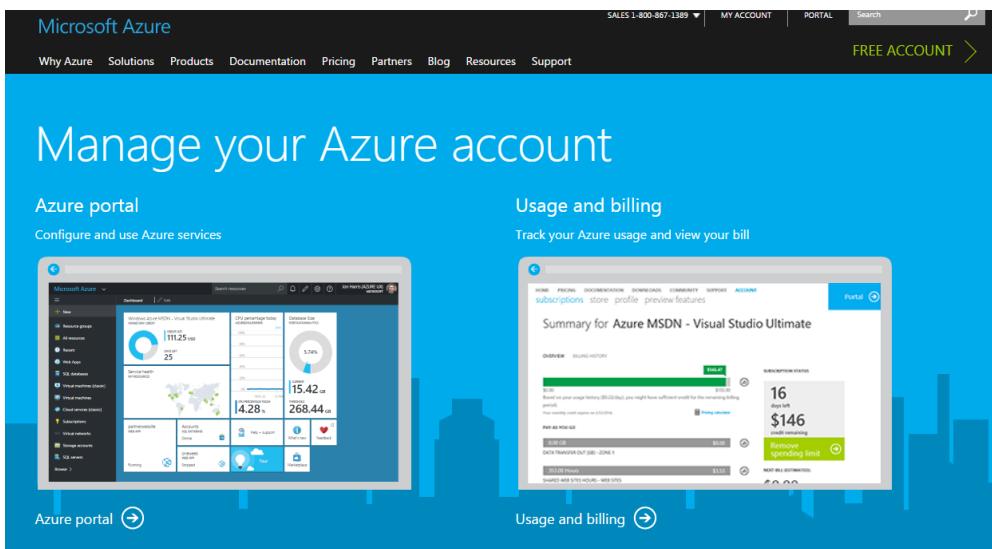
**FREE TRIAL IS NOT AVAILABLE.**

You already used your one free trial or you are not eligible for it.

**WHAT CAN I DO?**

- ⊕ Sign up for a different offer (Visual Studio Professional)
- ⊕ View your existing subscriptions

- Once you create it, go to the URL: <https://Azure.microsoft.com/en-us/account> and select Azure Portal.



**Microsoft Azure**

SALES 1-800-867-1389 | MY ACCOUNT | PORTAL | Search

Why Azure Solutions Products Documentation Pricing Partners Blog Resources Support FREE ACCOUNT >

## Manage your Azure account

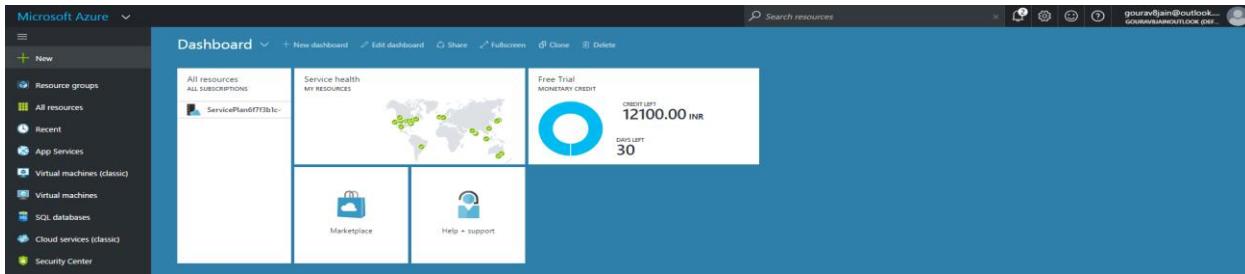
Azure portal Configure and use Azure services

Usage and billing Track your Azure usage and view your bill

**Azure portal** →

**Usage and billing** →

- Then, you will be redirected to the Dashboard.



**Microsoft Azure**

New

Resource groups

All resources

Recent

App Services

Virtual machines (classic)

Virtual machines

SQL databases

Cloud services (classic)

Security Center

**Dashboard** + New dashboard Edit dashboard Share Clone Delete

Search resources

All resources ALL SUBSCRIPTIONS Service health MY RESOURCES

ServicePlan6f771b1c- Service health MY RESOURCES

Marketplace Help + support

Free Trial MONETARY CREDIT

CREDIT LEFT 12100.00 INR

DAYS LEFT 30

## Configure Azure account to deploy the MVC application

### Steps to be followed -

- Choose “**Resource groups**” option from the menu and create a new resource group by clicking on the “**Add**” button.



- Click on “**Refresh**” and check for the new **resource-group**.

Resource groups

gourav8jainoutlook (Default Directory)

**Add** **Columns** **Refresh**

Subscriptions: Free Trial

Filter items...

NAME	SUBSCRIPTION	LOCATION	...
gourav8jain-demo1	Free Trial	Brazil South	...

- Choose “**App services**” option from the menu and create a new app service by clicking on “**Add**” button and choosing the existing resource group within that app-service. Wait for a few minutes as it might take a couple of minutes.

Web App

\* App name  
gourav8jain-demo1 .azurewebsites.net

\* Subscription  
Free Trial

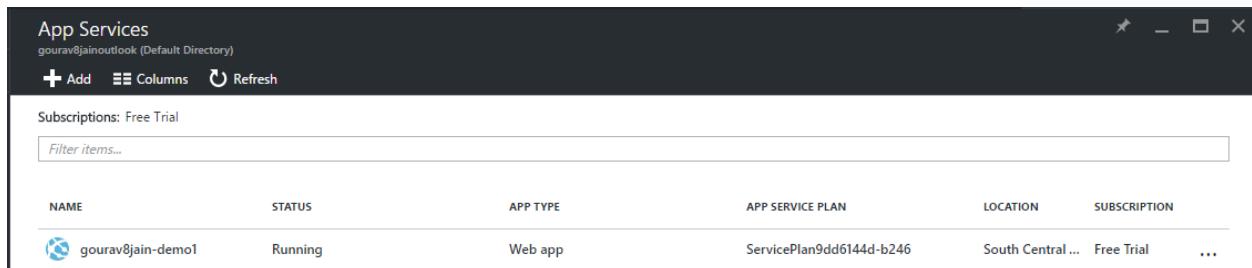
\* Resource Group ⓘ  
Create new  Use existing  
gourav8jain-demo1

\* App Service plan/Location  
ServicePlan9dd6144d-b246(South..) >

Pin to dashboard

**Create**

- Click on “Refresh” and check for the new app-service.

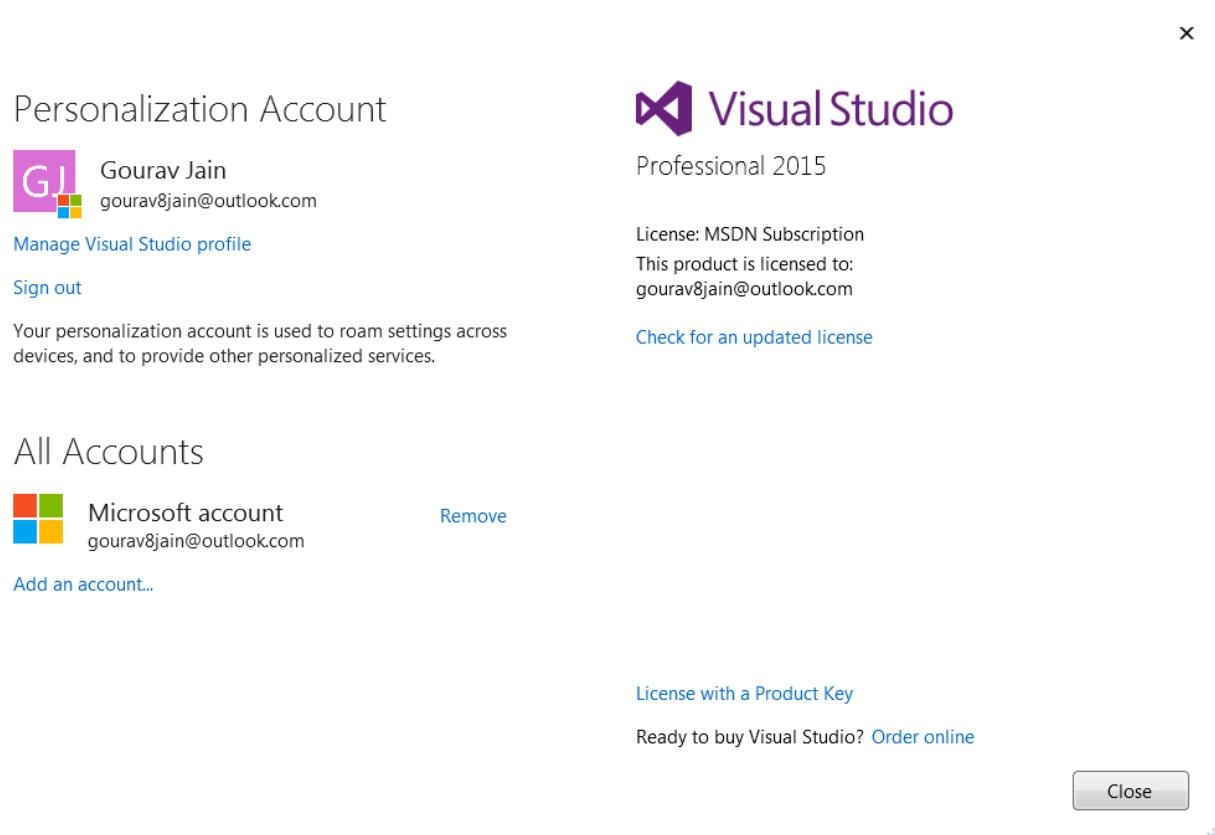


The screenshot shows the Azure portal's "App Services" blade. At the top, it displays "gouravbjainoutlook (Default Directory)". Below that are buttons for "Add", "Columns", and "Refresh". A message "Subscriptions: Free Trial" is shown. A search bar contains the placeholder "Filter items...". A table lists one application:

NAME	STATUS	APP TYPE	APP SERVICE PLAN	LOCATION	SUBSCRIPTION
gouravbjain-demo1	Running	Web app	ServicePlan9dd6144d-b246	South Central ...	Free Trial

## Configure Visual Studio with Microsoft Azure account

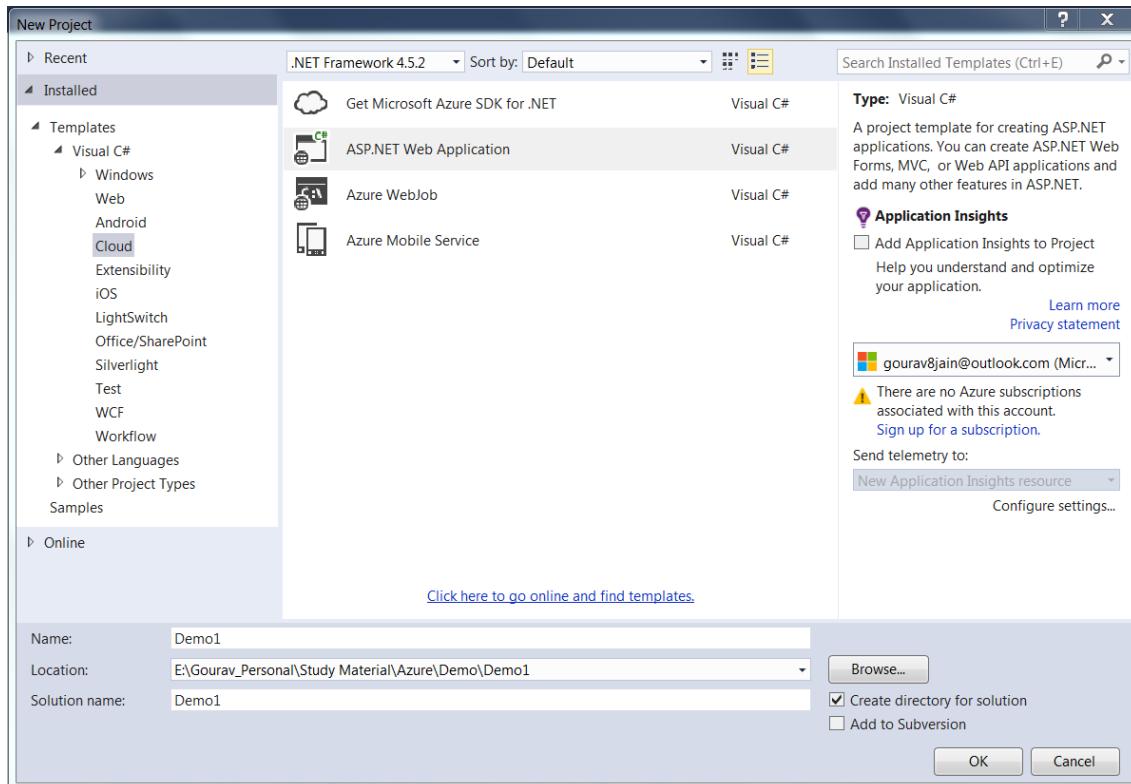
Open Visual Studio 2015, choose **Help->Register Product**, and sign-in to the **Visual Studio** account using **Microsoft Azure account** credentials.



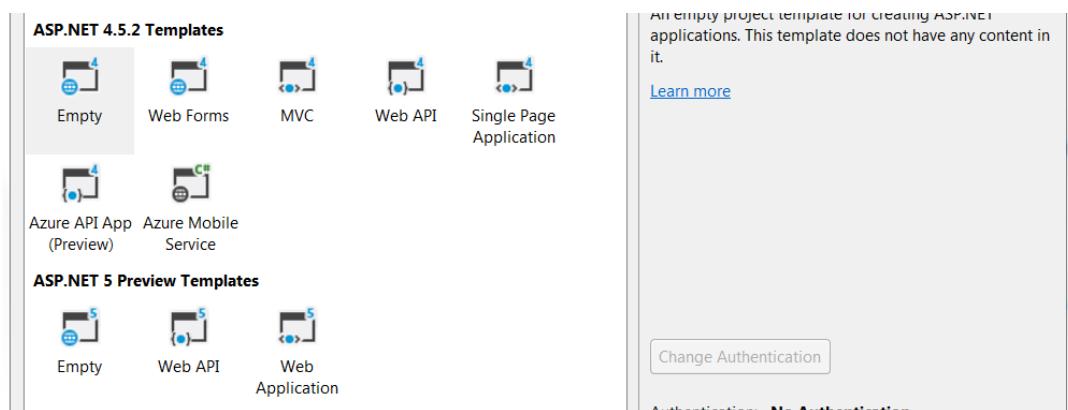
## Develop a basic MVC application using Visual Studio

### Steps to be followed -

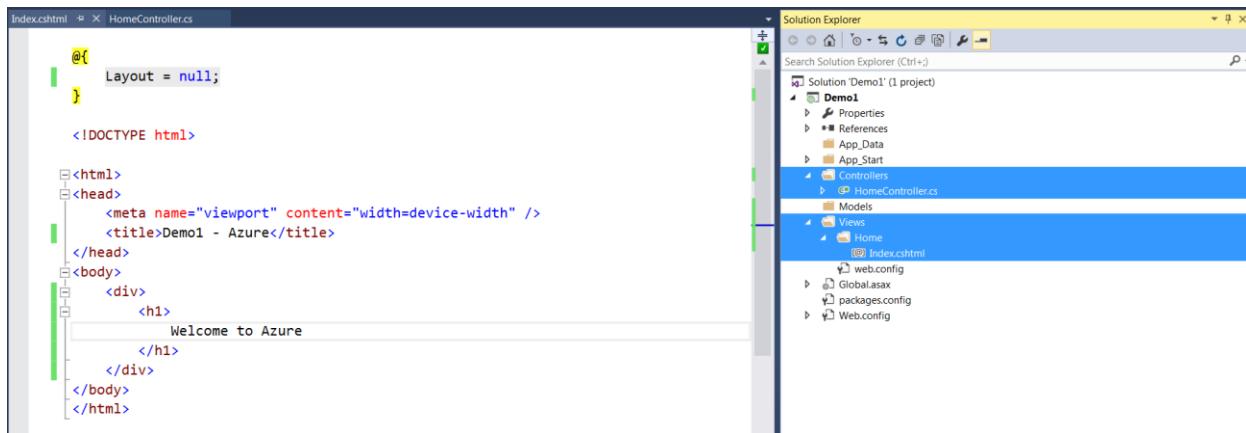
- Open **Visual Studio 2015** and create Project.
- Choose **Cloud->ASP.NET Web Application**.



- Choose **Empty Template** and **MVC** and uncheck **Host-In-Cloud** option (to understand the concept better).



- Add the default **MVC** files with few changes in the **Index.cshtml**.



The screenshot shows the Visual Studio interface. On the left is the Solution Explorer window, which displays a project named 'Demo1' containing files like 'Properties', 'References', 'App.Data', 'App.Start', 'Controllers' (with 'HomeController.cs' selected), 'Models', 'Views' (with 'Home' selected), and 'Index.cshtml'. On the right is the code editor window showing the 'Index.cshtml' file:

```

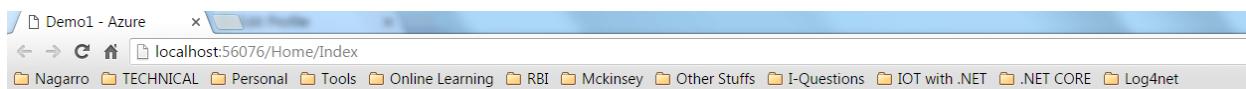
@{
    Layout = null;
}

<!DOCTYPE html>

<html>
    <head>
        <meta name="viewport" content="width=device-width" />
        <title>Demo1 - Azure</title>
    </head>
    <body>
        <div>
            <h1>
                Welcome to Azure
            </h1>
        </div>
    </body>
</html>

```

- Run the application from the URL - **<http://localhost:56076/Home/Index>**

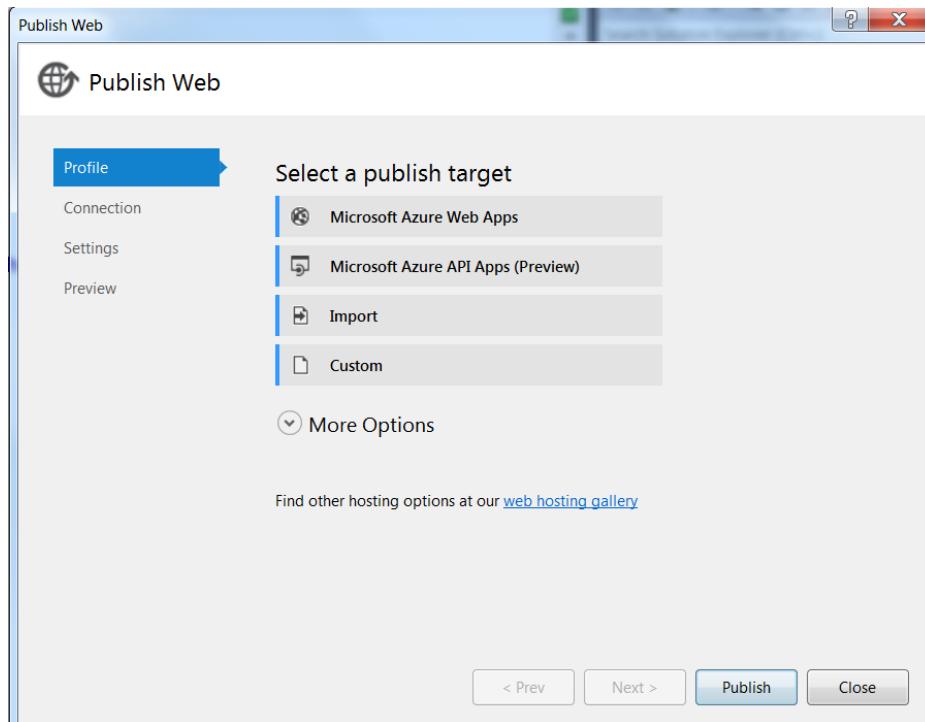


Welcome to Azure

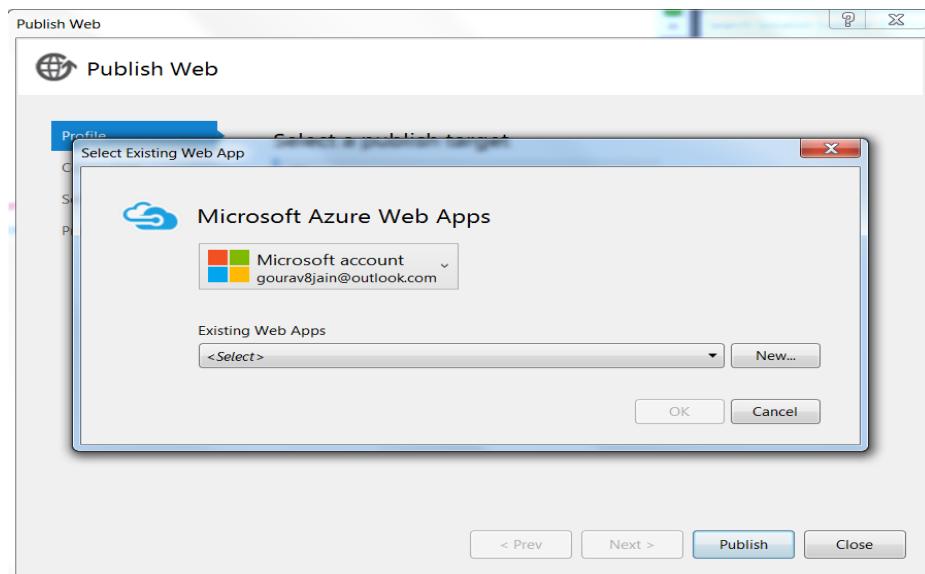
## Deploy MVC application on Azure using Visual Studio

### Steps to be followed -

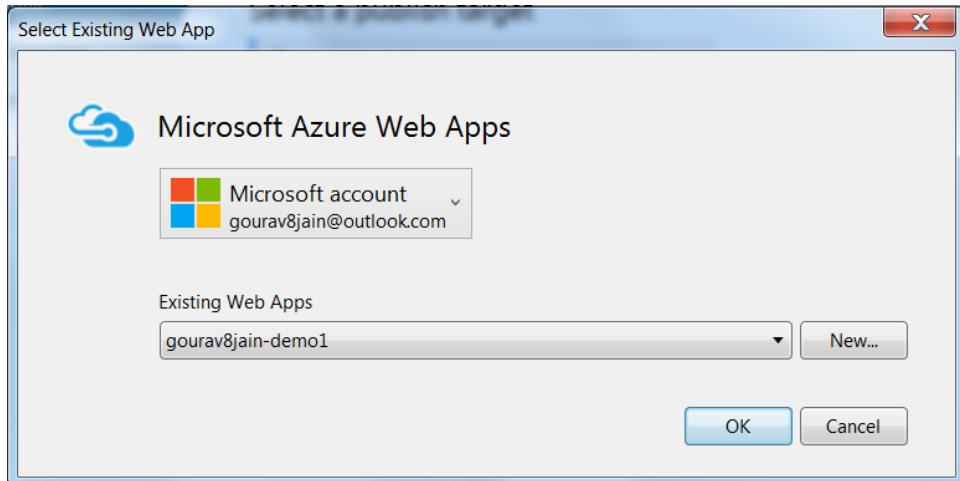
- Right click on the **project** in the **Solution Explorer** and click on **Publish**.



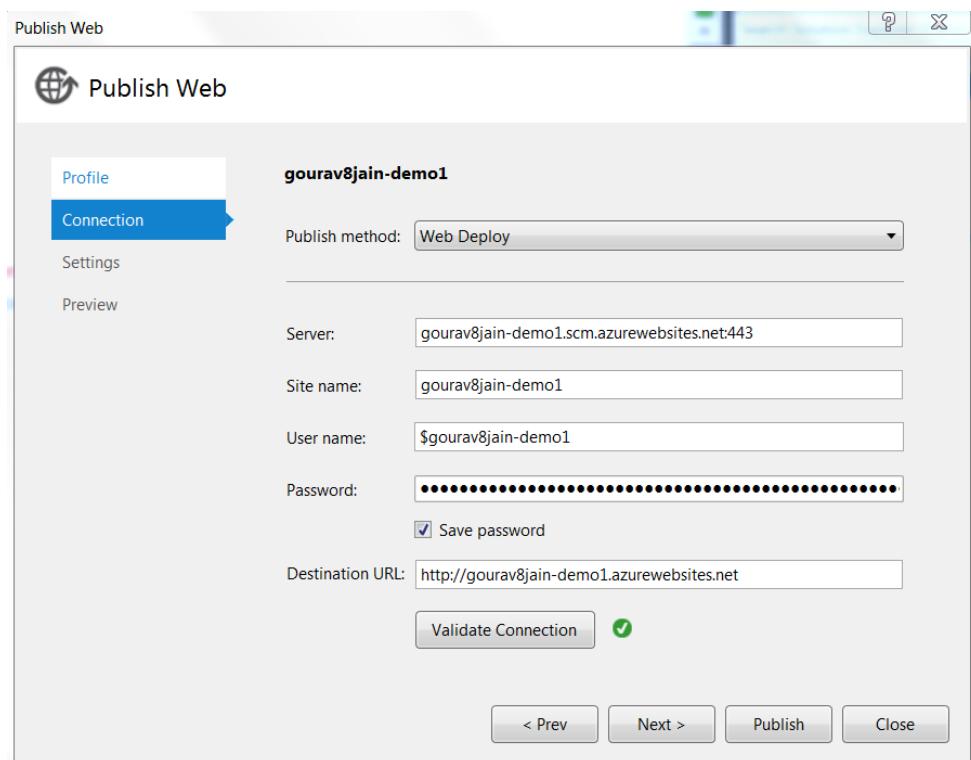
- Choose the "**Microsoft Azure Web Apps**" option here.



- Choose the **existing Web Apps – gourav8jain-demo1** (which we created in Step-2) and press **OK**.



- Validate** the connection and publish the **MVC** application.



- Go to the **URL** to check the deployed **MVC** application, for e.g. <http://gourav8jain-demo1.Azurewebsites.net/>

## 2. App Services

### What is Windows Azure App Service?

- Windows Azure App Service is a Platform-as-a-Service (PaaS) offering of Microsoft Azure.
- It helps us to create web or mobile app for any platform or device.
- As a single integrated service, it lets you combine multiple components -- websites, mobile app back ends, and API -- into a single solution.

### Why App Service?

- **Support for multiple languages and frameworks** – It has full support for .NET, Node.js, Java, PHP, and Python based applications.
- **IDE integration** - Dedicated tools in Visual Studio to help create, deploy, and debug
- **Continuous integration** - Set up continuous integration and deployment with Visual Studio Team Services, GitHub, or Bitbucket.
- **Scaling is easy** - Scale up or down manually or automatically. Host your apps anywhere in Microsoft's global data center infrastructure.
- **Extensive application templates** - Choose from an extensive list of templates in the Azure Marketplace that let you use a wizard to install popular open-source software, such as WordPress, Joomla, and Drupal.

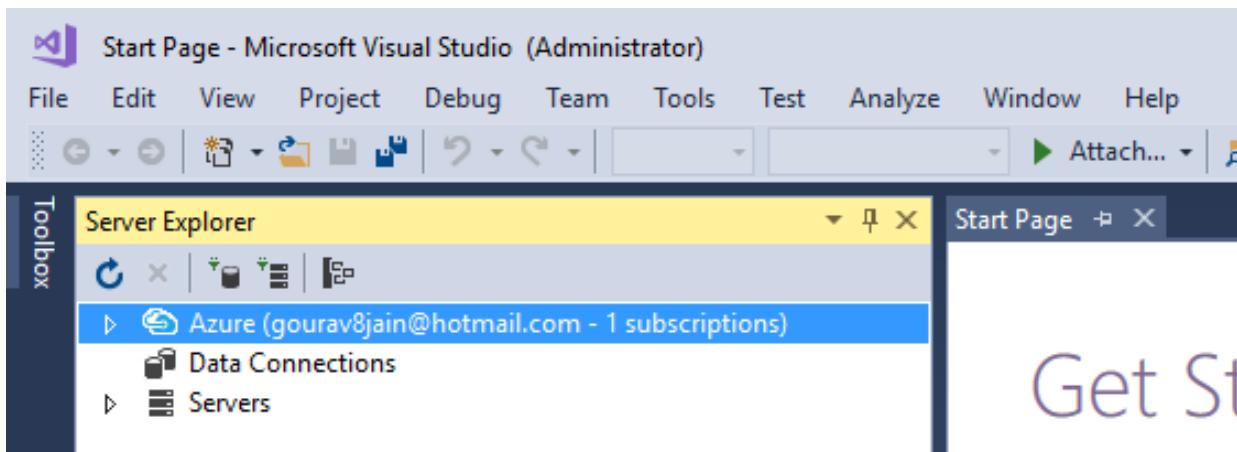
### Types of App Service?

- [\*\*Web Apps\*\*](#) - For hosting websites and web applications.
- [\*\*Mobile Apps\*\*](#) For hosting mobile app back-ends.
- [\*\*Logic Apps\*\*](#) - For automating business processes and integrating systems and data across clouds.
- [\*\*API Apps\*\*](#) - For hosting web APIs.

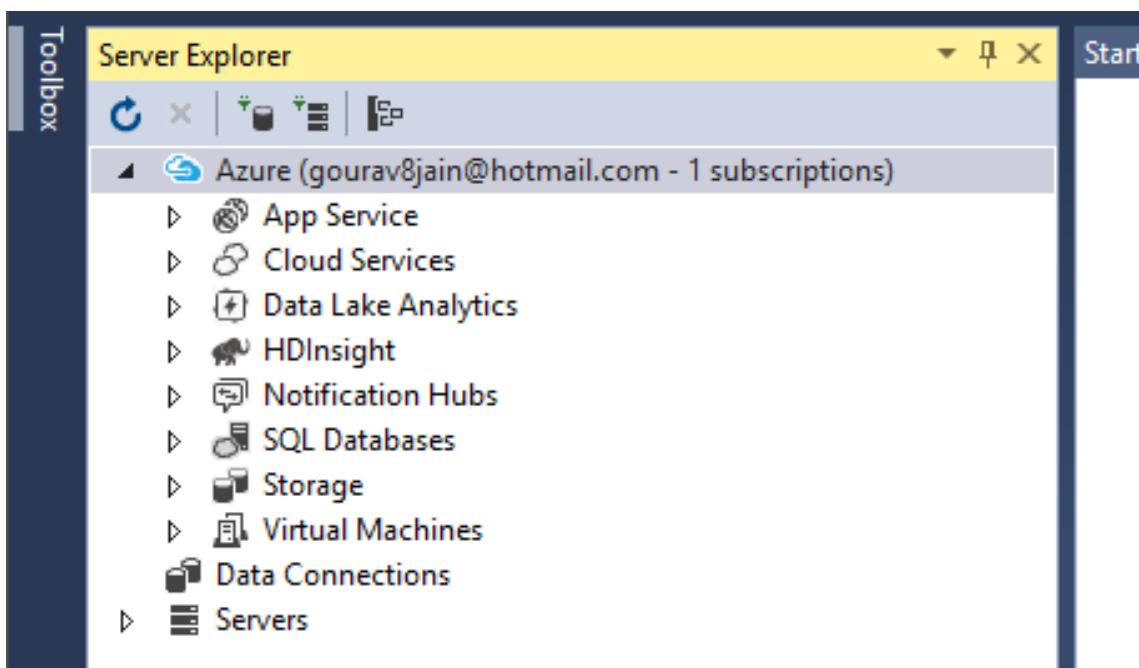
## Create App-services in Microsoft Azure using VS

### Steps to be followed -

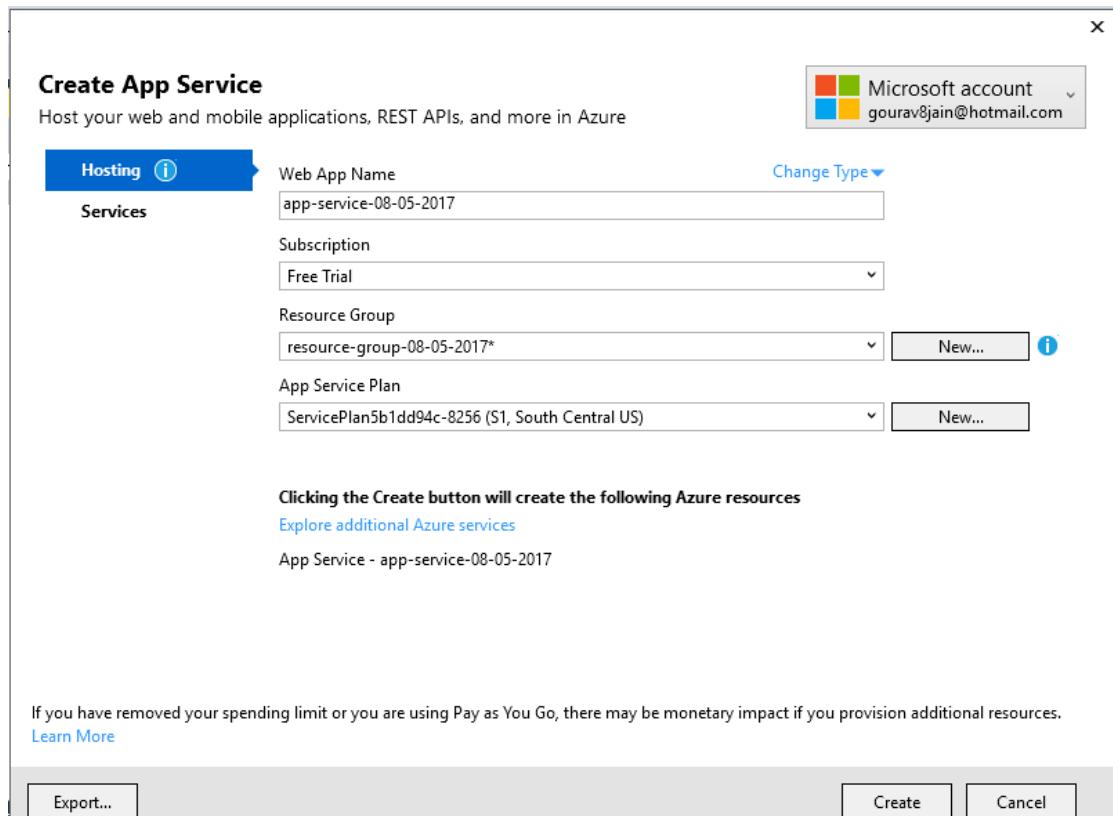
- Open VS 2017 and click on the Server Explorer from the **View** tab.



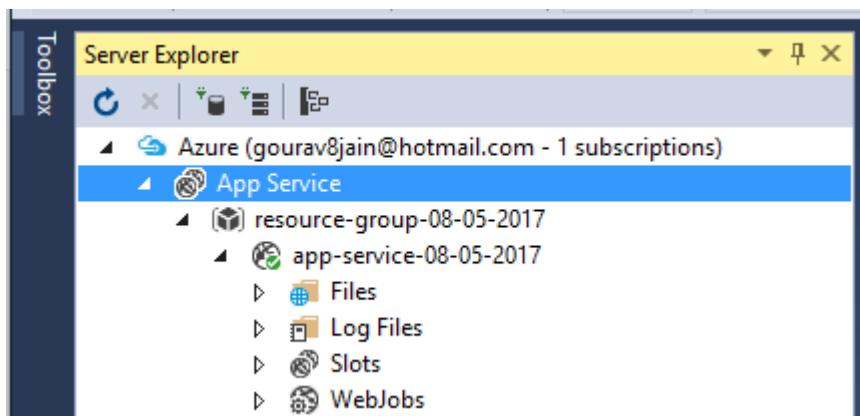
- Then, right click on Azure and click on the "Connect to Azure Subscription". After that, we will be able to see all the items present on the Azure portal in VS only.



- Right click on the App Service and create a new App Service followed by providing the name to the App Service as “app-service-08-05-2017”. Create a resource group named “resource-group-08-05-2017” and choose the existing service plan from there.



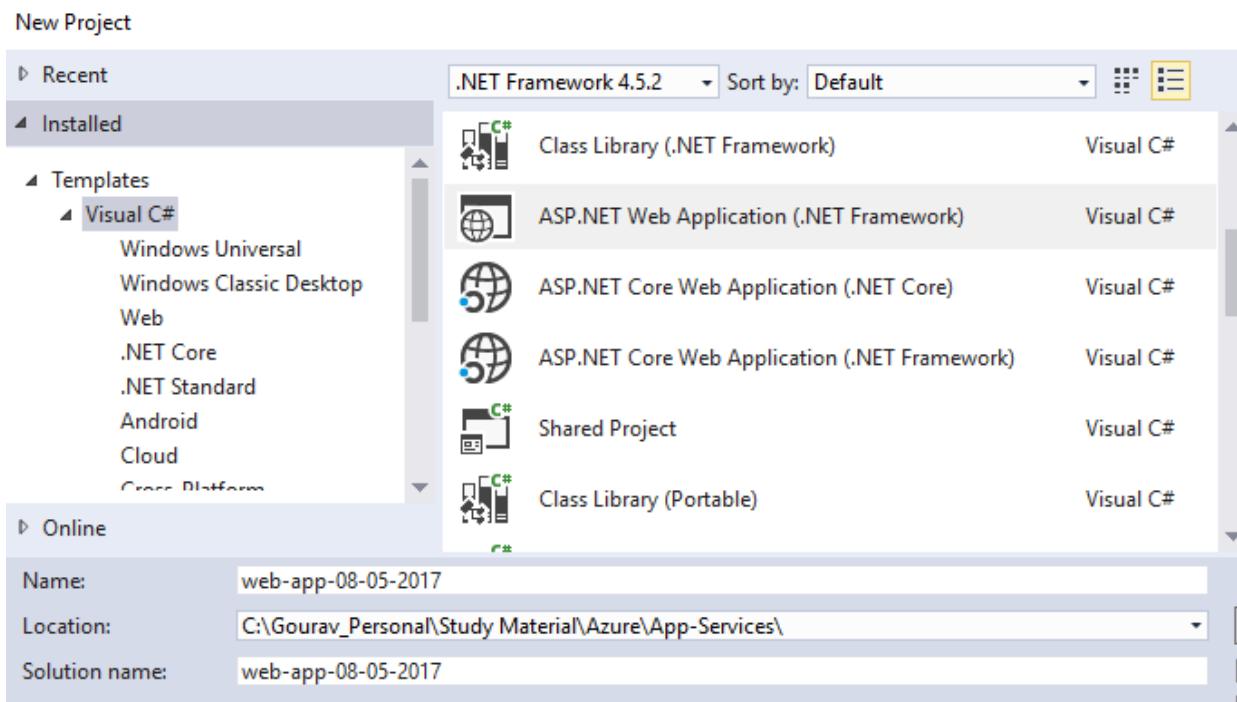
- Click on the **Create** button and then wait for a minute to get this created. Then, check into the App Services tab under Azure.



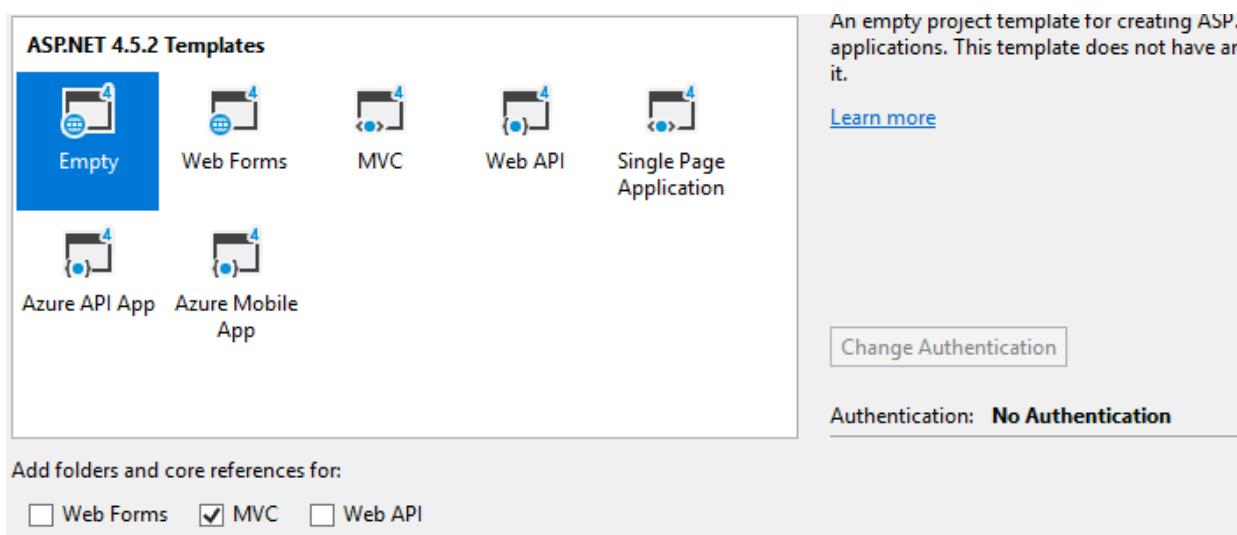
## Create web-application and deploy application on to the Azure

### Steps to be followed -

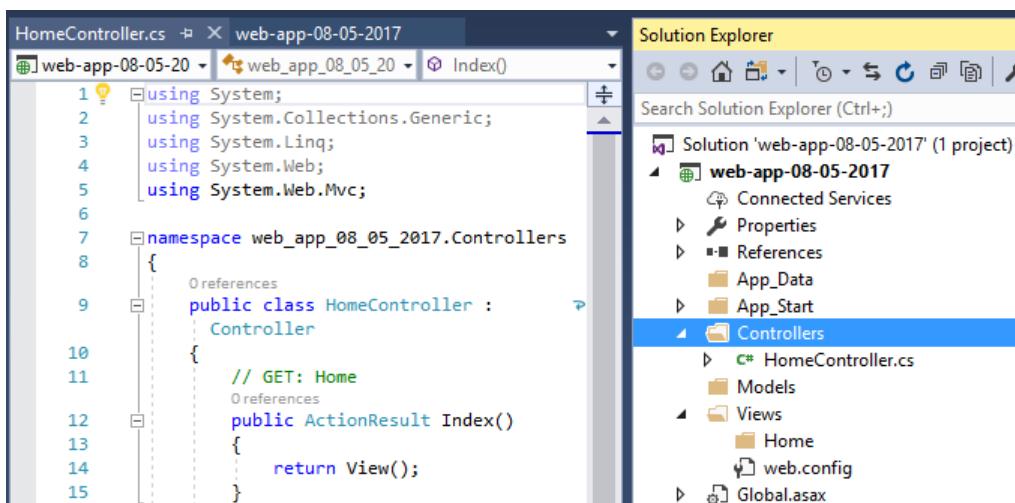
- Create a new project in VS 2017 named as “web-app-08-05-2017”.



- Then, choose empty template with MVC option checked there.



- Create a Home Controller in the **Controllers** folder.



```

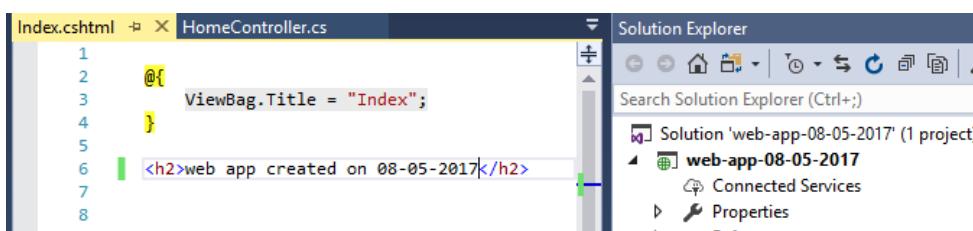
HomeController.cs
1  using System;
2  using System.Collections.Generic;
3  using System.Linq;
4  using System.Web;
5  using System.Web.Mvc;
6
7  namespace web_app_08_05_2017.Controllers
8  {
9      public class HomeController : Controller
10     {
11         // GET: Home
12         public ActionResult Index()
13         {
14             return View();
15         }
16     }
}

```

Solution Explorer:

- Solution 'web-app-08-05-2017' (1 project)
  - web-app-08-05-2017
    - Connected Services
    - Properties
    - References
    - App\_Data
    - App\_Start
    - Controllers
      - HomeController.cs
      - Models
    - Views
      - Home
      - web.config
    - Global.asax

- Create a View named as Index and write the sample code in .cshtml file. For e.g. - "web app created on 08-05-2017".



```

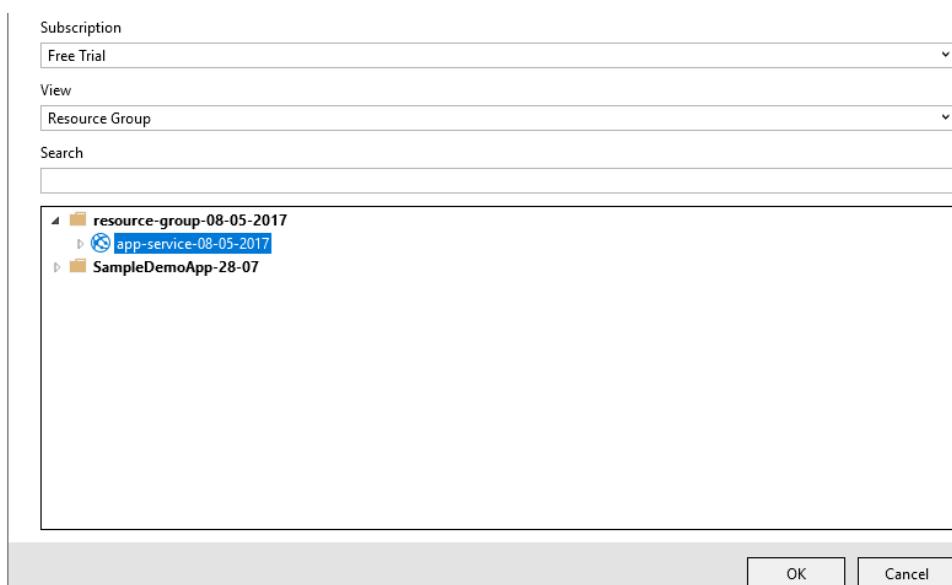
Index.cshtml
1  @{
2      ViewBag.Title = "Index";
3  }
4
5  <h2>web app created on 08-05-2017</h2>

```

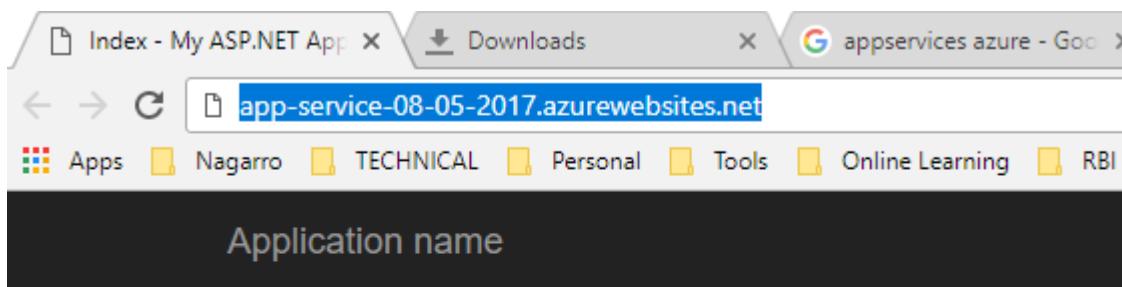
Solution Explorer:

- Solution 'web-app-08-05-2017' (1 project)
  - web-app-08-05-2017
    - Connected Services
    - Properties

- Right click on the project and click on **Publish**. Select the existing App Service and click on the OK button to get it deployed in the cloud.



- Run the application, after that, with the following URL and see the result – <http://app-service-08-05-2017.azurewebsites.net>.



© 2017 - My ASP.NET Application

### 3. Virtual Machines

#### What is Windows Azure Virtual Machine?

- Windows Azure Virtual Machine is an operating system or application environment that is installed on software which reproduces dedicated hardware.
- The end user gets the same experience on a virtual machine that they would have on a dedicated hardware.

#### Benefits

- Limits costs by reducing the need of physical hardware systems.
- Efficiently uses hardware, which lowers the quantities of hardware and associated maintenance costs, and reduces the power and cooling demand.
- Ease of management because virtual hardware does not fail.

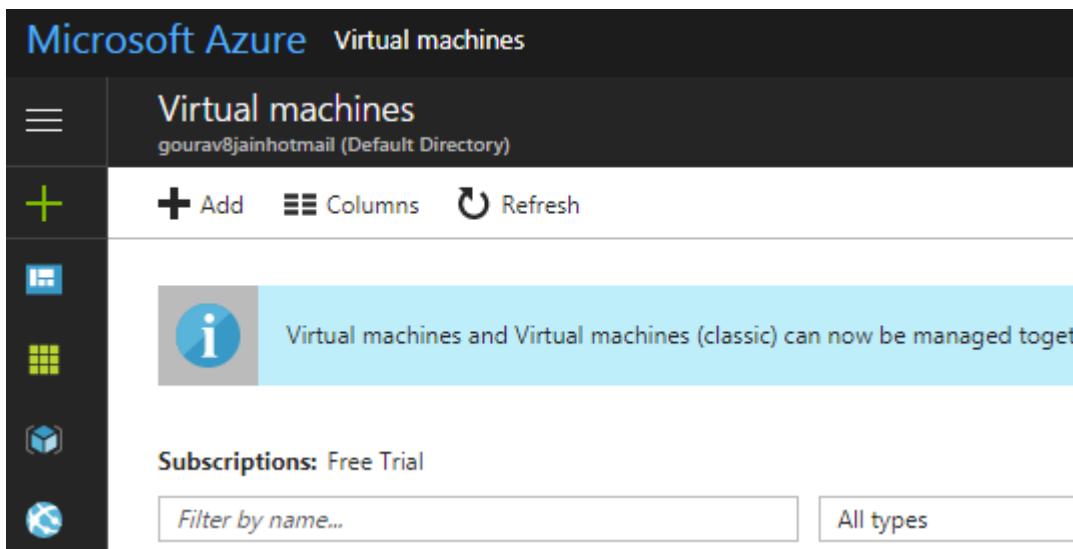
#### Vendors?

- **VMware** - mature product portfolio, with many years of use in the IT industry
- **Microsoft** - a bit of a late player to virtualization. Microsoft is showing considerable progress.

## Create Virtual Machines in Azure

### Steps to be followed -

- Open Azure portal and go to Virtual machines section. Click on the **Add** symbol to add “virtual machines”.

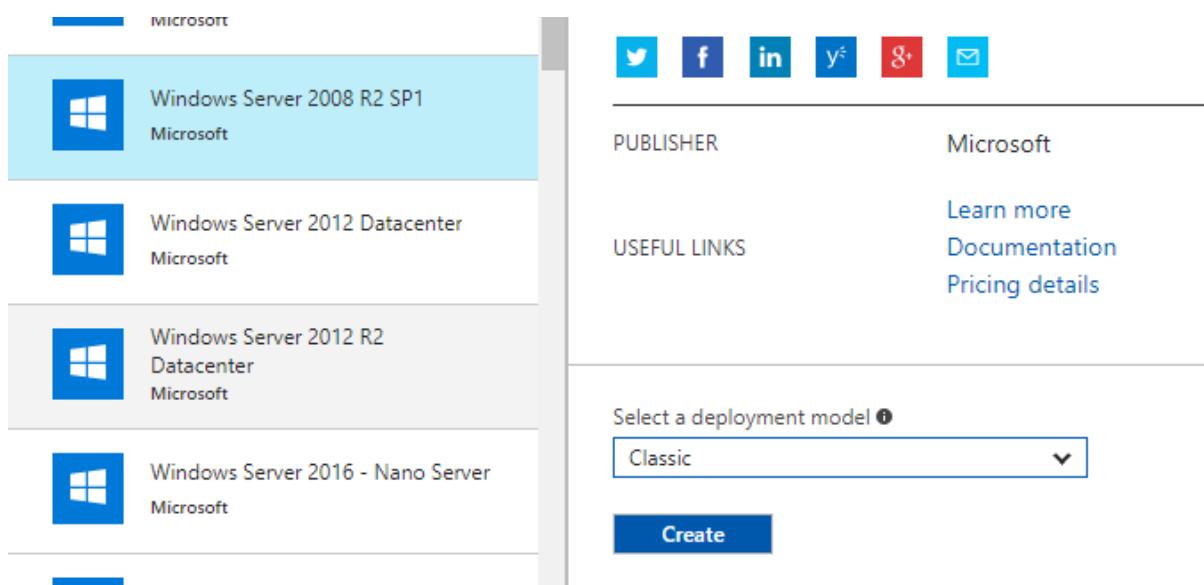


- Choose a **Windows Server** Machine from Microsoft.
- 

Recommended

 Windows Server Microsoft	 redhat. Red Hat Enterprise Linux RedHat	 Ubuntu Server Canonical	 SQL Server 2016 SP1 Enterprise on Microsoft
--	--	--	--

- Select “Windows Server 2008 SP1” and deployment model as “Classic”. Then, click on **Create**.



PUBLISHER Microsoft

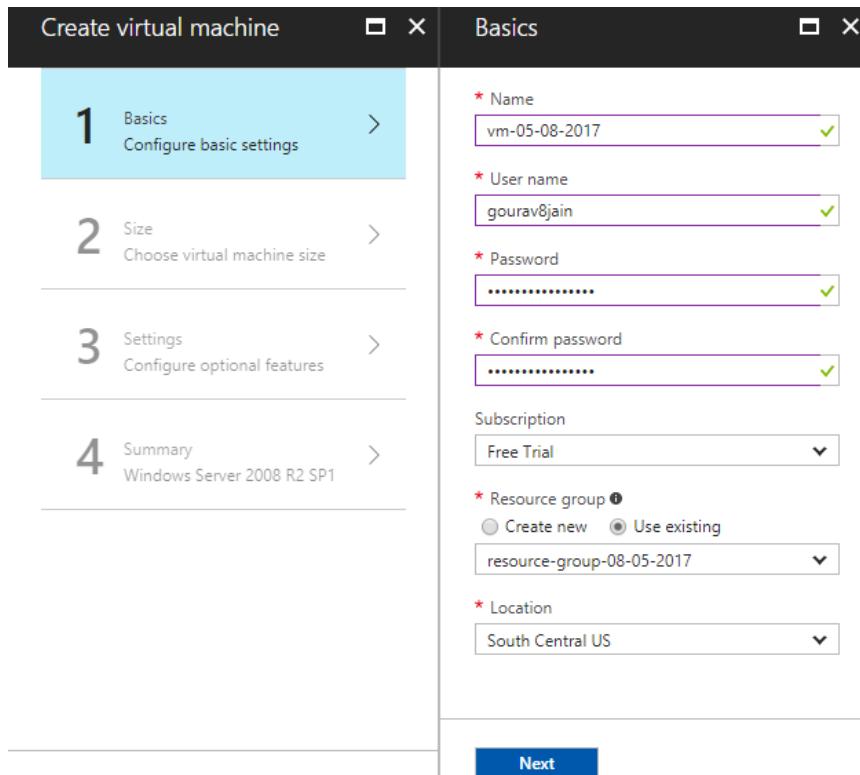
USEFUL LINKS

Select a deployment model ⓘ

Classic

**Create**

- Configure the basic settings with the unique name and use existing resource group. Click “Next”.



Basics

Name: vm-05-08-2017

User name: gourav8jain

Password: [REDACTED]

Confirm password: [REDACTED]

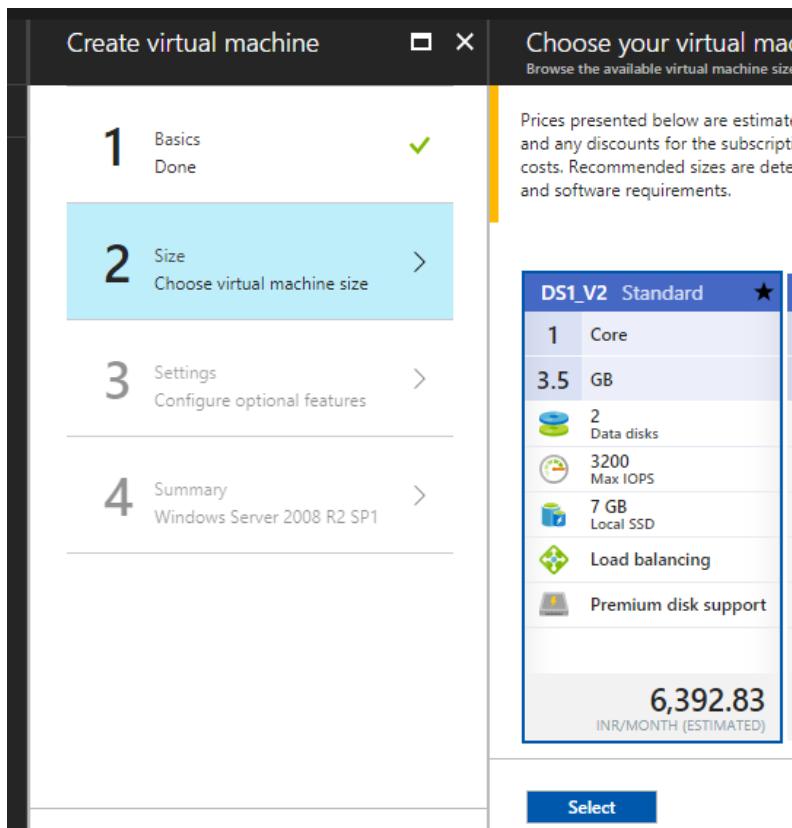
Subscription: Free Trial

Resource group: Use existing  
resource-group-08-05-2017

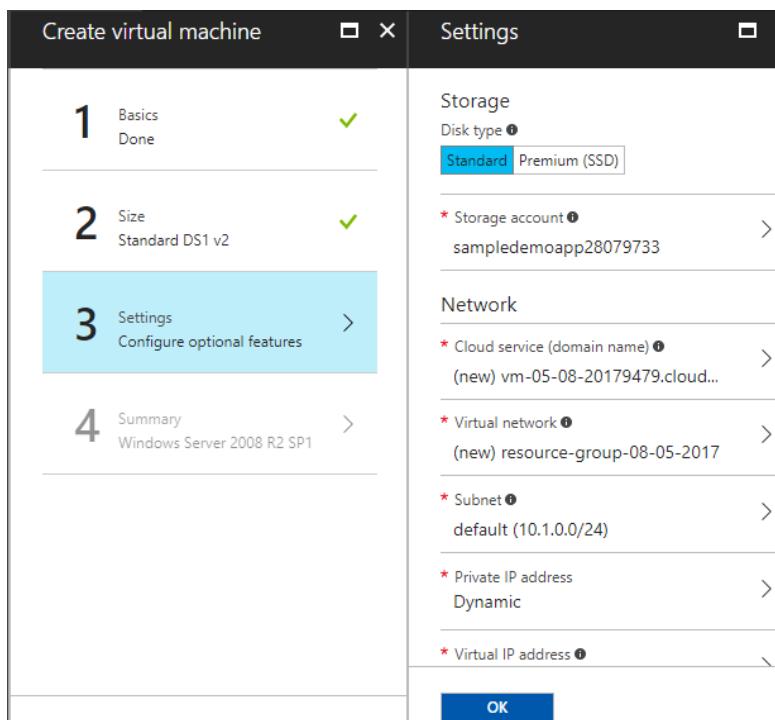
Location: South Central US

**Next**

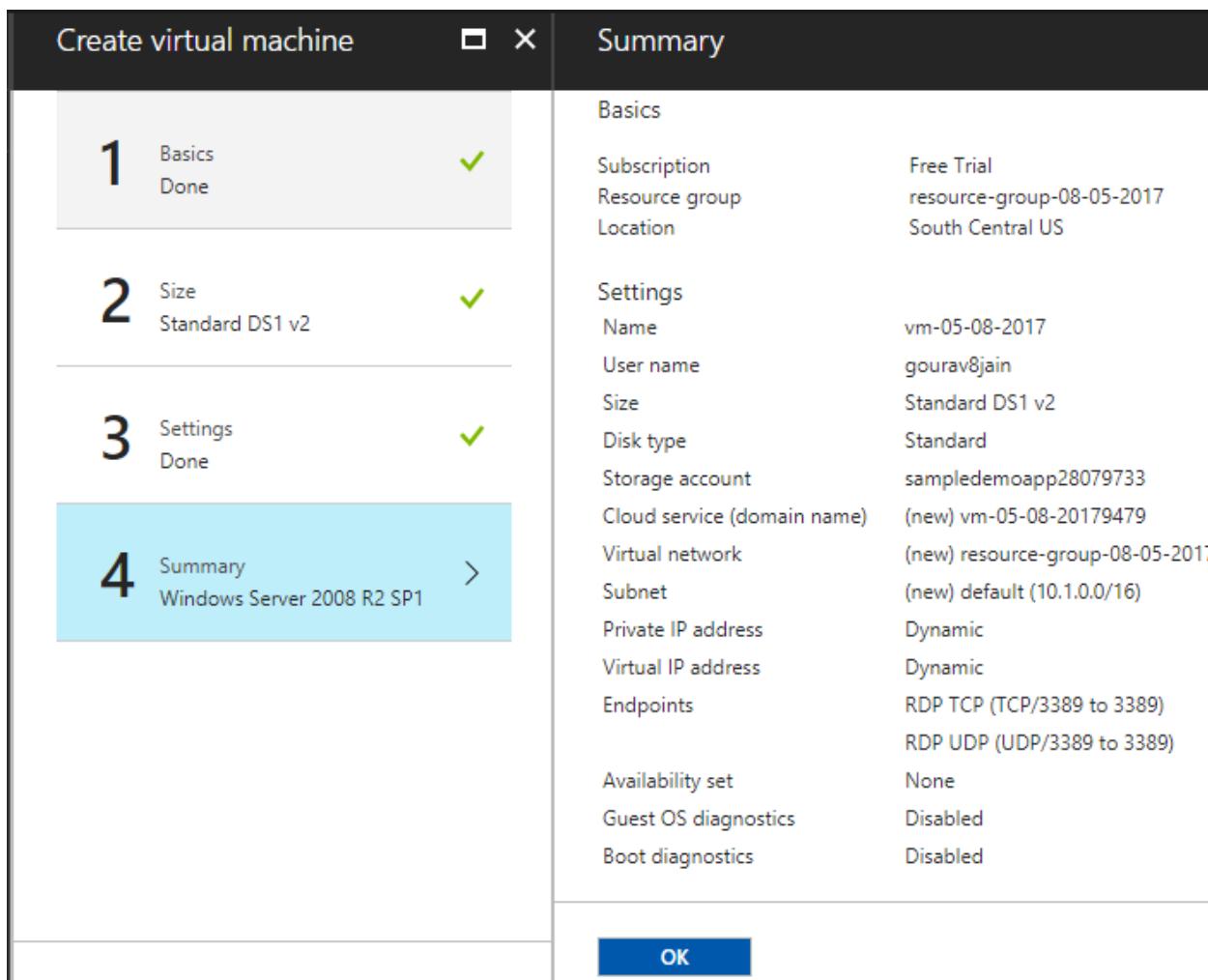
- Then, choose the VM size and select with the lowest configuration to get started.



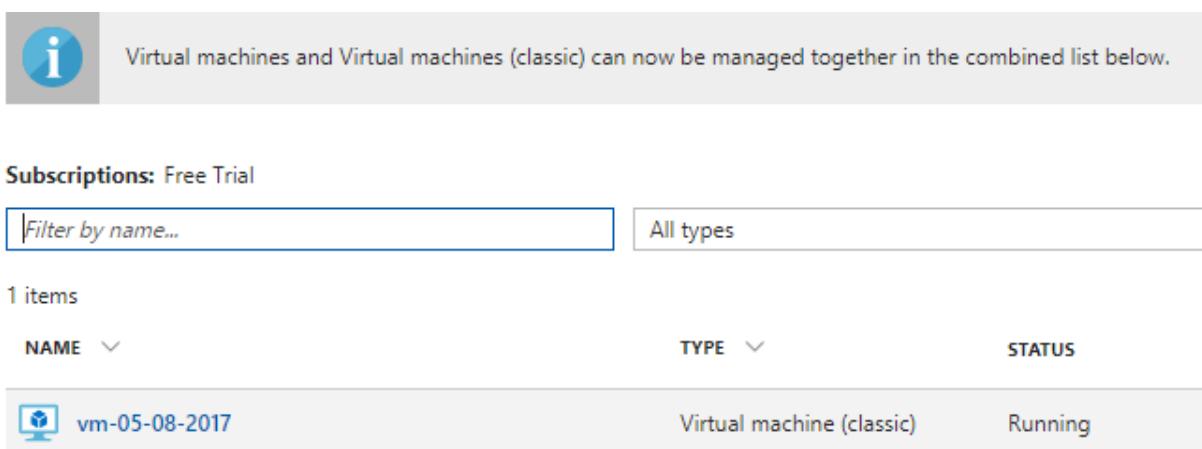
- Configure the optional features and select the disk-type as **standard**, and then, click on **OK**.



- Verify the summary and click on OK. Wait for a few minutes for the deployment.



- See the Virtual machines section. You can see the newly added VM there.



The screenshot shows the Azure portal's 'Virtual machines' section. It includes a informational message about managing VMs, a search bar, and a table listing the VM.

**Subscriptions:** Free Trial

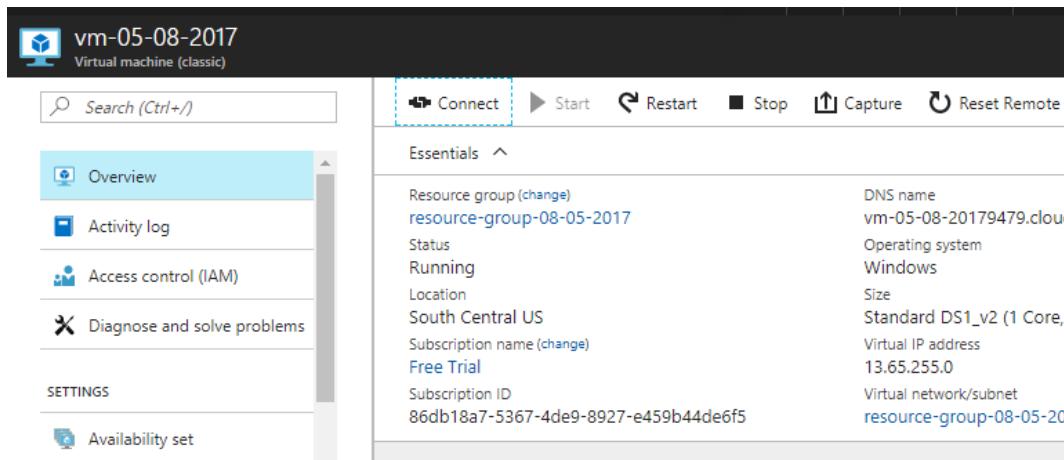
**Virtual machines and Virtual machines (classic) can now be managed together in the combined list below.**

NAME	TYPE	STATUS
vm-05-08-2017	Virtual machine (classic)	Running

## Connect to the Virtual Machine

### Steps to be followed -

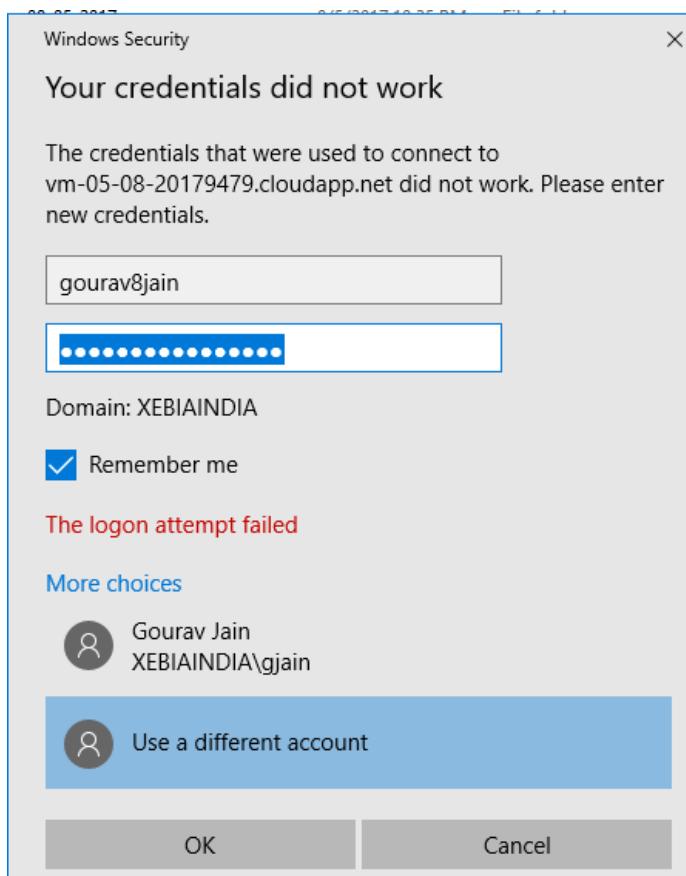
- Go to Virtual machines section and select the VM. Then, click on **Connect** to download the RDP file.



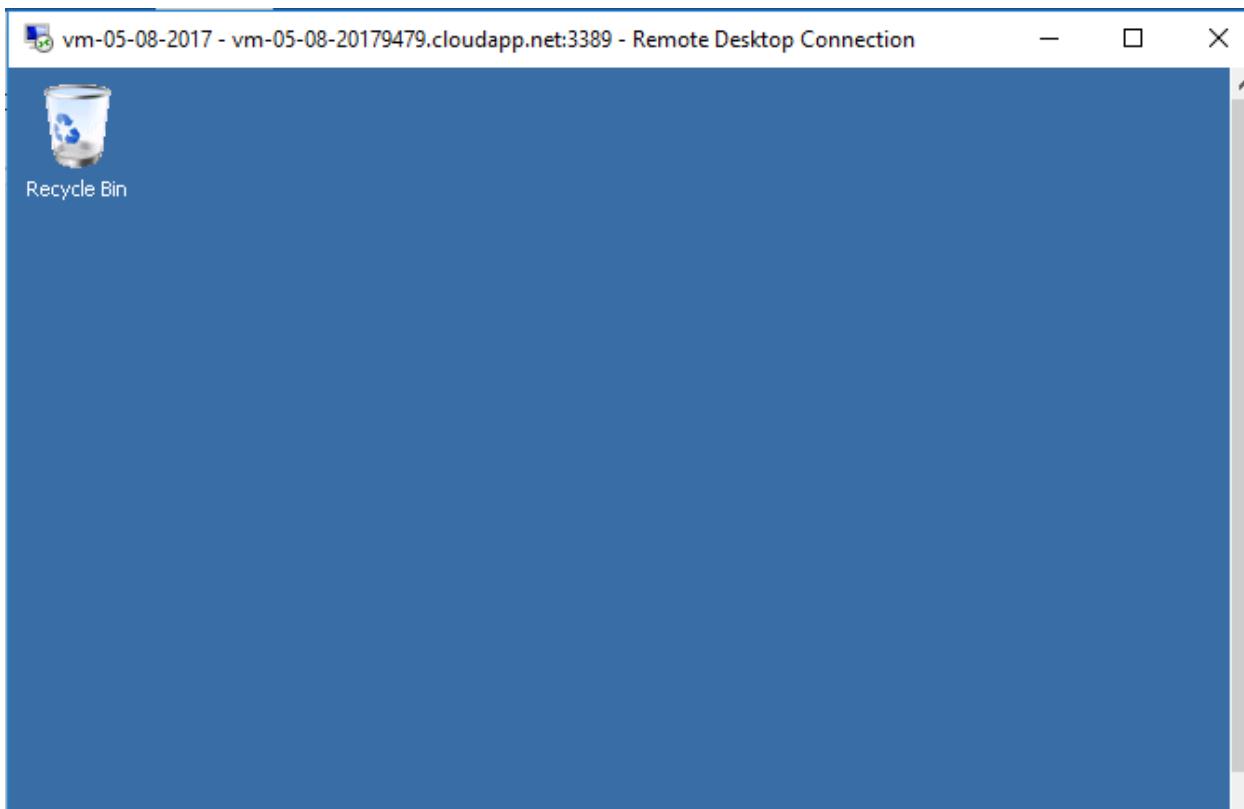
The screenshot shows the Azure portal interface for a virtual machine named 'vm-05-08-2017'. The 'Connect' button is highlighted in the top navigation bar. The main pane displays the 'Essentials' section with various configuration details:

Resource group (change)	DNS name
<a href="#">resource-group-08-05-2017</a>	vm-05-08-20179479.cloudapp.net
Status	Operating system
Running	Windows
Location	Size
South Central US	Standard DS1_v2 (1 Core, 13.65.255.0)
Subscription name (change)	Virtual IP address
<a href="#">Free Trial</a>	13.65.255.0
Subscription ID	Virtual network/subnet
86db18a7-5367-4de9-8927-e459b44de6f5	<a href="#">resource-group-08-05-20</a>

- Connect to the virtual machine using the RDP file using the username and password that we used while creating the VM.



- See the dashboard.



## 4. SQL Azure

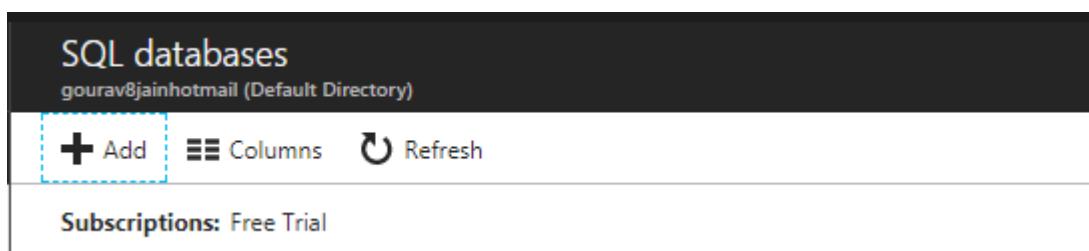
### What is SQL Azure?

- SQL Azure is Microsoft's cloud database service.
- It's based on SQL Server database technology built on Azure cloud computing platform.
- It enables organizations to store relational data in the cloud and quickly scale the size of their databases up or down as business needs change.
- It is hosted, managed, and provisioned in Microsoft data centers.

### Create SQL DB on Azure Platform

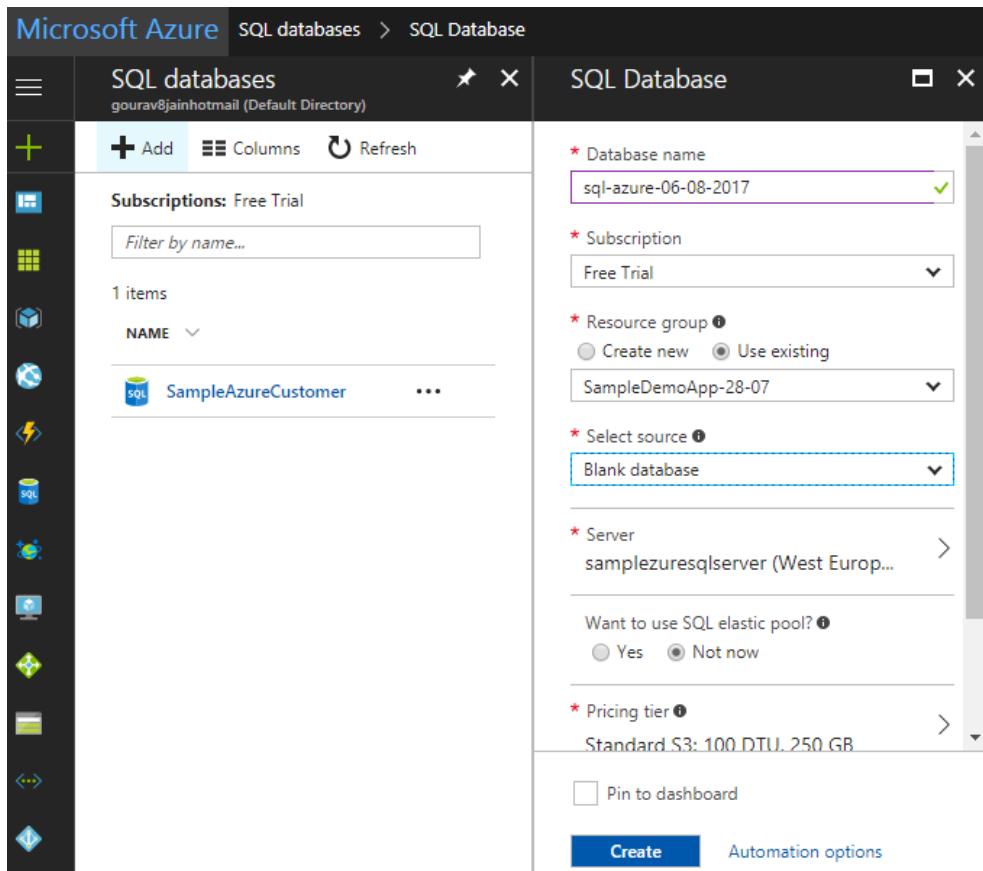
#### Steps to be followed -

- Open Azure portal and go to **SQL databases** section. Then, click on the **Add** symbol to add a new **SQL database**.



The screenshot shows the 'SQL databases' section of the Azure portal. At the top, it displays the user's email (gourav8jainhotmail) and the 'Default Directory'. Below the header, there are three buttons: 'Add' (highlighted with a blue dashed box), 'Columns', and 'Refresh'. A message 'Subscriptions: Free Trial' is also visible.

- Fill in the details of SQL consisting of the database name. Use the existing resource group and create it.

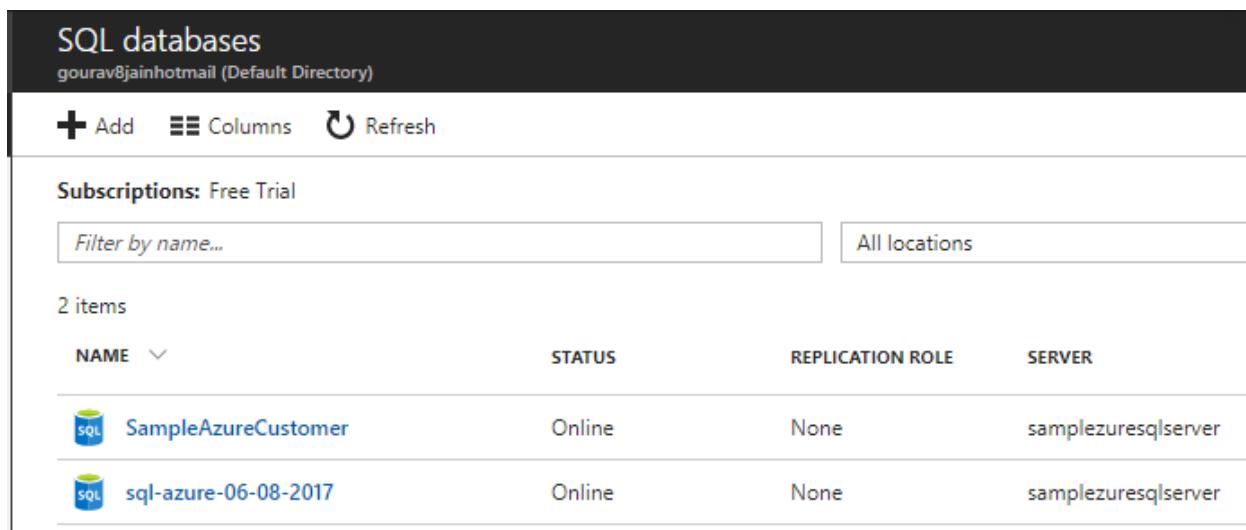


The screenshot shows the Microsoft Azure portal interface for creating a new SQL Database. The top navigation bar says "Microsoft Azure" and "SQL databases > SQL Database". The left sidebar has various icons for different services. The main area is titled "SQL Database" and contains the following fields:

- Database name:** sql-azure-06-08-2017
- Subscription:** Free Trial
- Resource group:** SampleDemoApp-28-07 (radio button selected)
- Select source:** Blank database
- Server:** samplezuresqlserver (West Europe)
- Pricing tier:** Standard S3: 100 DTU, 250 GB
- Want to use SQL elastic pool?** Not now (radio button selected)
- Automation options:** Pin to dashboard (checkbox)

At the bottom are "Create" and "Automation options" buttons.

- New DB has been added there. See the database section.



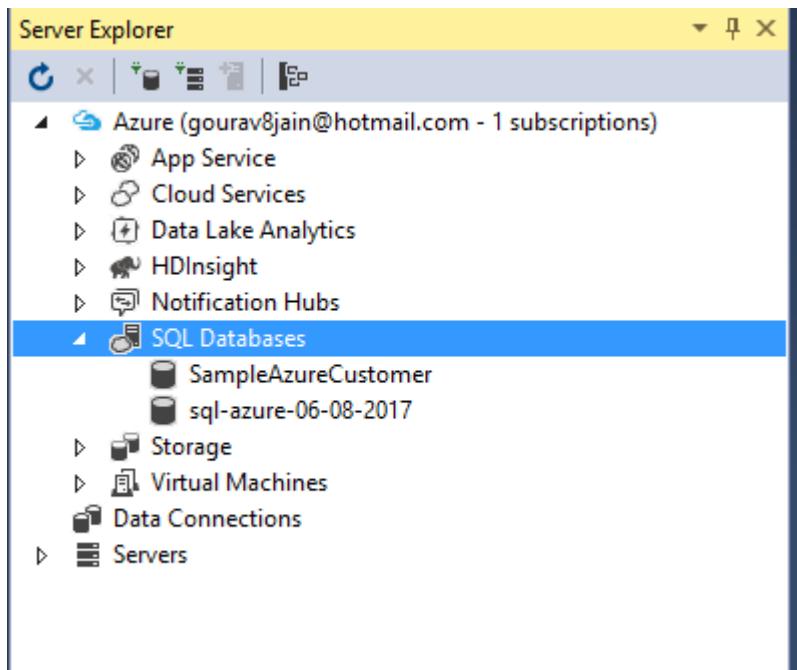
The screenshot shows the Microsoft Azure portal interface for managing SQL databases. The top navigation bar says "SQL databases" and "gourav8jainhotmail (Default Directory)". The left sidebar has various icons for different services. The main area lists the databases:

NAME	STATUS	REPLICATION ROLE	SERVER
SampleAzureCustomer	Online	None	samplezuresqlserver
sql-azure-06-08-2017	Online	None	samplezuresqlserver

## Use SQL Azure in VS 2017

### Steps to be followed -

- Open VS 2017 and refresh the **SQL Databases** section. Check if the new database is added there.



- Extract the relevant details from the SQL Azure like server-name, connection-string, and all.

sql-azure-06-08-2017 - Properties  
SQL database

Search (Ctrl+ /)

Automation script

MONITORING

Alert rules

Database size

Diagnostics settings

SUPPORT + TROUBLESHOOTING

Resource health

Performance overview

Performance recommendati...

Query Performance Insight

Automatic tuning

New support request

CREATION DATE  
8/6/2017, 1:40:36 AM

CONNECTION STRINGS  
[Show database connection strings](#)

SERVER NAME  
samplezuresqlserver.database.windows.net

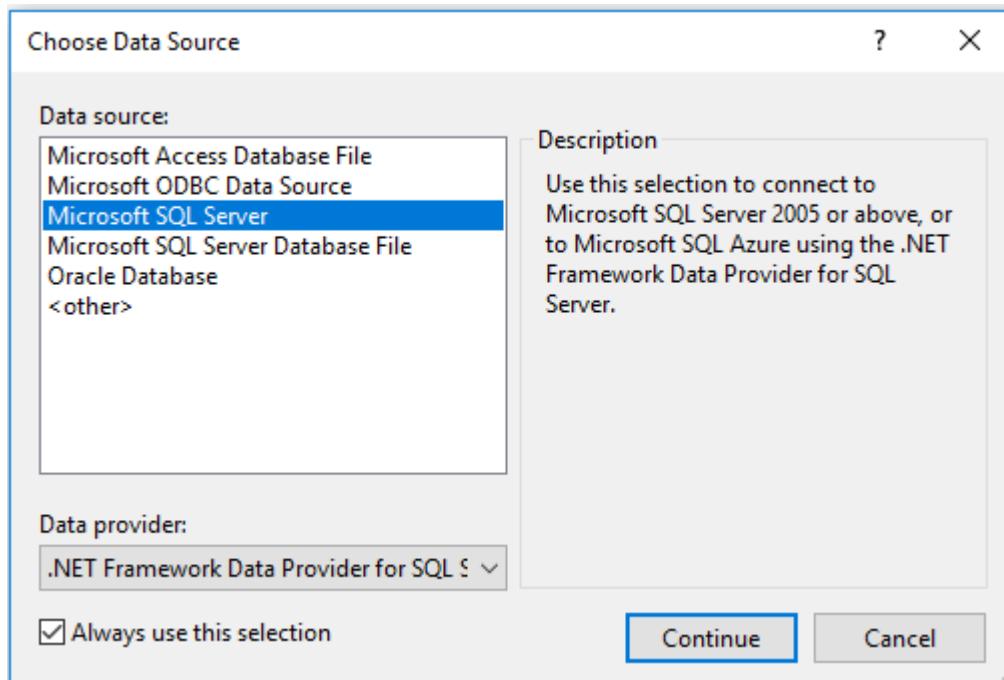
LOCATION  
West Europe

SERVER ADMIN LOGIN  
gourav8jain

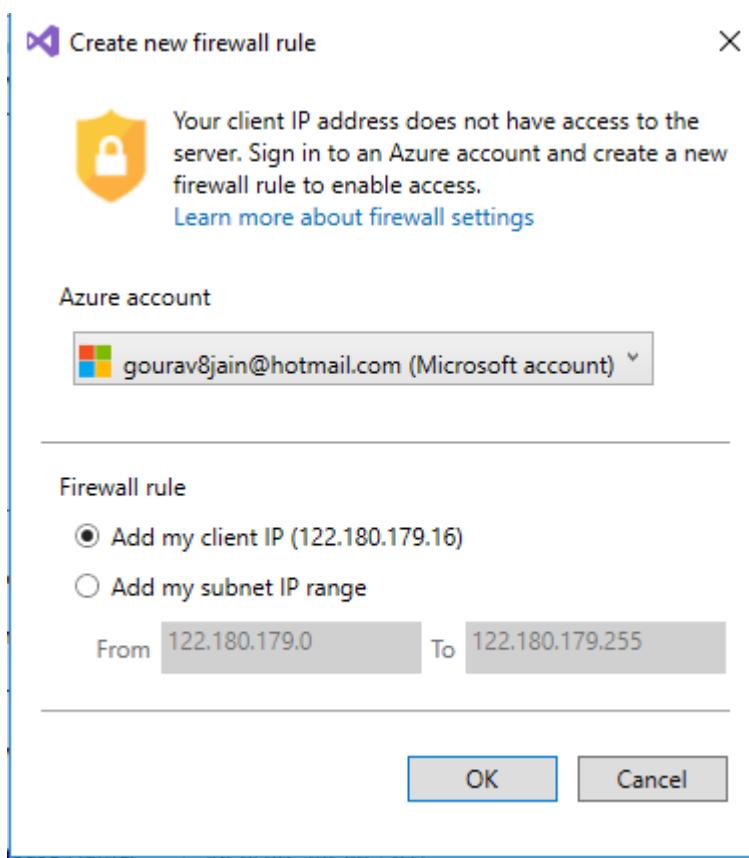
ACTIVE DIRECTORY ADMIN  
Not configured

RESOURCE GROUP  
SampleDemoApp-28-07

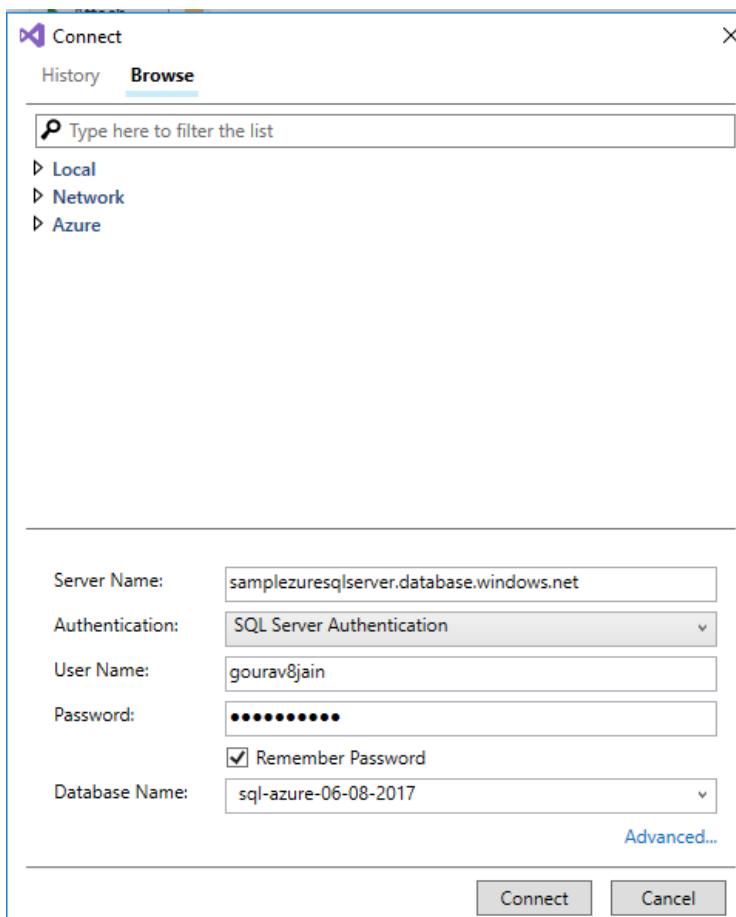
- Go to Visual Studio and see the **Data Connections**. Add a new connection and chose **SQL Server** option.



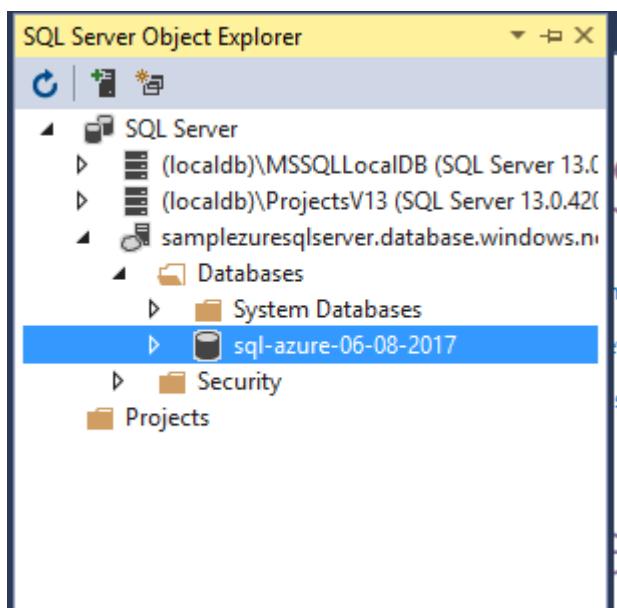
- Add the new firewall rule and press OK.



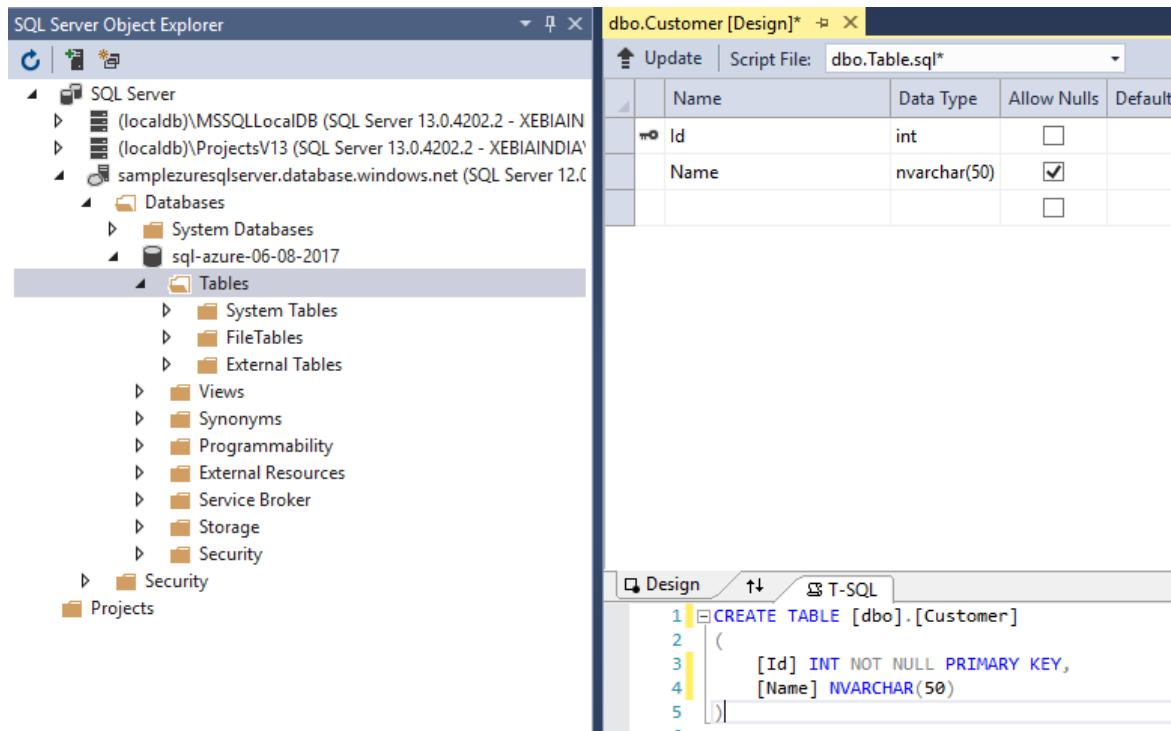
- Click on the database which has been recently created and click on **Open SQL Explorer** and connect using credentials.



- After connecting, the connection will be shown in **SQL Server** section under **SQL Server Object Explorer**.



- Go to the database and Add/Create a table Customer there with couple of fields - ID and Name.



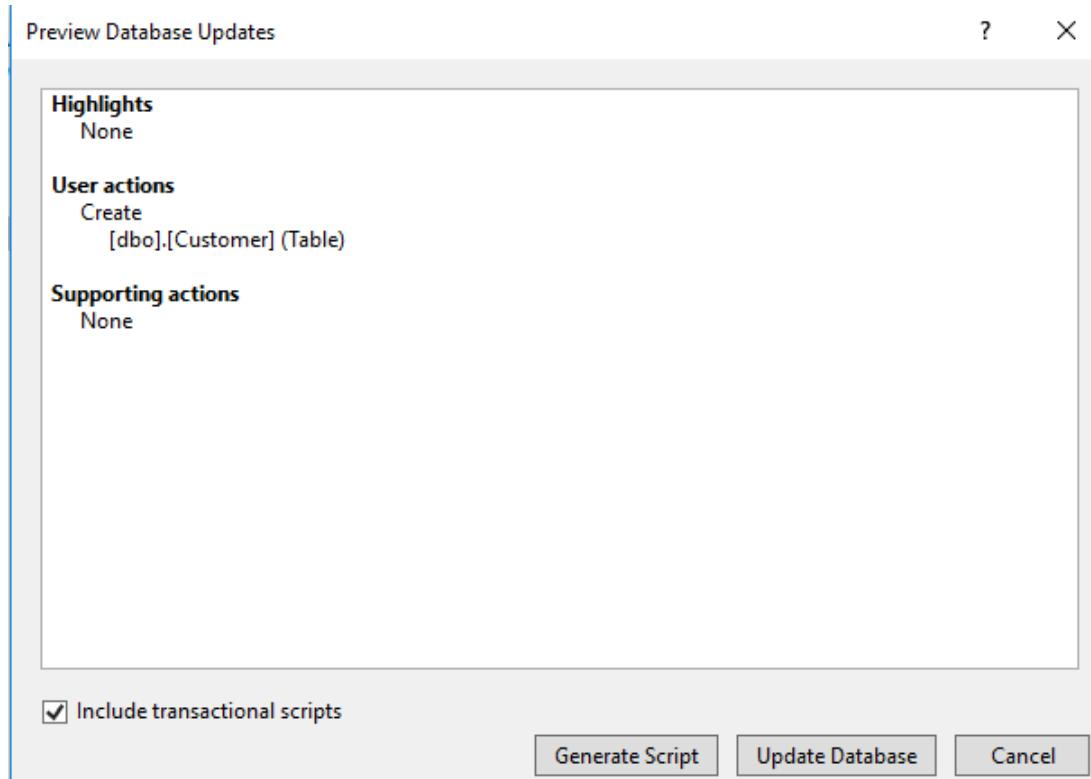
The screenshot shows the SQL Server Object Explorer on the left and the dbo.Customer [Design] window on the right. In the Object Explorer, the database 'sql-azure-06-08-2017' is selected, and the 'Tables' node under it is expanded. The dbo.Customer table is selected. The Design tab in the dbo.Customer [Design] window shows two columns: 'Name' and 'Data Type'. The first column has two rows: 'Id' (int) and 'Name' (nvarchar(50)). The second column has three rows: 'Allow Nulls' (checkboxes), 'Default' (checkboxes), and an empty row. Below the table definition, the T-SQL pane displays the CREATE TABLE statement:

```

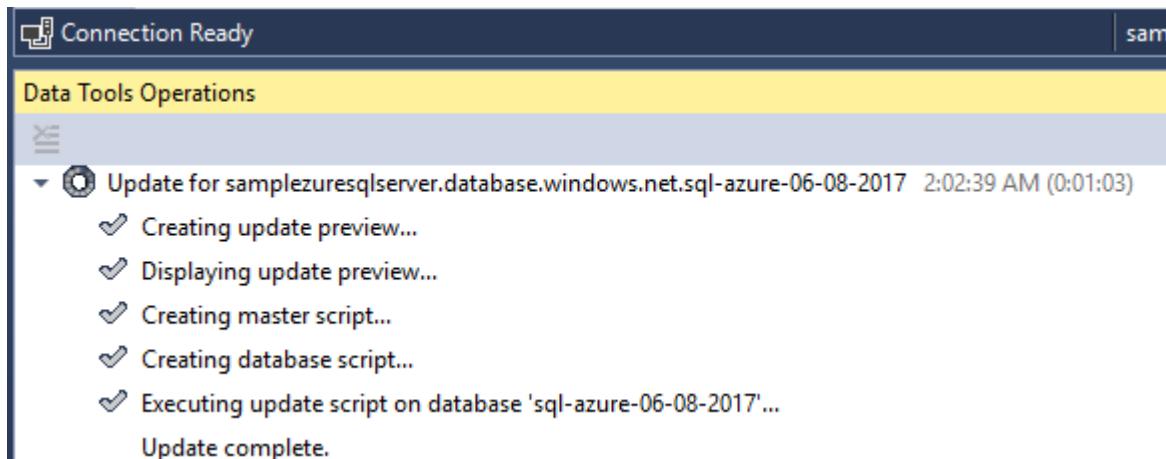
1 CREATE TABLE [dbo].[Customer]
2 (
3     [Id] INT NOT NULL PRIMARY KEY,
4     [Name] NVARCHAR(50)
5 )

```

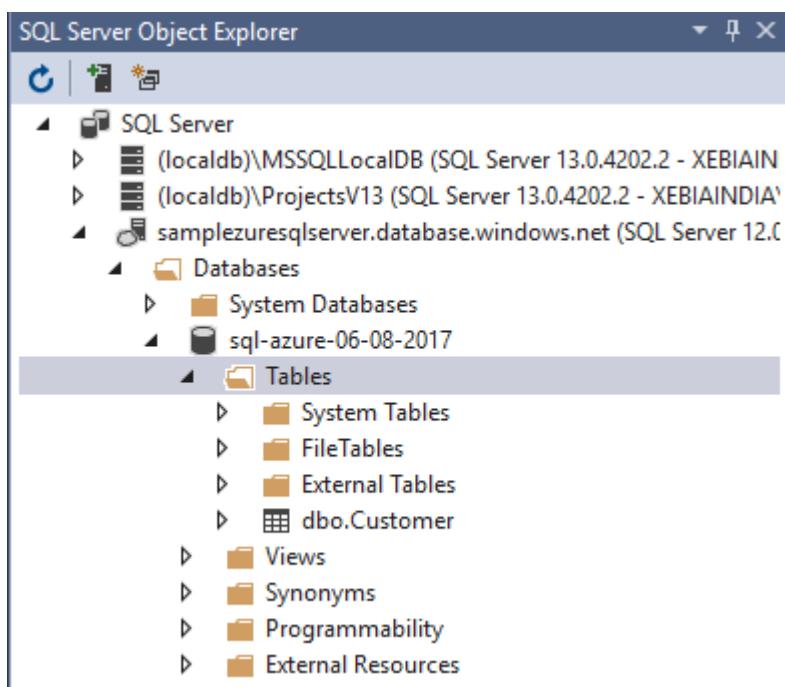
- Click on the **Update** button to create it into the **SQL Azure** on the portal and wait for some time.



- Click on the **Update Database** button to update it into SQL Azure on the portal and wait for some time.



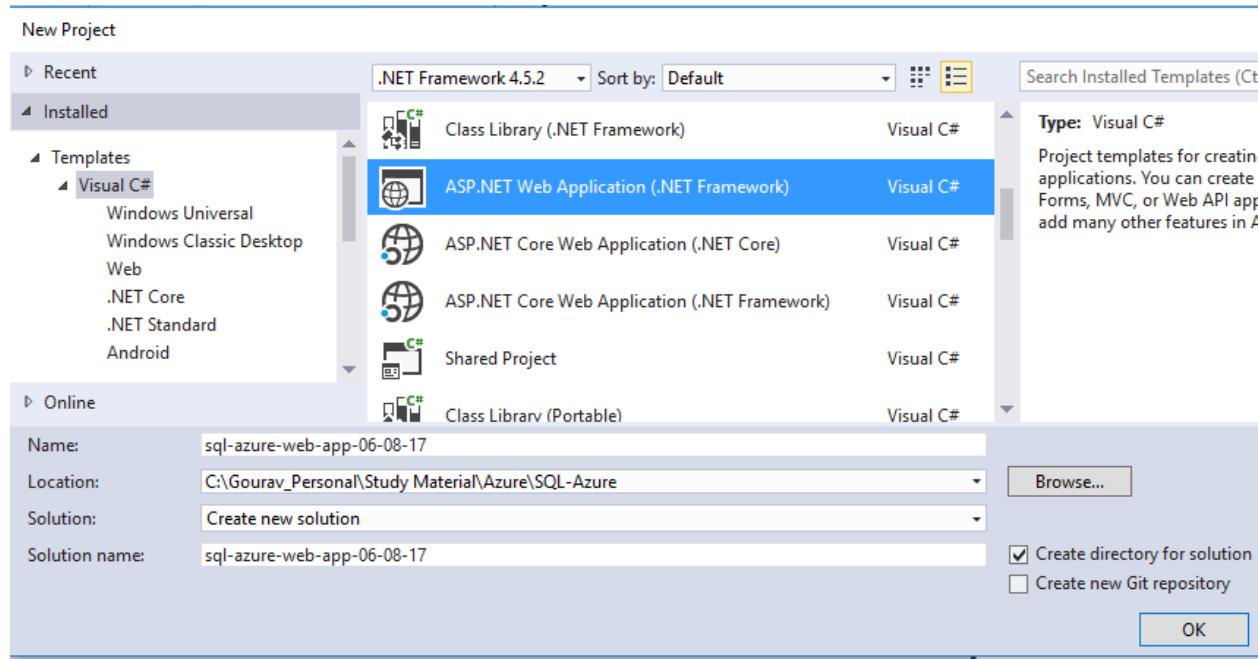
- See the SQL Server Object Explorer and locate the new table created there.



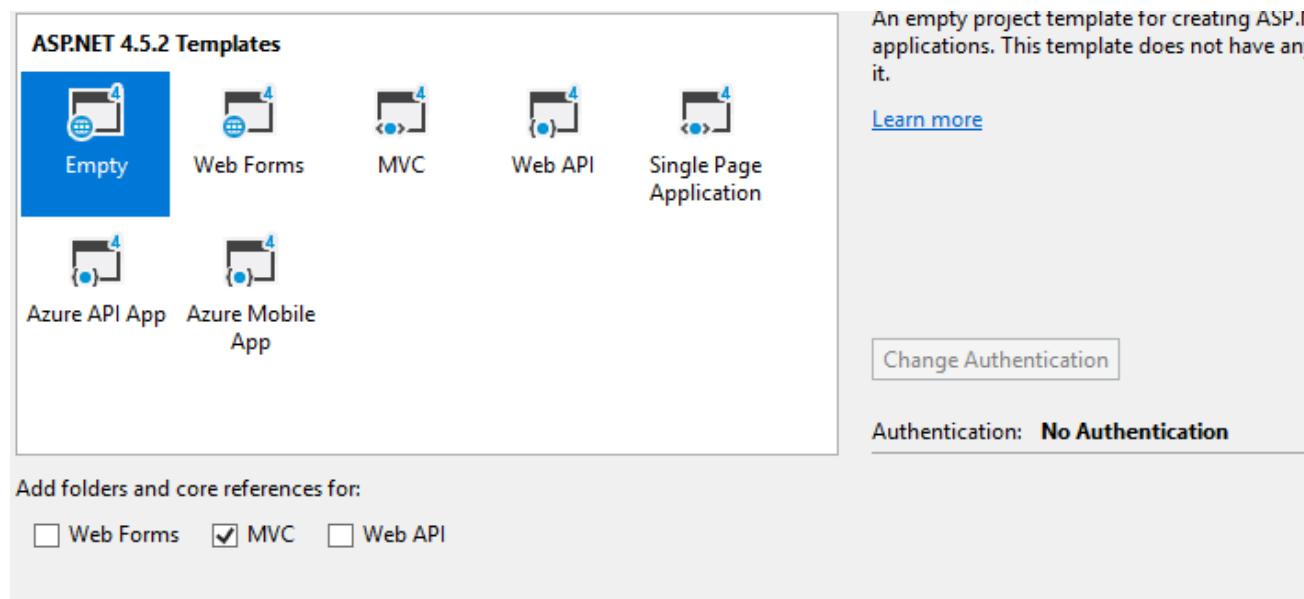
## Create a simple Web application

### Steps to be followed -

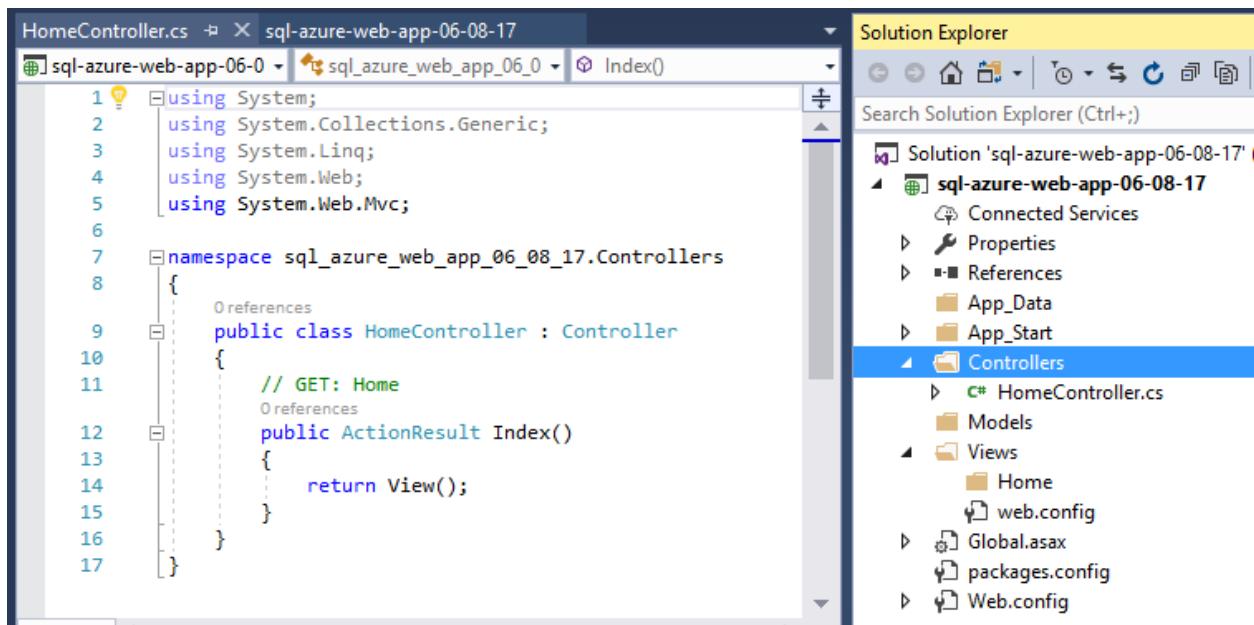
- Open Azure portal and go to **SQL databases** section. Then, click on the **Add** symbol to add **SQL database**.



- Then, choose empty template with MVC option checked there.



- Create a Home Controller in the **Controllers** folder.



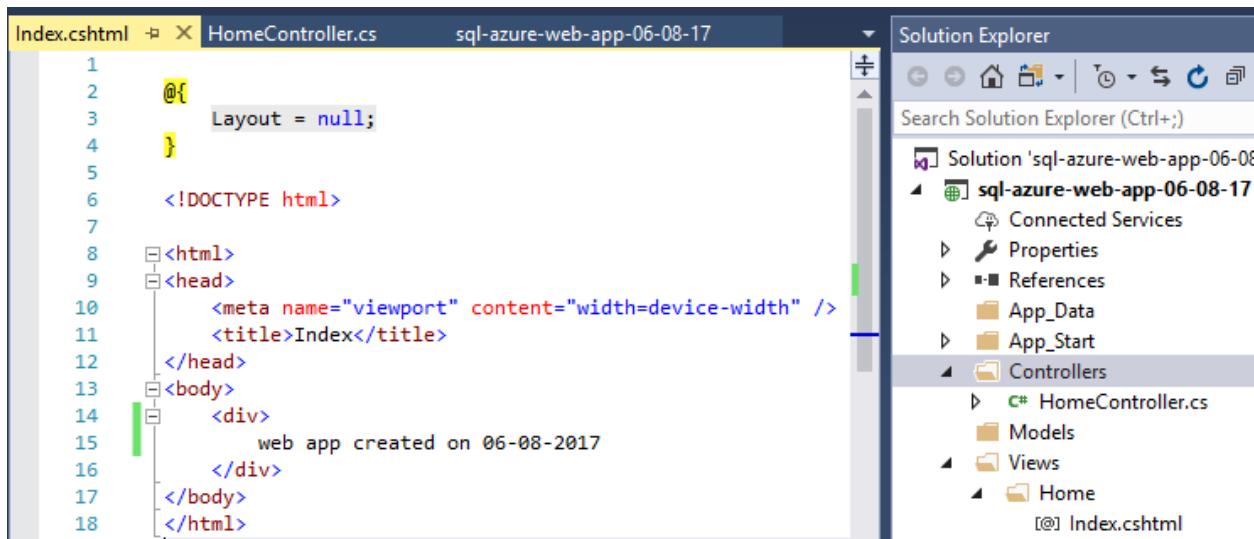
The screenshot shows the Visual Studio IDE with the code editor open to `HomeController.cs`. The code defines a basic MVC controller:

```

1  using System;
2  using System.Collections.Generic;
3  using System.Linq;
4  using System.Web;
5  using System.Web.Mvc;
6
7  namespace sql_azure_web_app_06_08_17.Controllers
8  {
9      public class HomeController : Controller
10     {
11         // GET: Home
12         public ActionResult Index()
13         {
14             return View();
15         }
16     }
17 }
```

The Solution Explorer on the right shows the project structure, including the newly created `Controllers` folder.

- Create a View named as Index and write the sample code in the .cshtml file; for e.g. “web app created on 06-08-2017”.



The screenshot shows the Visual Studio IDE with the code editor open to `Index.cshtml`. The view contains the following HTML and Razor code:

```

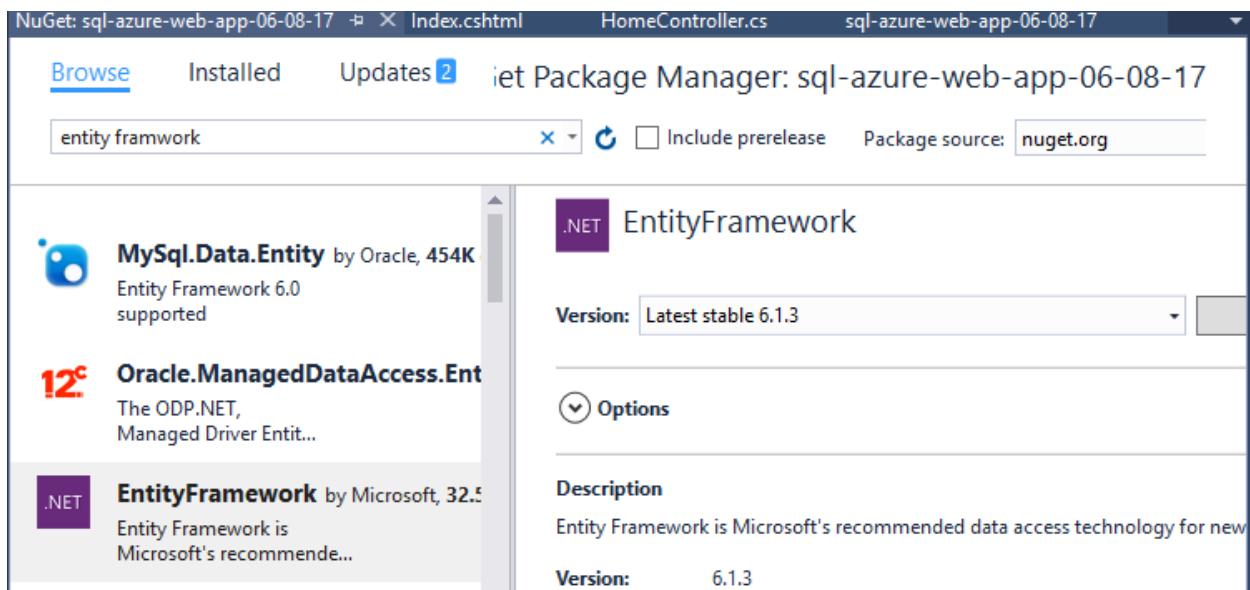
1  @{
2      Layout = null;
3  }
4
5  <!DOCTYPE html>
6
7  <html>
8      <head>
9          <meta name="viewport" content="width=device-width" />
10         <title>Index</title>
11     </head>
12     <body>
13         <div>
14             web app created on 06-08-2017
15         </div>
16     </body>
17 </html>
```

The Solution Explorer on the right shows the project structure, including the newly created `Views/Home/Index.cshtml`.

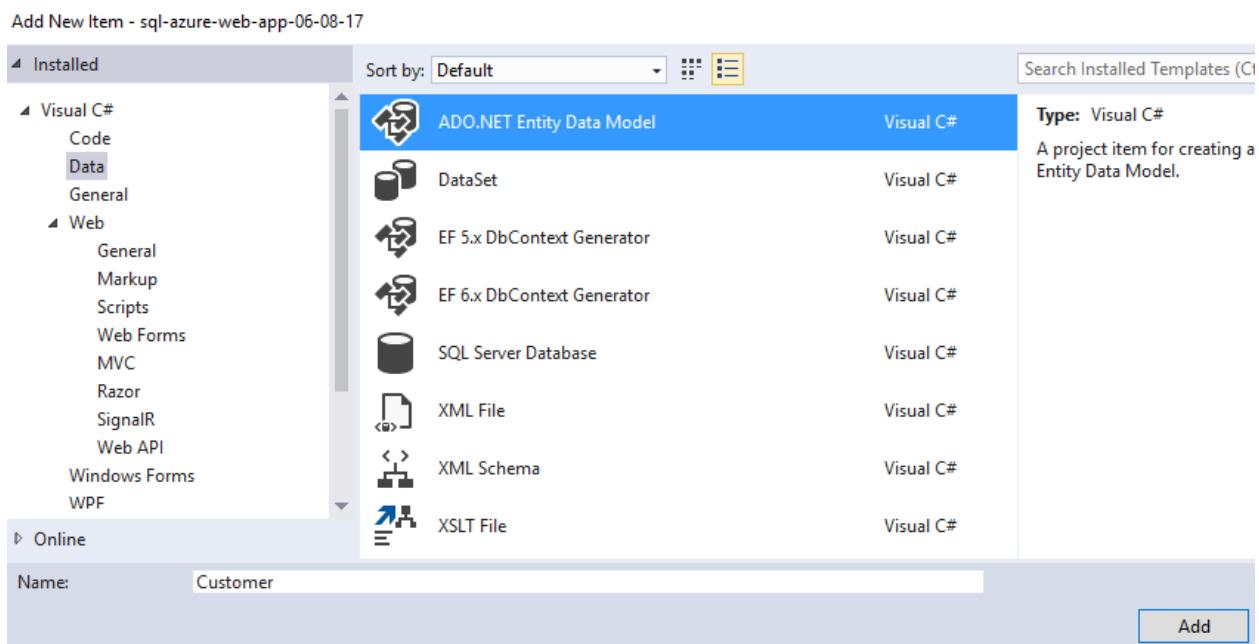
## Connect the application with SQL Azure using EF

### Steps to be followed -

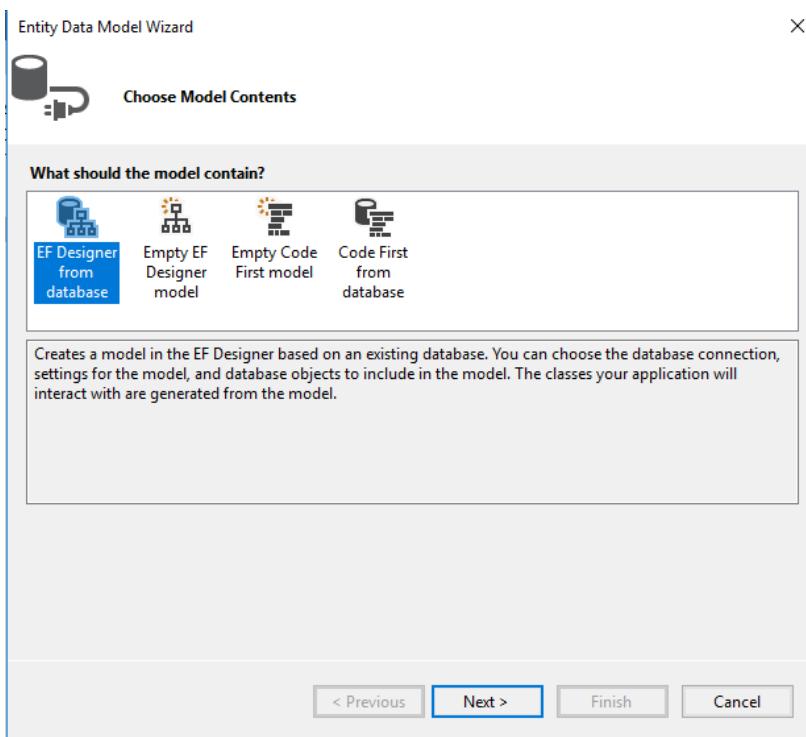
- Right click on the project and install **Entity Framework NuGet package** by choosing the option “Manage Packages”.



- Add .edmx file to use a DB first approach and connect with the **SQL Azure** entities.



- Choose the DB first approach there.



- Extract the server-name from the SQL Azure DB's properties on the portal and create a SQL Server connection using the credentials. Then, choose the DB from there and press **OK**.

## Connection Properties

[?](#) [X](#)

Enter information to connect to the selected data source or click "Change" to choose a different data source and/or provider.

## Data source:

Microsoft SQL Server (SqlClient)

[Change...](#)

## Server name:

samplezuresqlserver.database.windows.net

[Refresh](#)

## Log on to the server

## Authentication: SQL Server Authentication

User name: gourav8jain

Password:   Save my password

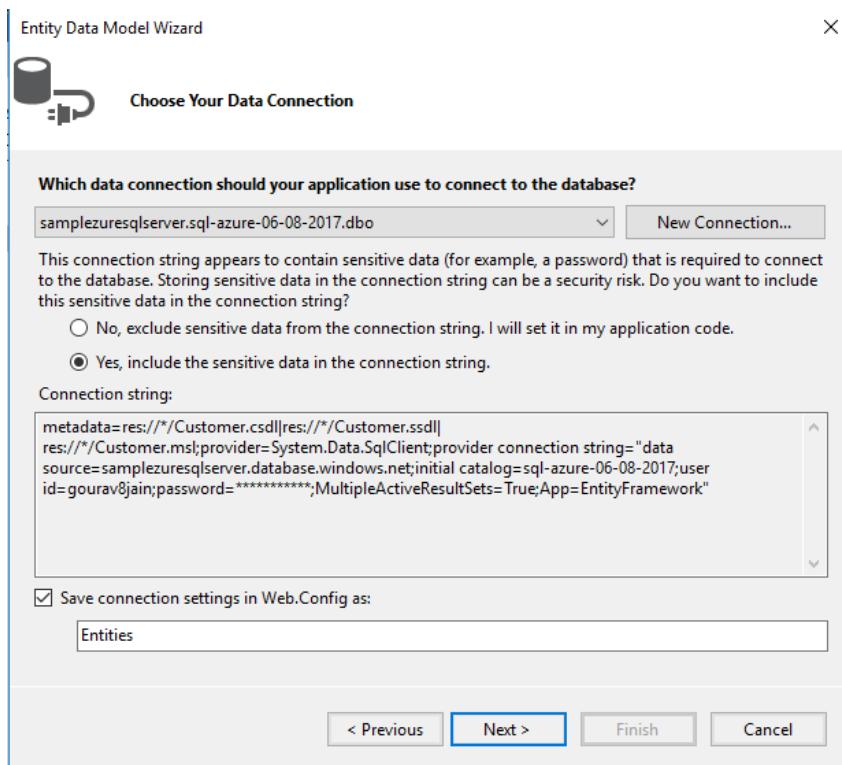
## Connect to a database

 Select or enter a database name:

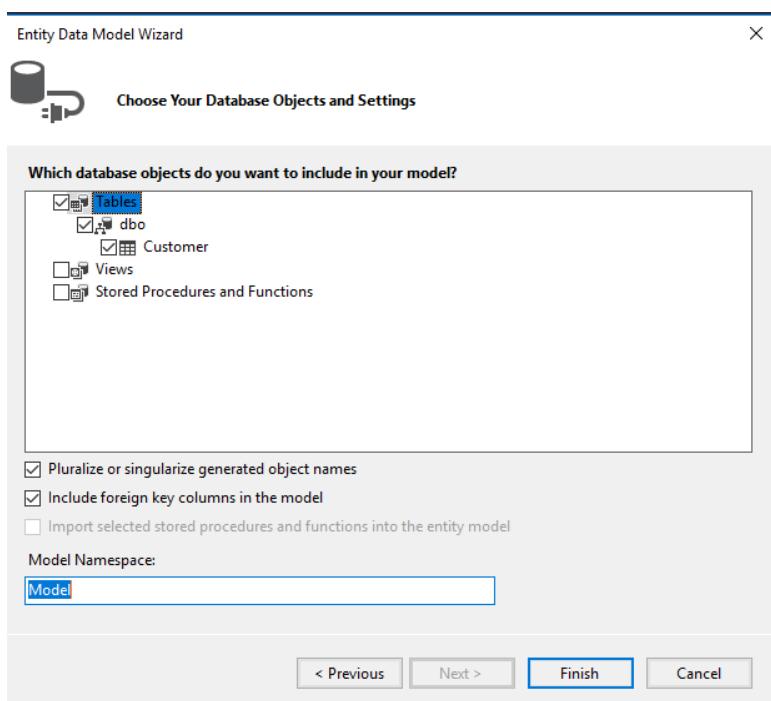
sql-azure-06-08-2017

 Attach a database file: [Browse...](#)Logical name: [Advanced...](#)[Test Connection](#)[OK](#)[Cancel](#)

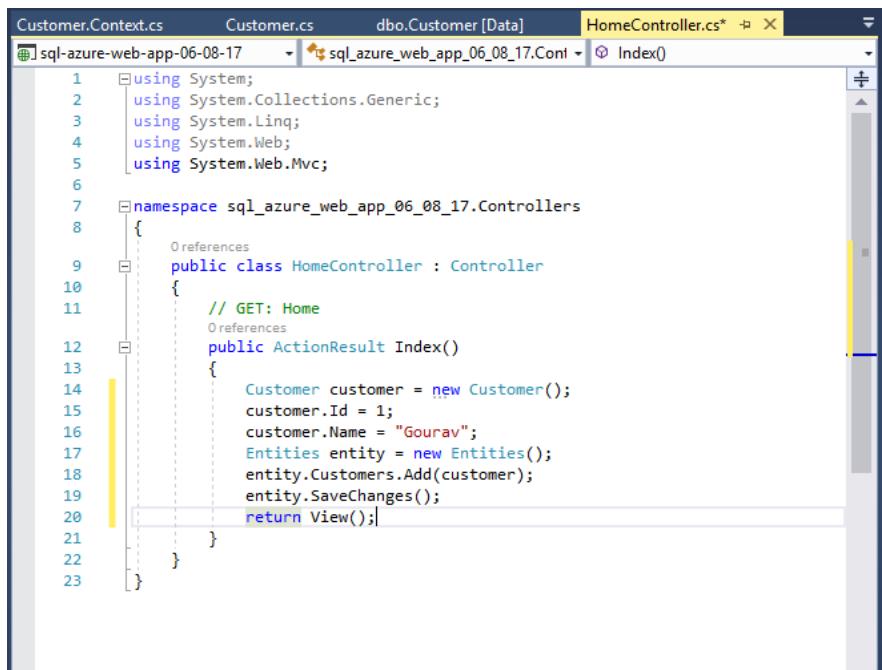
- Then, choose the YES option to having the “sensitive data in connection string” and press **Next**.



- Choose the customer table from the menu and click on **Finish**.



- Now, go to the **Controller** and add some code to insert an entry into the Customer table.



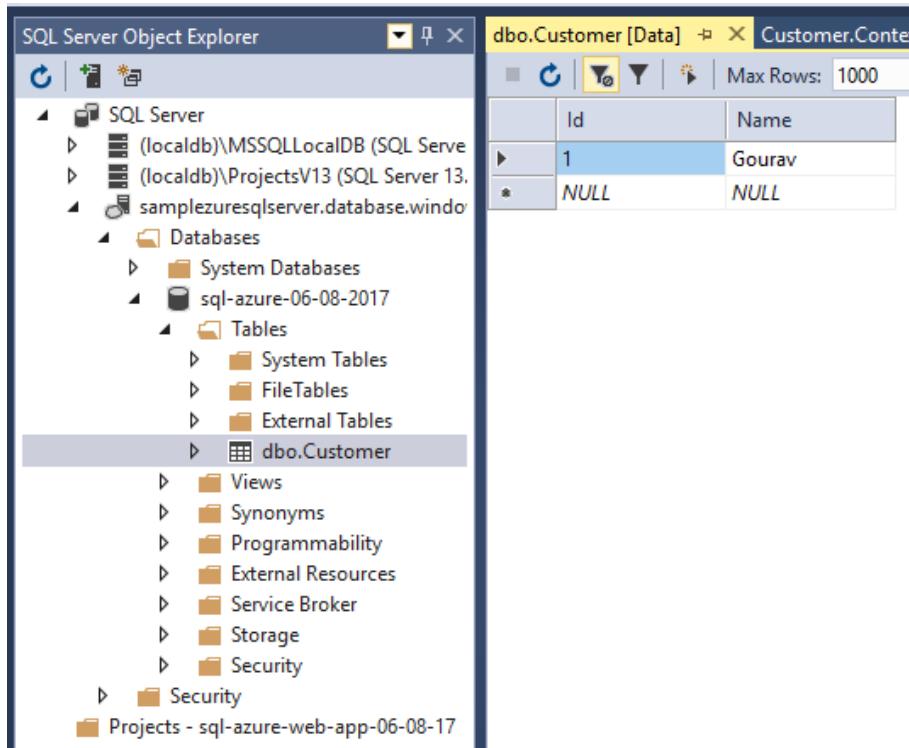
```

Customer.Context.cs      Customer.cs      dbo.Customer [Data]      HomeController.cs*  X
sql-azure-web-app-06-08-17  sql_azure_web_app_06_08_17.Con...  Index()

1  using System;
2  using System.Collections.Generic;
3  using System.Linq;
4  using System.Web;
5  using System.Web.Mvc;
6
7  namespace sql_azure_web_app_06_08_17.Controllers
8  {
9      public class HomeController : Controller
10     {
11         // GET: Home
12         public ActionResult Index()
13         {
14             Customer customer = new Customer();
15             customer.Id = 1;
16             customer.Name = "Gourav";
17             Entities entity = new Entities();
18             entity.Customers.Add(customer);
19             entity.SaveChanges();
20             return View();
21         }
22     }
23 }

```

- Run the application and check the Customer table data from the SQL Server Object Explorer.



The screenshot shows the SQL Server Object Explorer on the left and a data grid on the right. The Object Explorer tree shows the database structure, including the 'samplezuresqlserver.database.windows.net' database and its 'sql-azure-06-08-2017' schema, which contains the 'dbo.Customer' table. The data grid on the right displays the following data:

	Id	Name
▶	1	Gourav
✳	NULL	NULL

## 5. Azure Data Lake

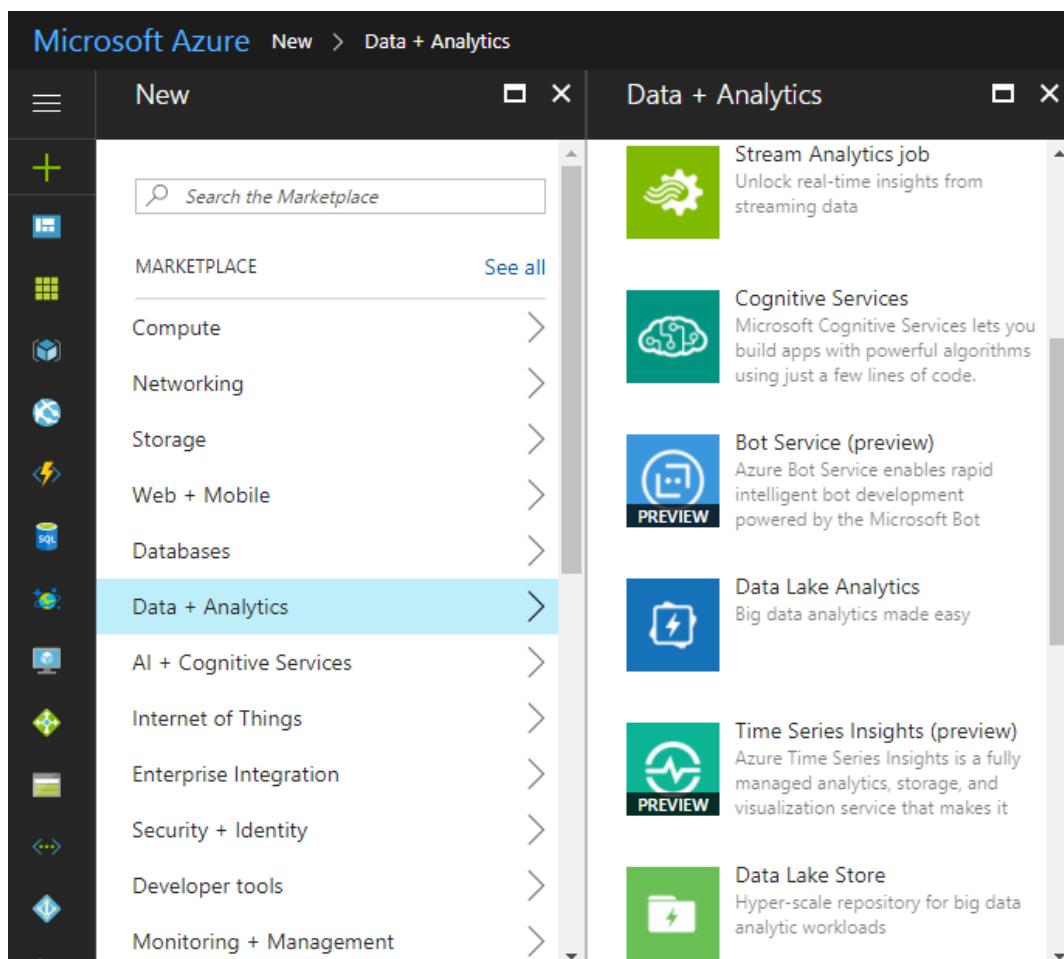
### What is Azure Data Lake?

- Azure Data Lake is highly scalable data storage and analytics service.
- It is hosted in Azure, Microsoft's public cloud, and is largely intended for big data storage and analysis.
- Data Lake is a cloud computing service and gives customers a faster and more efficient alternative to deploying and managing the big data infrastructure within their own data centers.

### Create a Data Lake Analytics account

#### Steps to be followed -

- Open the Azure portal and click on **Add**. Then, choose the **Data + Analytics** category.



The screenshot shows the Microsoft Azure portal interface. At the top, there is a navigation bar with 'Microsoft Azure' and 'New' buttons, followed by a breadcrumb trail 'Data + Analytics'. On the left, a vertical sidebar lists various service categories: Compute, Networking, Storage, Web + Mobile, Databases, Data + Analytics (which is highlighted with a blue selection bar), AI + Cognitive Services, Internet of Things, Enterprise Integration, Security + Identity, Developer tools, and Monitoring + Management. The main content area is titled 'Data + Analytics' and displays several service cards:

- Stream Analytics job**: Unlock real-time insights from streaming data.
- Cognitive Services**: Microsoft Cognitive Services lets you build apps with powerful algorithms using just a few lines of code.
- Bot Service (preview)**: Azure Bot Service enables rapid intelligent bot development powered by the Microsoft Bot.
- Data Lake Analytics**: Big data analytics made easy.
- Time Series Insights (preview)**: Azure Time Series Insights is a fully managed analytics, storage, and visualization service that makes it
- Data Lake Store**: Hyper-scale repository for big data analytic workloads.

- Click on the Data Lake analysis and then give the account-name. Use an existing resource-group and then, **Create**.

New Data Lake Analytics Ac... □ X

Name  
 ✓  
datalake060817.azuredatalakeanalytics.net

\* Subscription

\* Resource Group  
 Create new  Use existing

\* Location

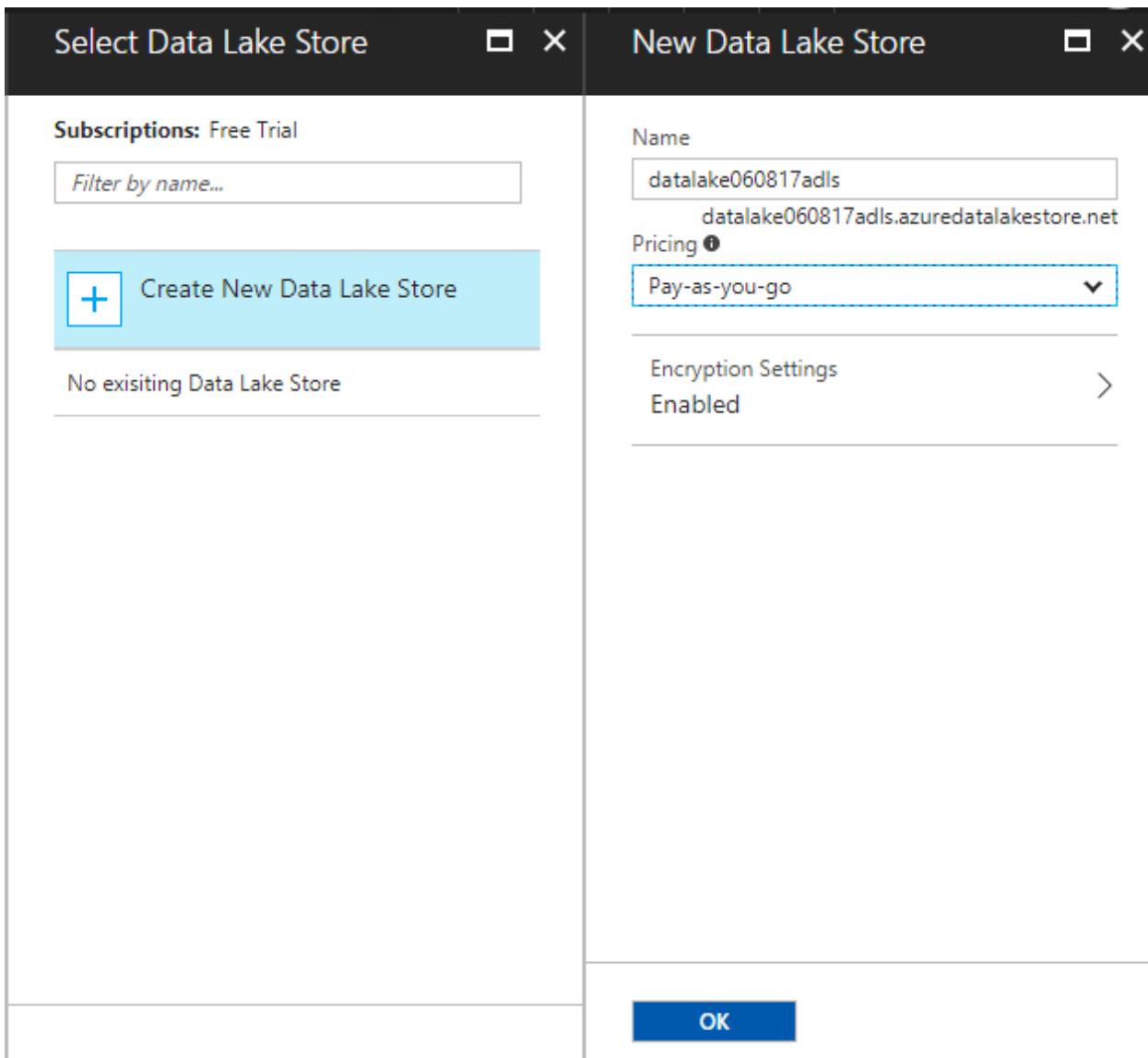
\* Data Lake Store ⓘ >  
*Configure required settings*

Pricing Tier ⓘ

Pin to dashboard

**Create** Automation options

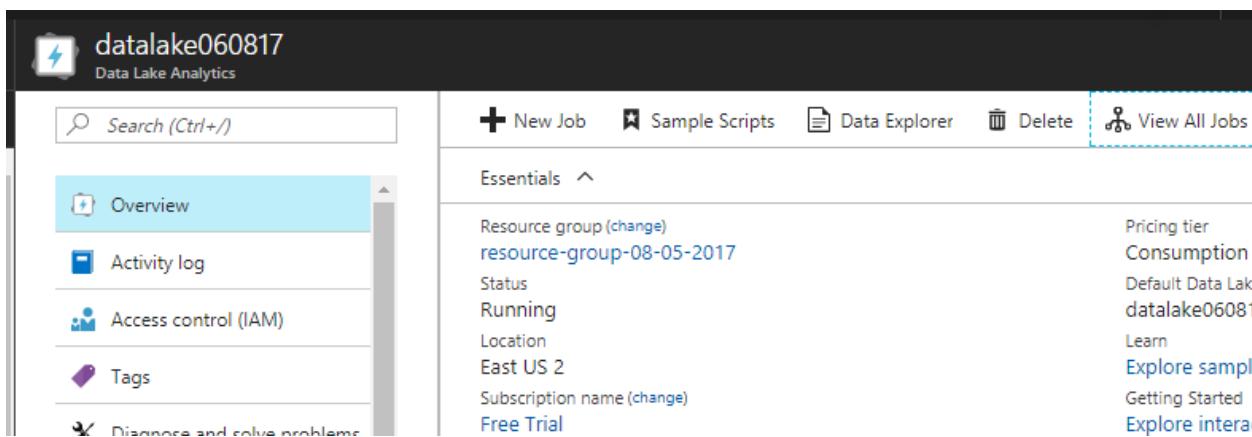
- Also, before that, we need to create “data lake store” and click on the OK button.



The screenshot shows two overlapping windows from the Azure portal:

- Select Data Lake Store** window (left):
  - Subscriptions:** Free Trial
  - Filter by name...** input field
  - Create New Data Lake Store** button (highlighted with a blue border)
  - No existing Data Lake Store** message
- New Data Lake Store** window (right):
  - Name:** datalake060817adls
  - Pricing:** Pay-as-you-go
  - Encryption Settings:** Enabled
  - OK** button (highlighted with a blue border)

- See the data lake analytics section for the newly created “data-lake060817”.



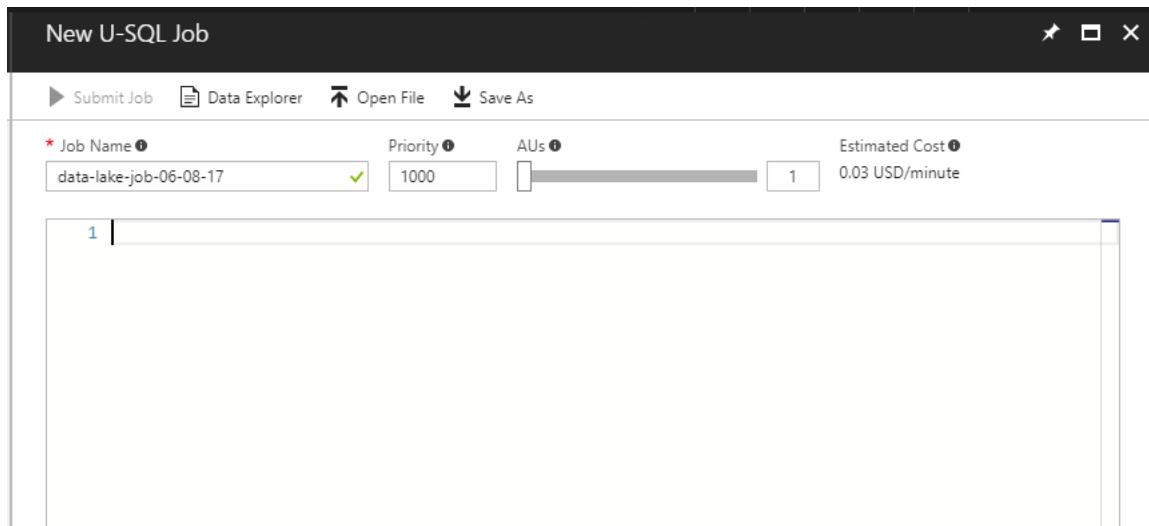
The screenshot shows the **datalake060817** Data Lake Analytics blade:

- Overview** tab is selected in the left sidebar.
- Essentials** section details:
  - Resource group: resource-group-08-05-2017
  - Status: Running
  - Location: East US 2
  - Subscription name: Free Trial
- Actions** menu items include: New Job, Sample Scripts, Data Explorer, Delete, and View All Jobs (which is highlighted with a dashed blue box).

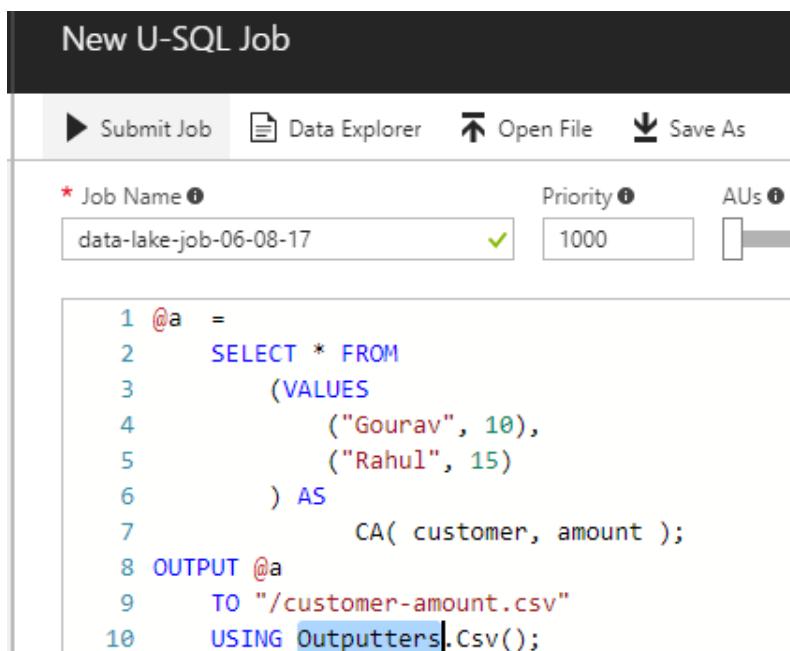
## Create U-SQL job and execute U-SQL query on Data Lake account

### Steps to be followed -

- From the Data Lake Analytics account, click **New Job**.



- Write a simple query of storing the customer and its amount using this job and put into the .csv file and click on **Submit Job**.



```

1 @a =
2     SELECT * FROM
3         (VALUES
4             ("Gourav", 10),
5             ("Rahul", 15)
6         ) AS
7             CA( customer, amount );
8 OUTPUT @a
9     TO "/customer-amount.csv"
10    USING Outputters.Csv();

```

- See the job details with the graph after that.

**data-lake-job-06-08-17**

Job Details

► Resubmit     Refresh     Duplicate Script

Preparing    Queued    Running    Finalizing    

16s    4s    20s

State    Succeeded

Duration    41s

Author    gourav8jain@hotmail.com

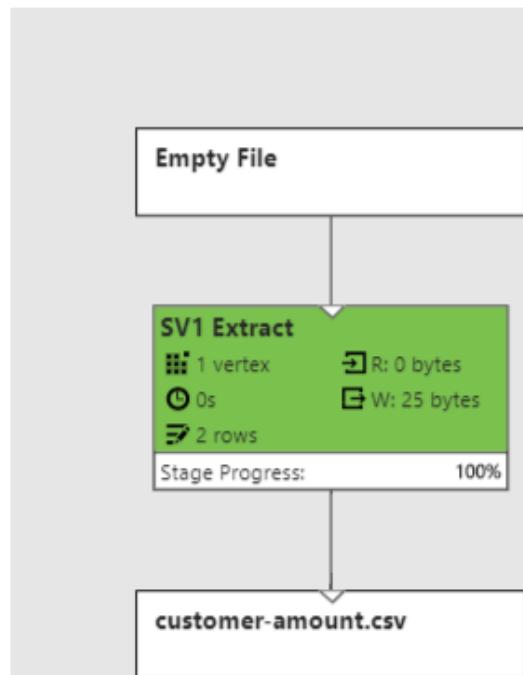
Submitted    8/6/2017, 5:34:02 PM



 Input     Output

NAME

No input files



```

graph TD
    A[Empty File] --> B[SV1 Extract]
    B --> C["customer-amount.csv"]
    subgraph B [SV1 Extract]
        R[1 vertex] R[0 bytes]
        O[0s] O[25 bytes]
        E[2 rows]
        SP[Stage Progress: 100%]
    end

```

- Click on the output tab and click on the **customer-amount.csv** to see the file.

**File Preview**

customer-amount.csv

 Format     Download     Rename File

```

1 "Gourav",10
2 "Rahul",15
3

```

## 6. Azure Explorer and blob storage

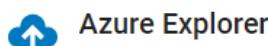
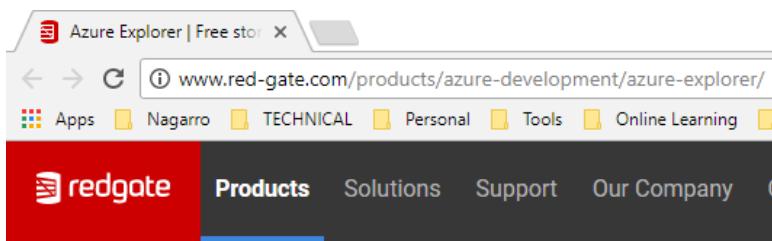
### What is Azure Explorer?

- Azure Explorer is free Azure storage tool to manage all the blobs at the common place.
- Great GUI tool for adding and modifying the blobs.

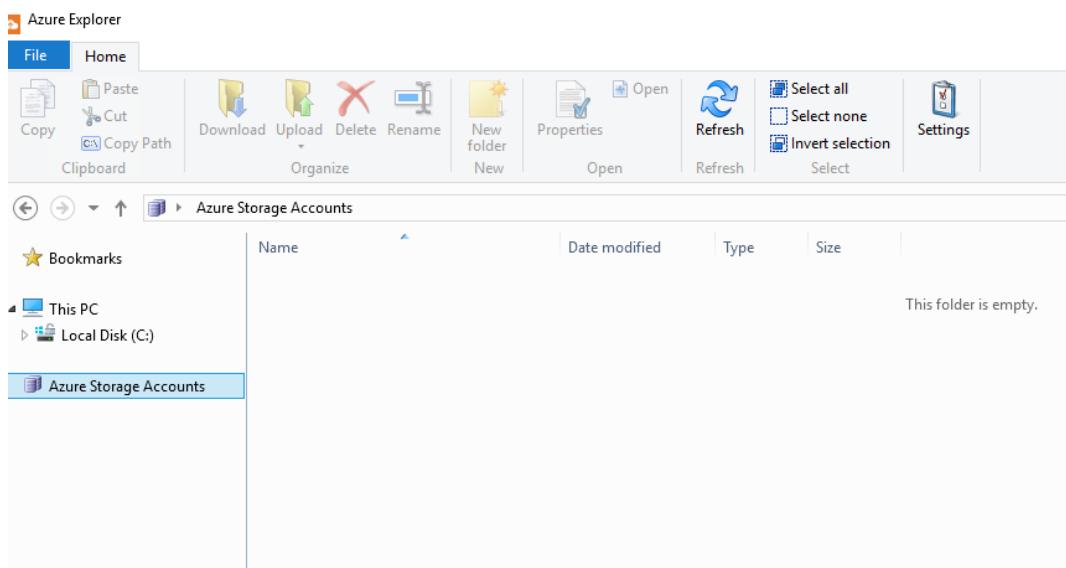
### Installation of Azure Explorer

#### Steps to be followed -

- Download Azure Explorer from the following link -- <http://www.red-gate.com/products/Azure-development/Azure-explorer/> and click on the **Download** button to download and install it into the system.



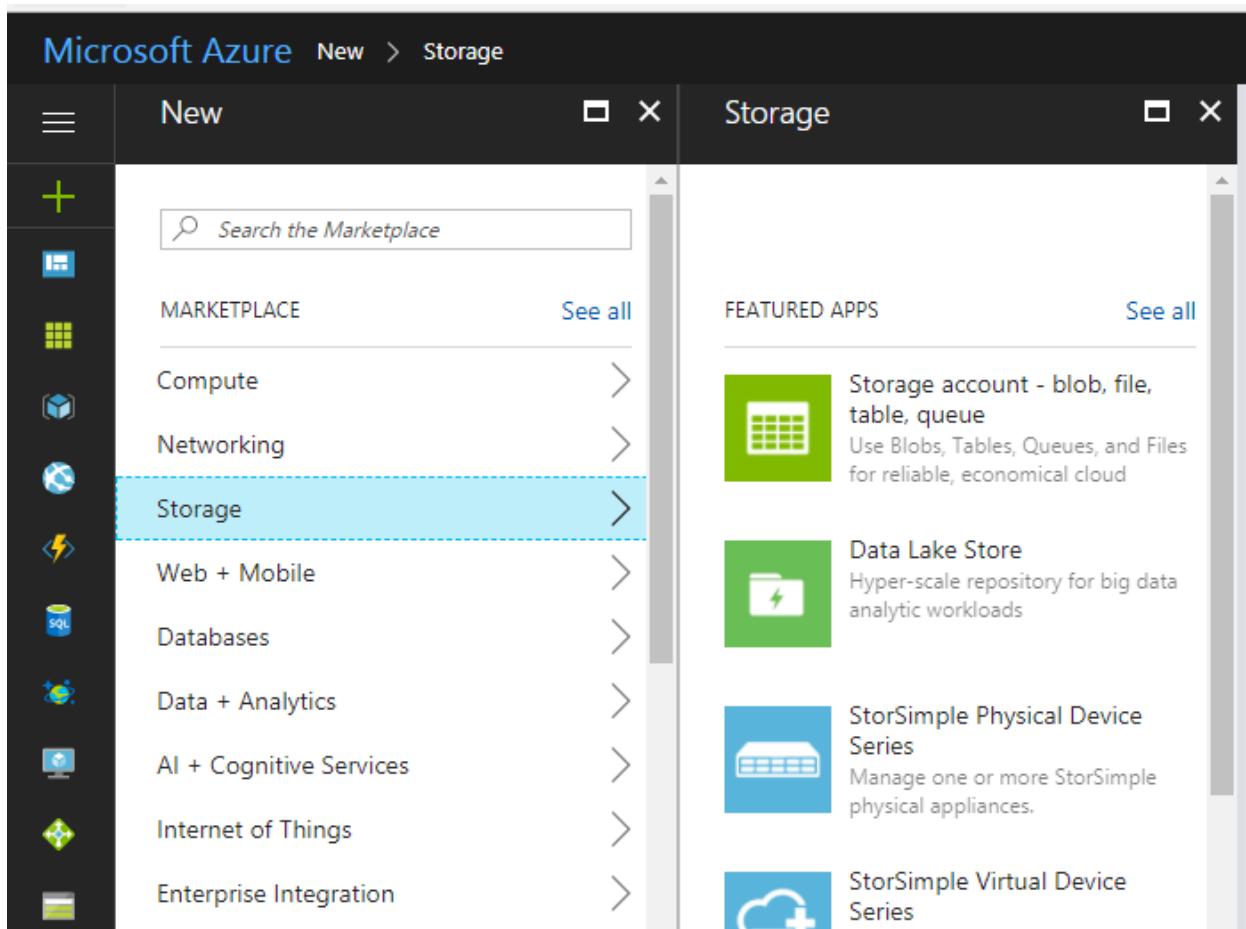
- Once we open the Azure Explorer, we will see Azure storage accounts, which is empty currently –



## Create a Storage Account in Azure

### Steps to be followed -

- Go to the Azure portal and click on **Add**. Then, choose the storage option.



The screenshot shows the Microsoft Azure portal's 'New' blade. On the left, there's a sidebar with various service icons. The 'Storage' icon is highlighted with a blue dashed border. The main area has two tabs: 'MARKETPLACE' and 'FEATURED APPS'. Under 'MARKETPLACE', 'Storage' is selected and highlighted with a blue dashed border. Under 'FEATURED APPS', there are three items listed:

- Storage account - blob, file, table, queue**: Use Blobs, Tables, Queues, and Files for reliable, economical cloud storage.
- Data Lake Store**: Hyper-scale repository for big data analytic workloads.
- StorSimple Physical Device Series**: Manage one or more StorSimple physical appliances.

- Fill in all the details and give the storage name. Use an existing resource group and then click on **Create**.

Create storage account X

The cost of your storage account depends on the usage and the options you choose below.  
[Learn more](#)

**\* Name** \*  ✓  
.core.windows.net

**Deployment model** i   
 Resource manager  Classic

**Account kind** i   
 General purpose ▼

**Performance** i   
 Standard  Premium

**Replication** i   
 Read-access geo-redundant storage (RA-... ▼

**\* Subscription**   
 Free Trial ▼

Pin to dashboard

Create [Automation options](#)

- Go to the **Storage accounts** section and see the newly created storage account.

Storage accounts	
gourav8jainhotmail (Default Directory)	
<span style="font-size: 2em;">+</span> Add	Columns <span style="font-size: 1.5em;">↻</span> Refresh
 Storage accounts and Storage accounts (classic) can now be managed together in the	
<b>Subscriptions:</b> Free Trial <input type="text" value="Filter by name..."/> <span style="border: 1px solid #ccc; padding: 2px 10px; margin-left: 10px;">All types</span>	
2 items NAME <span style="float: right;">▼</span> TYPE <span style="float: right;">▼</span>	
 <a href="#">sampledemoapp28079733</a>	Storage account (classic)
 <a href="#">storageaccount070817</a>	Storage account (classic)

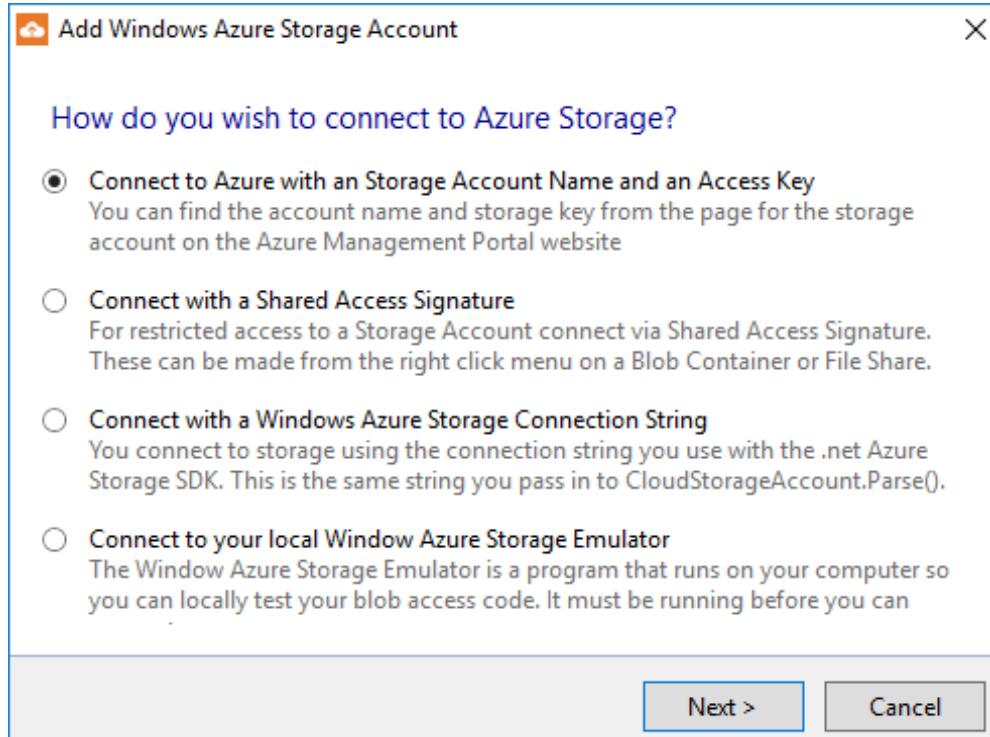
## Use Azure Explorer to add blobs in the storage account

©2017 C# CORNER.

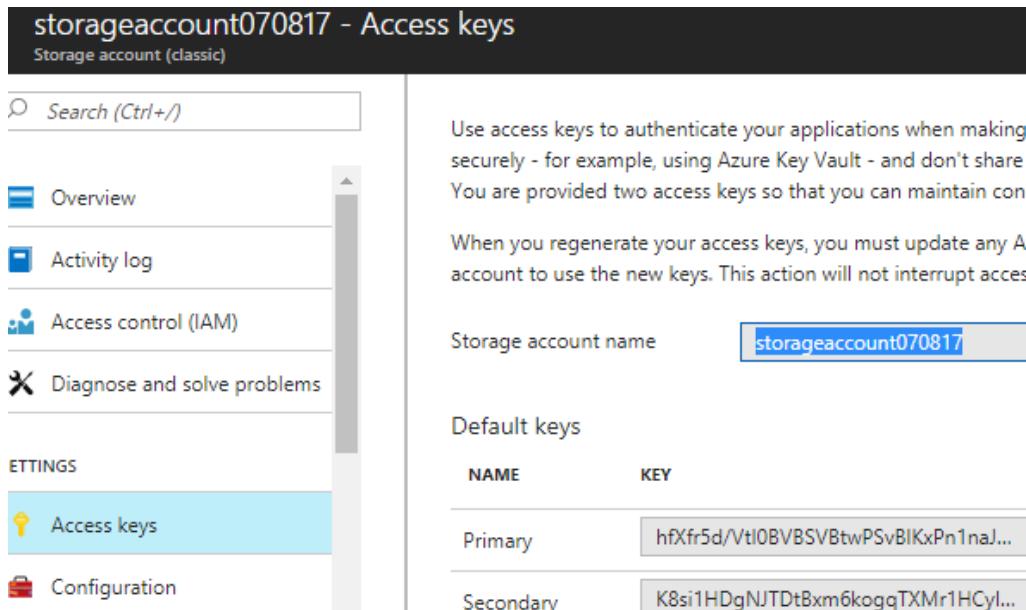
SHARE THIS DOCUMENT AS IT IS. PLEASE DO NOT REPRODUCE, REPUBLISH, CHANGE OR COPY.

Page | 51

- Go the Azure Explorer and right click on that.
- Add a new connection and select “connect to Azure using storage name and access key”.



- Go to the storage account in Azure and get the storage name and key from there.



**storageaccount070817 - Access keys**  
Storage account (classic)

Search (Ctrl+ /)

- Overview
- Activity log
- Access control (IAM)
- Diagnose and solve problems
- SETTINGS
- Access keys
- Configuration

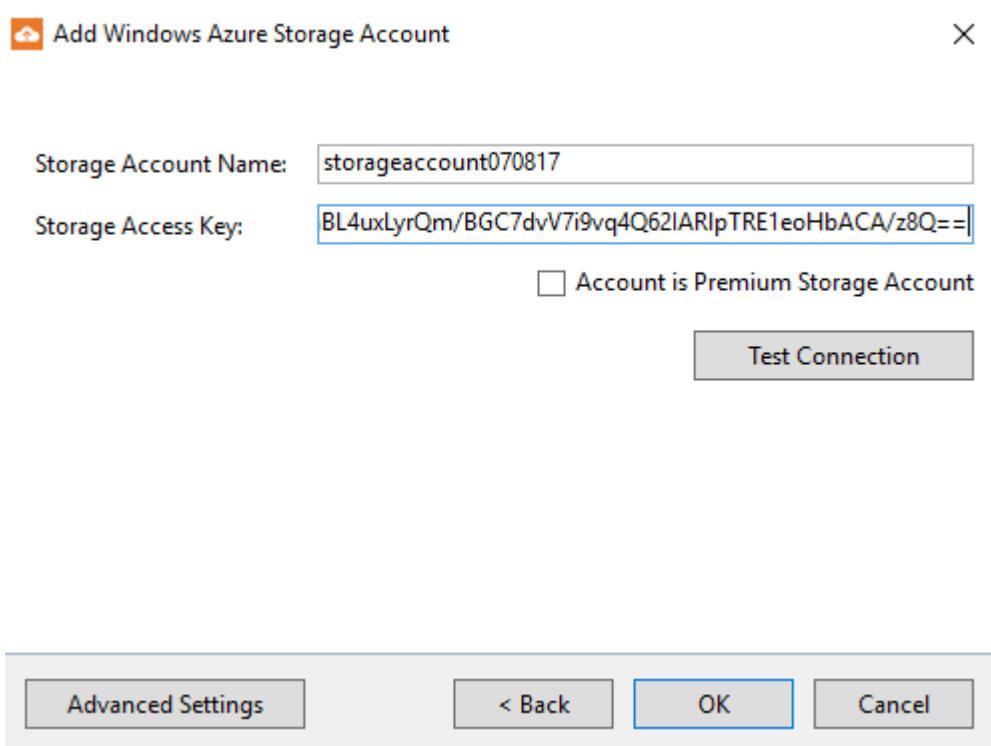
Use access keys to authenticate your applications when making securely - for example, using Azure Key Vault - and don't share them. You are provided two access keys so that you can maintain control over each key.

When you regenerate your access keys, you must update any application that uses them to use the new keys. This action will not interrupt access.

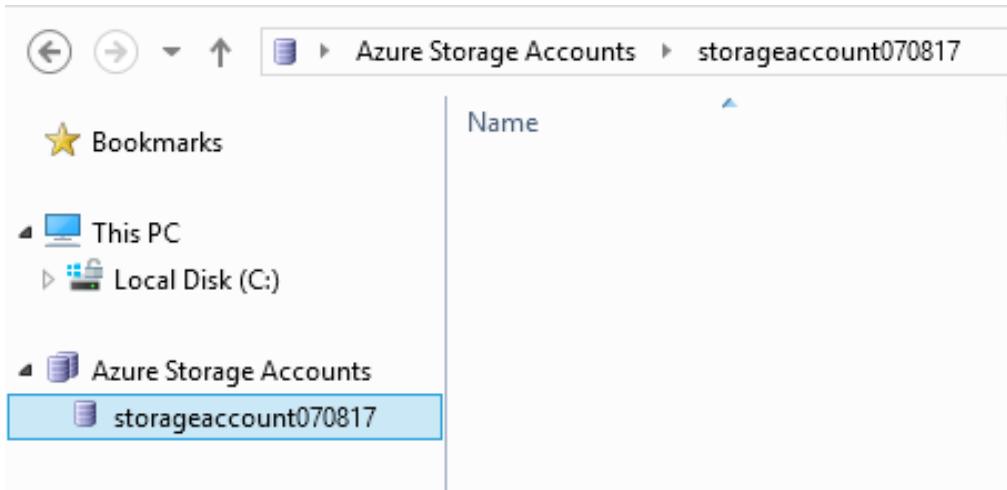
Storage account name: **storageaccount070817**

Default keys	
NAME	KEY
Primary	hfXfr5d/VtI0BVBSVBtwPSvBIKxPn1naJ...
Secondary	K8si1HDgNJTDtBxm6kogqTXMr1HCyl...

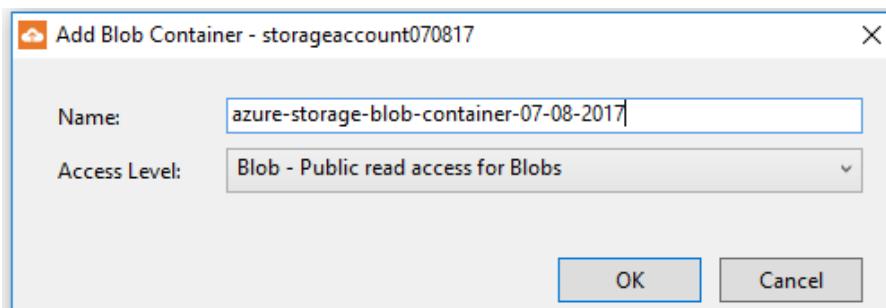
- Then, put these values in the connection and press OK.



- Then, you will see the new storage account shown there in Azure Explorer.



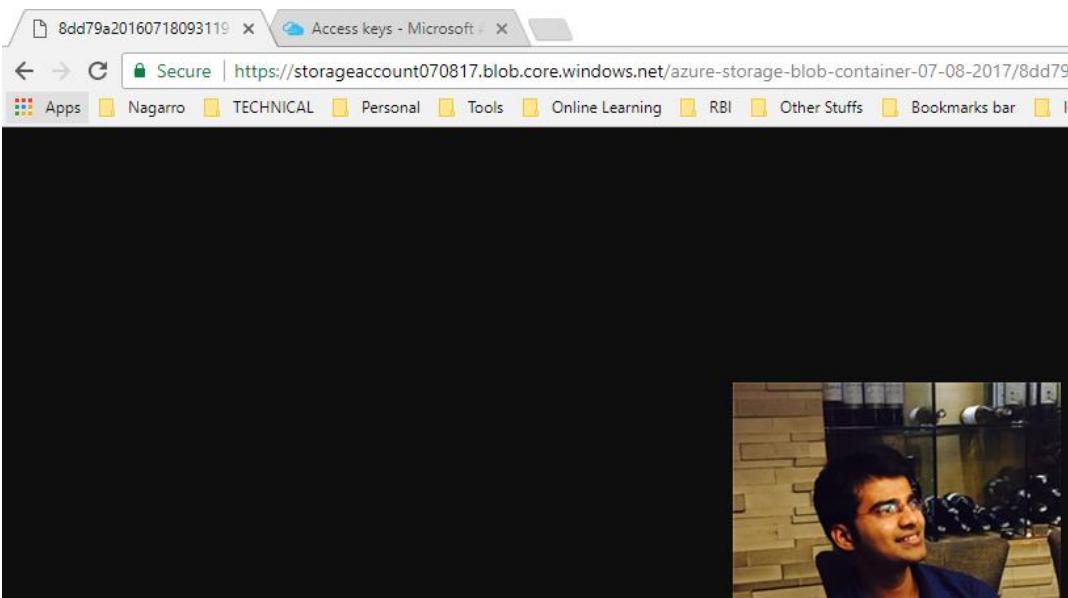
- Then, add a new blob container and select the access level to **public**.



- Copy the image from the file system and paste it there in the blob container.

Name	Date modified	Type	Blob
8dd79a20160718093119	8/6/2017 7:46 PM	PNG File	Block

- Then, copy the path of the image and paste it into the browser. When you see the image, you can look at the URL which is a storage account URL.

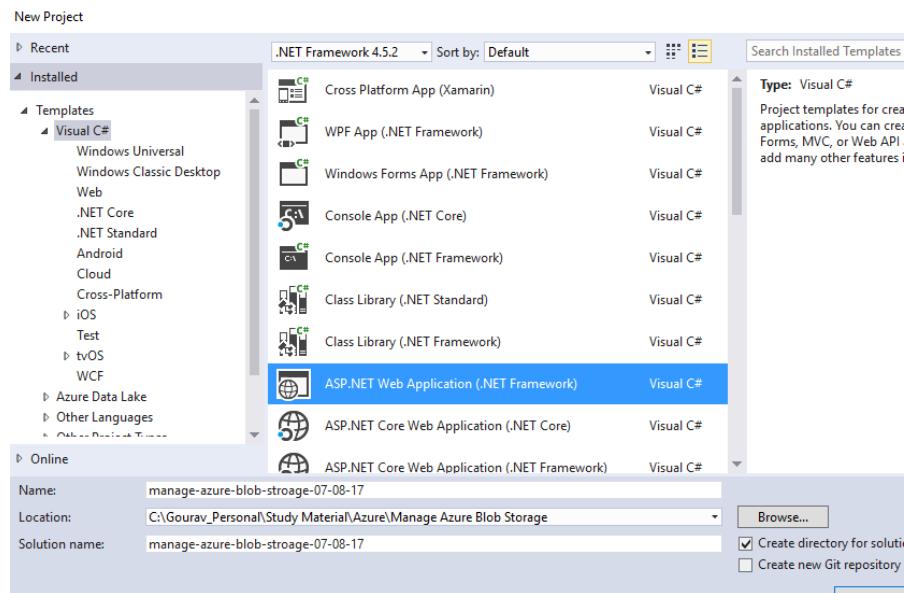


## 7. Manage Azure Blob Storage

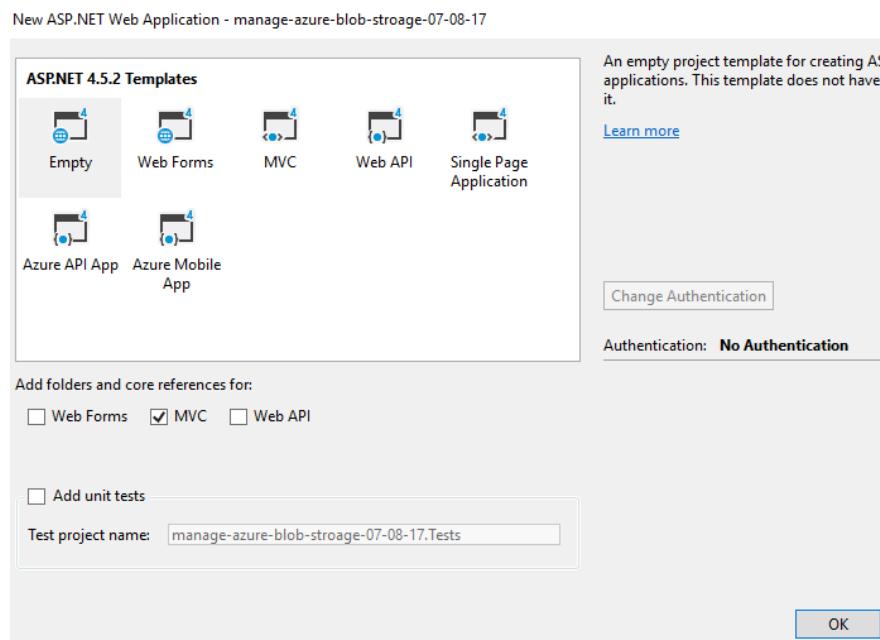
**Create a simple web application and install “Azure Storage” package using VS**

**Steps to be followed -**

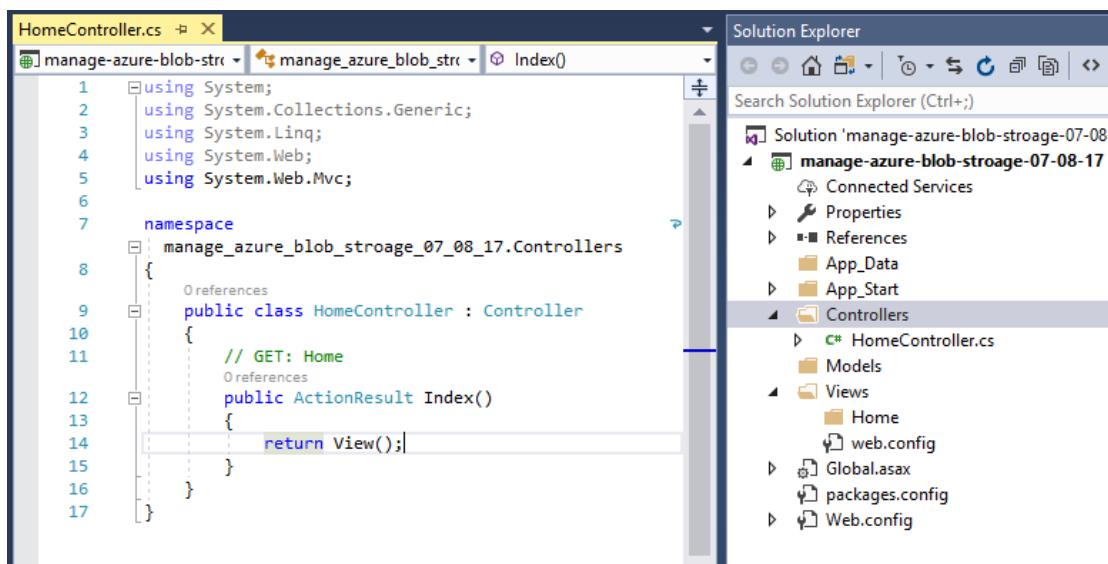
- Open VS 2017, click on **New Project**, and choose the web application.



- Choose the empty template with MVC option only and click on OK.



- Create a Home Controller with the default methods.



The screenshot shows the Visual Studio IDE. On the left, the code editor displays `HomeController.cs` with the following content:

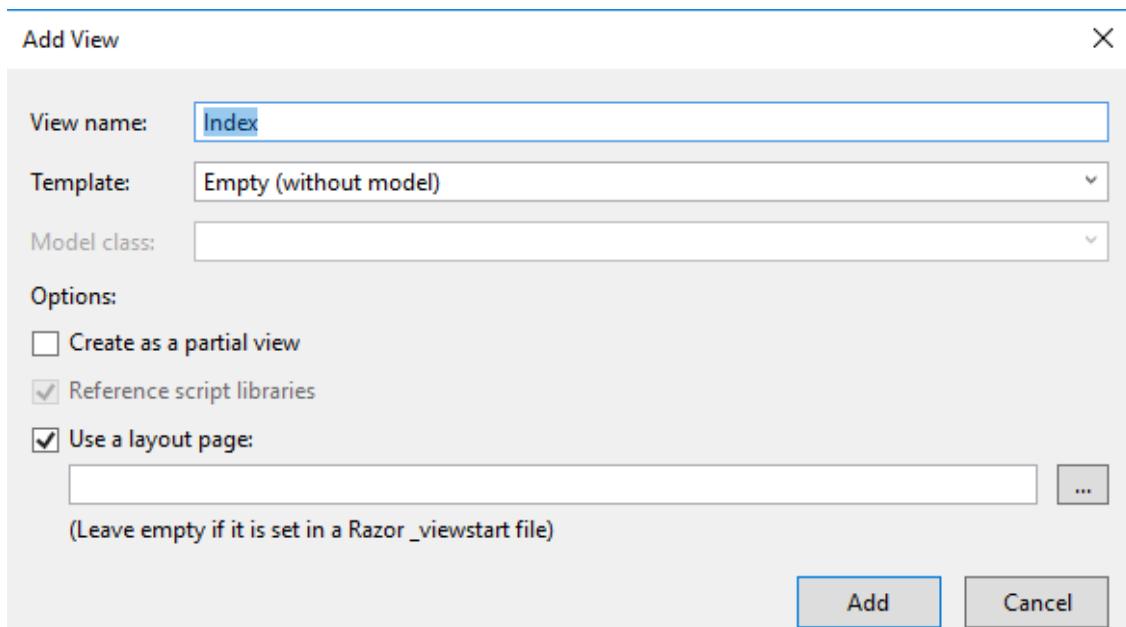
```

1  using System;
2  using System.Collections.Generic;
3  using System.Linq;
4  using System.Web;
5  using System.Web.Mvc;
6
7  namespace manage_azure_blob_stroage_07_08_17.Controllers
8  {
9      public class HomeController : Controller
10     {
11         // GET: Home
12         public ActionResult Index()
13         {
14             return View();
15         }
16     }
17 }

```

On the right, the Solution Explorer shows the project structure for "manage-azure-blob-stroage-07-08-17". The `Controllers` folder is selected, containing `HomeController.cs`, `Models`, and `Views` (which contains `Home`).

- Add a View named as **Index** and have a default template placed there.



- Install the packages like “Windows Azure Storage” to get this going.

Windows Azure Storage    Include prerelease

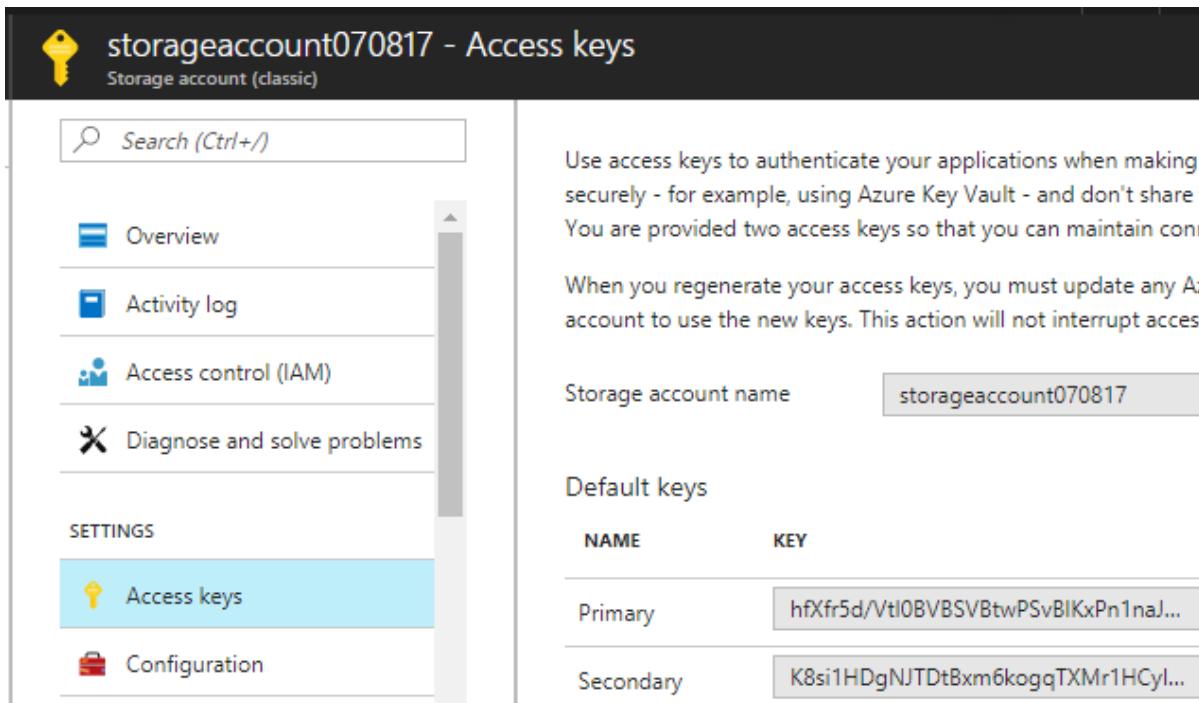
---

	<b>WindowsAzure.Storage</b> by Microsoft, 12M downloads	v8.2.1
	A client library for working with Microsoft Azure storage services including blobs, files, tables, and queues.	
	<b>Microsoft.IdentityModel.Clients.ActiveDirectory</b> by Micrc	v3.16.0
	This package contains the binaries of the Active Directory Authentication Library (ADAL). ADAL provides easy to use authentication functionality...	

## Manage blob storage using the web application

### Steps to be followed -

- Write the sample code to store the image into the blob container. For that, first, extract the storage account name and key to access the blob storages.



storageaccount070817 - Access keys

Storage account (classic)

Search (Ctrl+ /)

Overview

Activity log

Access control (IAM)

Diagnose and solve problems

SETTINGS

Access keys

Configuration

Use access keys to authenticate your applications when making securely - for example, using Azure Key Vault - and don't share them. You are provided two access keys so that you can maintain connectivity.

When you regenerate your access keys, you must update any Azure services or applications that use the old keys. This action will not interrupt access.

Storage account name: storageaccount070817

**Default keys**

NAME	KEY
Primary	hfXfr5d/VtI0BVBSVBtwPSvBIKxPn1naJ...
Secondary	K8si1HDgNJTDtBxm6kogqTXMr1HCyl...

- Code to store image into the blob container image is the public URL.

```
public ActionResult Index()
{
    var name = "sampledemoapp28079733";
    var key = "ljqxMn3N00W6Fm5mdXqrgqiPerLkKbSv1qCKHs6Yxve7lwbtu053nJ6jzT5gCXsSTTSWjaeb/M5Ad0UHID+EYg==";
    StorageCredentials credentials = new StorageCredentials(name, key);
    CloudStorageAccount storageAccount = new CloudStorageAccount(credentials, useHttps: true);
    CloudBlobClient blobClient = storageAccount.CreateCloudBlobClient();
    CloudBlobContainer blobContainer = blobClient.GetContainerReference("sampleblob");
    blobContainer.CreateIfNotExists();
    blobContainer.SetPermissions(new BlobContainerPermissions
    {
        PublicAccess = BlobContainerPublicAccessType.Blob
    });
    Random rnd = new Random();
    int rndnumber = rnd.Next();
    CloudBlockBlob blobBlock = blobContainer.GetBlockBlobReference("sample-upload" + rndnumber);
    WebRequest request = WebRequest.Create(new Uri("https://static.pexels.com/photos/39803/pexels-photo-39803.jpeg"))

    using (var response = request.GetResponse())
    using (var stream = response.GetResponseStream())
    {
        blobBlock.UploadFromStream(stream);
    }
}
```

- Write the sample text on the Index.cshtml file.

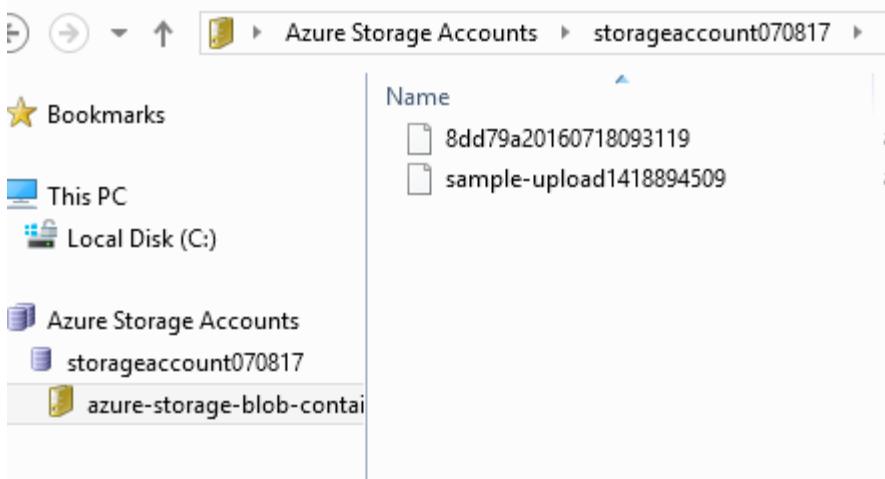
NuGet: manage-azu...-stroage-07-08-17    Index.cshtml ✎ X    HomeController.cs

```

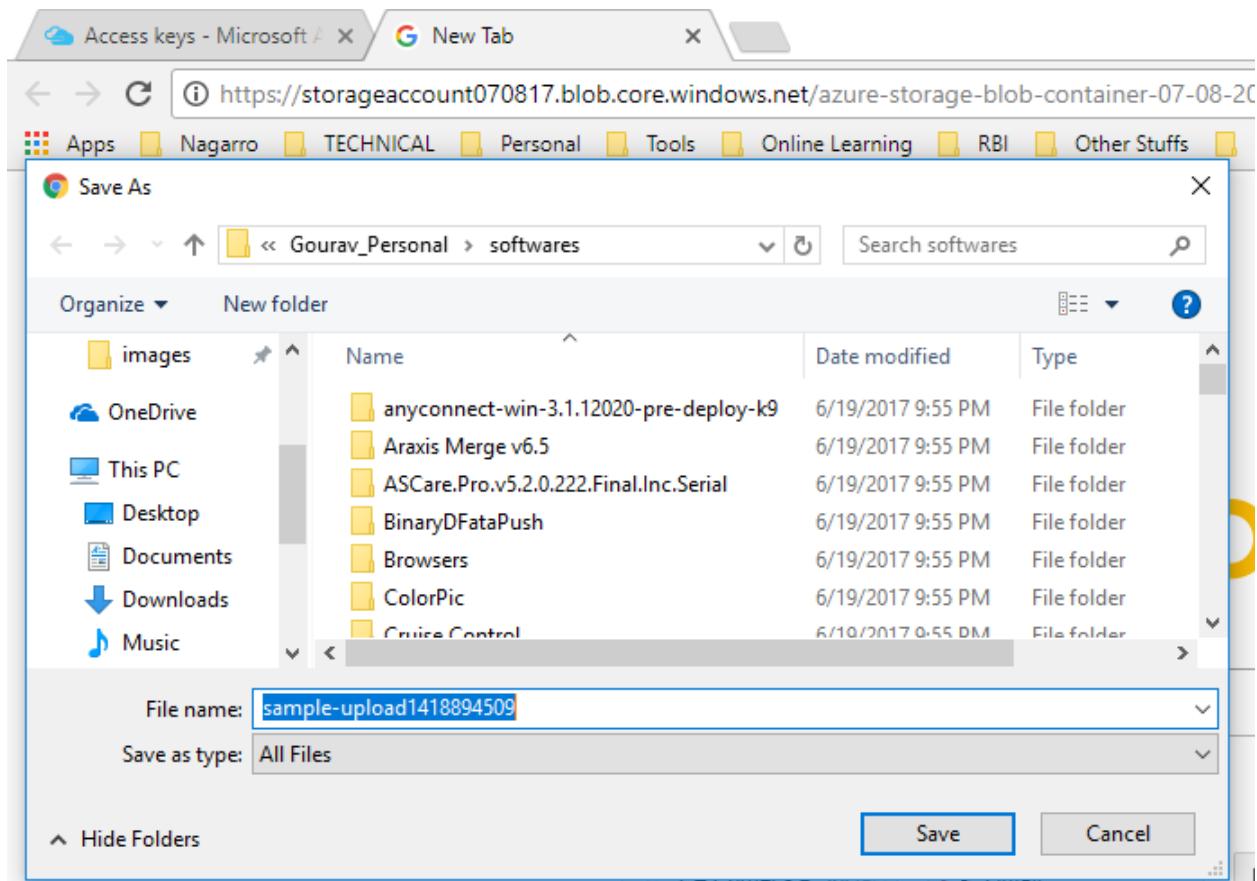
1
2     @{
3         Layout = null;
4     }
5
6     <!DOCTYPE html>
7
8     <html>
9         <head>
10            <meta name="viewport" content="width=device-width" />
11            <title>Index</title>
12        </head>
13        <body>
14            <div>
15                Check the blob container storage
16            </div>
17        </body>
18    </html>
19

```

- Run the application and check the storage account's blob container where the new upload will be there.



- Copy the path of the new image and paste on the browser to check if the correct image is uploaded or not. As soon as we do it, it comes up to save the image.



## 8. Understanding Document DB in Azure

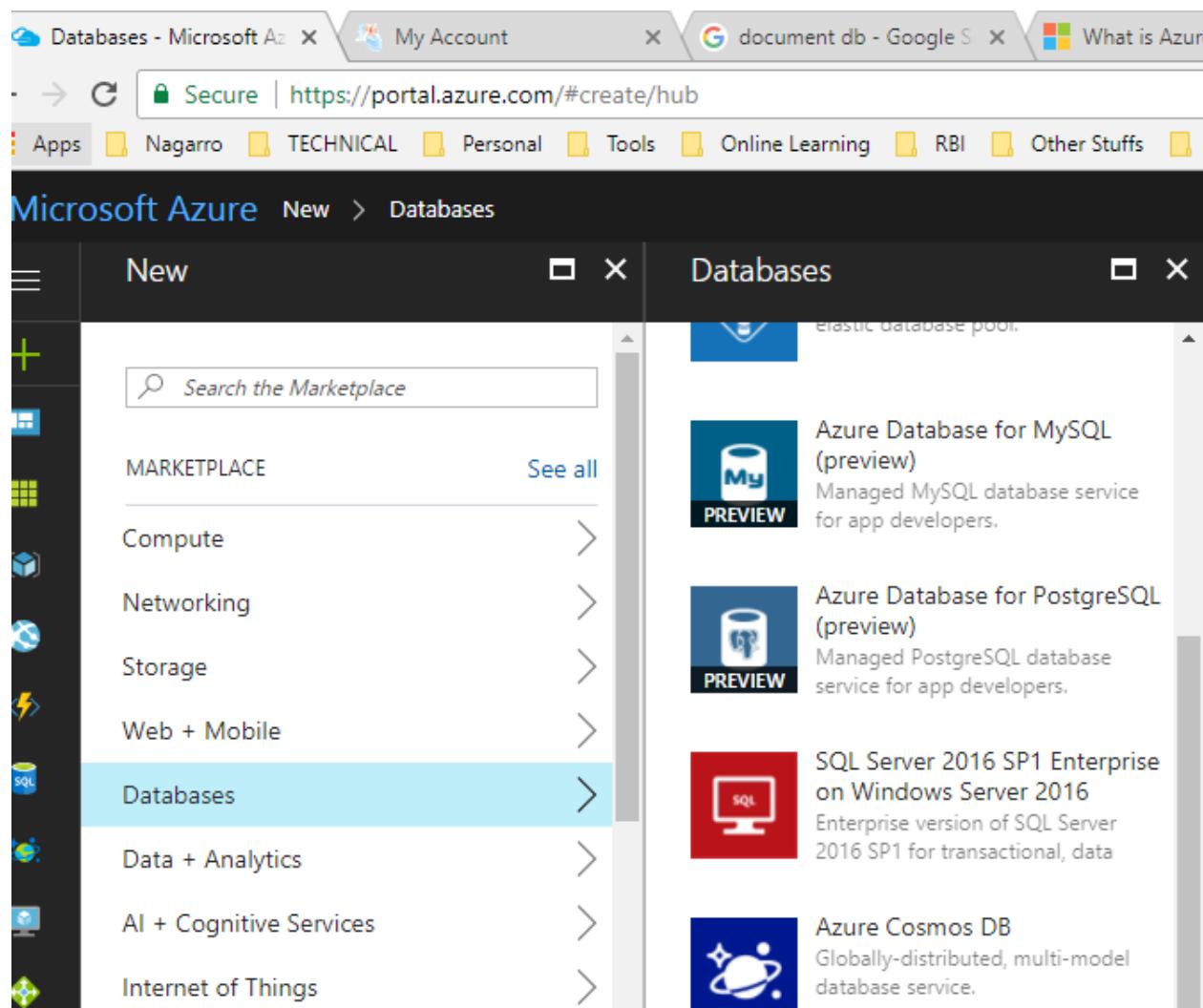
### What is Azure Document DB?

Azure Document DB is a NoSQL document database service designed from the ground up to natively support JSON and JavaScript directly inside the database engine.

### Create Cosmos DB account of API type Document DB in Azure

#### Steps to be followed -

- Open Azure portal and click on the **Add** symbol to add Databases. Here, select Azure Cosmos DB.



- Mention the name and use the existing resource-group. Then, choose the API-type to Document DB.

**Azure Cosmos DB**

New account

---

\* ID  
documentdb070817 

documents.azure.com

\* API    
SQL (DocumentDB) 

\* Subscription  
Free Trial 

\* Resource Group    
 Create new  Use existing 

resource-group-08-05-2017 

\* Location  
South Central US 

Pin to dashboard

**Create** [Automation options](#)

- Go to the Cosmos DB's section and see the newly created Document DB.

**Microsoft Azure** **Azure Cosmos DB**

---

Azure Cosmos DB  
gourav8jainhotmail (Default Directory)

+ Add  Refresh

**Subscriptions:** Free Trial

Filter by name...  All location: 

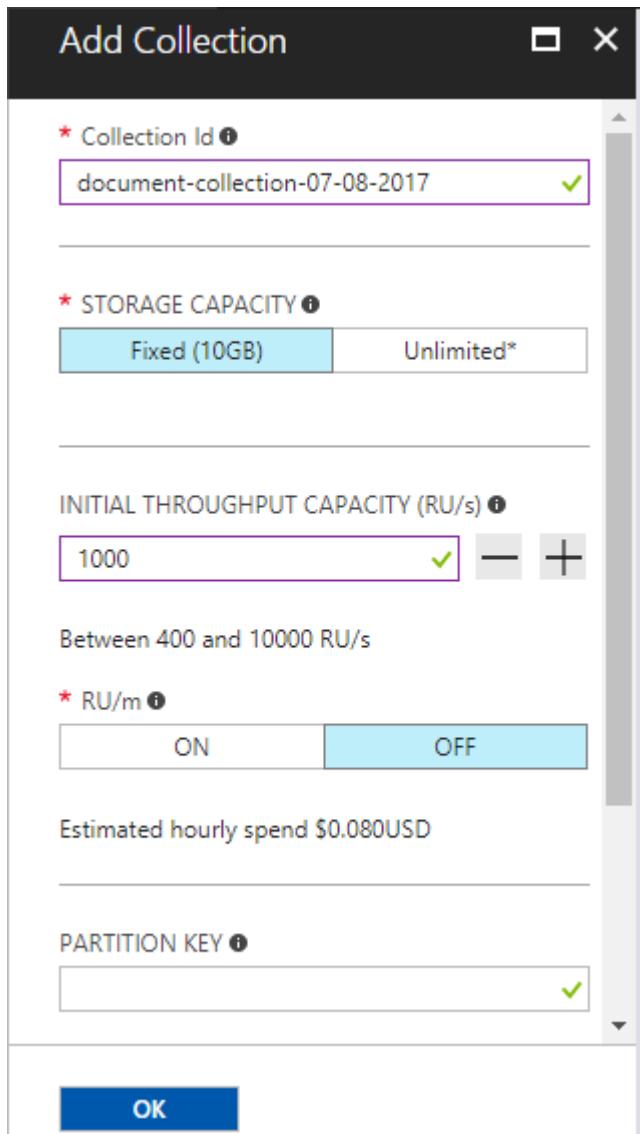
2 items

NAME	STATUS
 documentdb070817	Online
 sampleazurecosmosdb	Online

## Manage the collection in the Document DB

### Steps to be followed -

- Go to the “Azure Cosmos DB” and click on the “Add Collection” by providing the name and provide the document DB ID as well there and click on “Create”



- See the collections created just now.

+ Add Collection     Refresh     Move     Delete Account     Data Explorer

**i** Successfully refreshed the collection list

Subscription (change)	Subscription ID
Free Trial	86db18a7-5367-4de9-8927-e459b44de6f5
Read Locations	URI
South Central US	<a href="https://documentdb070817.documents.azure.com:443/">https://documentdb070817.documents.azure.com:443/</a>
Write Location	
South Central US	

---

Collections

ID	DATABASE	THROUGHPUT (R...)	STORAGE ^	EST. HOURLY CO... ^
document-collectio...	document-db-07-0...	1000	0 kB	0.08
<b>TOTAL</b>		1000	0 kB	0.08

\* This is NOT your bill. This is an estimated hourly rate for the currently provisioned throughput, and the size of the database.

- Create the “New Document” from the option, after choosing the newly created collection.

New Collection    New SQL Query    New Stored Procedure    New User Defined Function    

**COLLECTIONS**

- ▼ document-db-07-08-2017
  - ▼ document-collection-07-0...
    - Documents
    - Scale & Settings
    - Stored Procedures
    - User Defined Functions
    - Triggers

Documents X

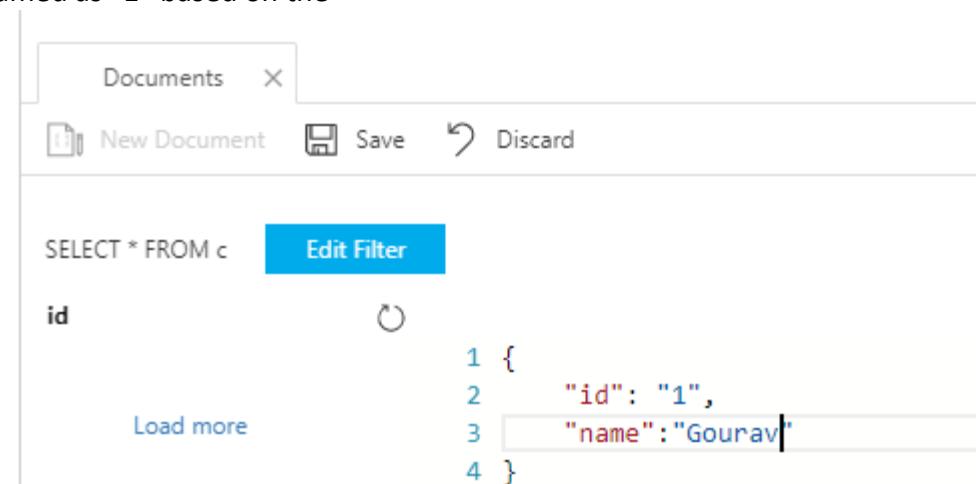
 New Document

SELECT \* FROM c Edit Filter

**id** 

Load more

- Put the simple JSON into the new document and save this document which will be named as “1” based on the



```

Documents X
New Document Save Discard

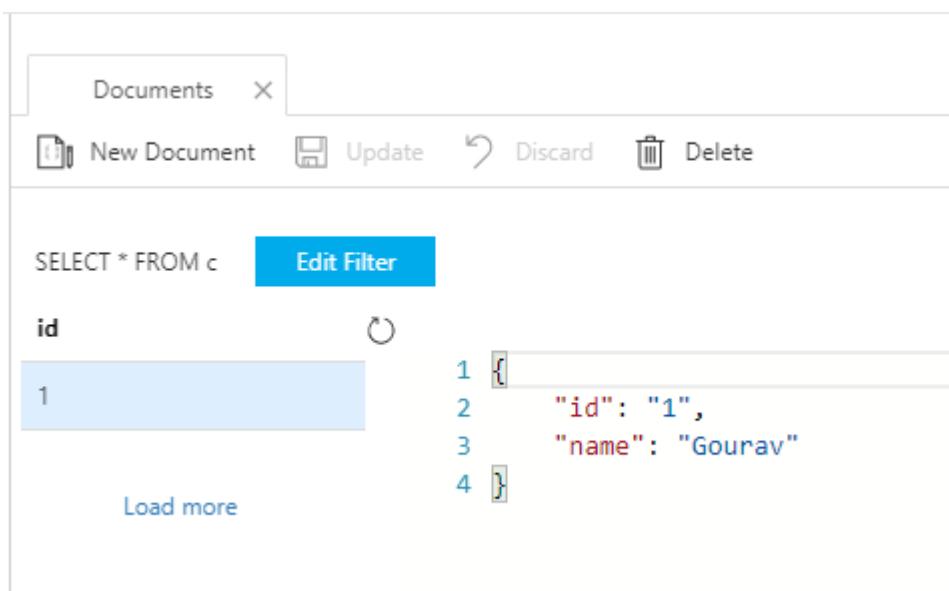
SELECT * FROM c
Edit Filter

id
Load more
1 {
2   "id": "1",
3   "name": "Gourav"
4 }

```

id.

- See the documents created into this collection in Cosmos DB using Document DB API and once more thing, we can edit and delete the document very easily.



```

Documents X
New Document Update Discard Delete

SELECT * FROM c
Edit Filter

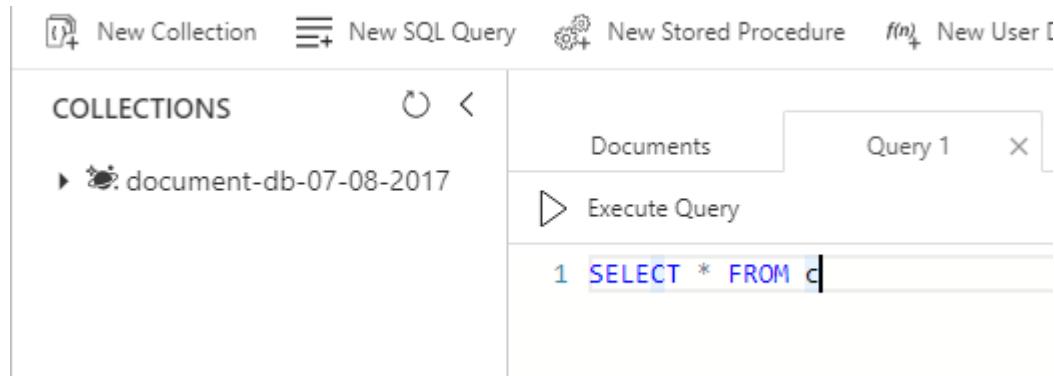
id
1
Load more
1 {
2   "id": "1",
3   "name": "Gourav"
4 }

```

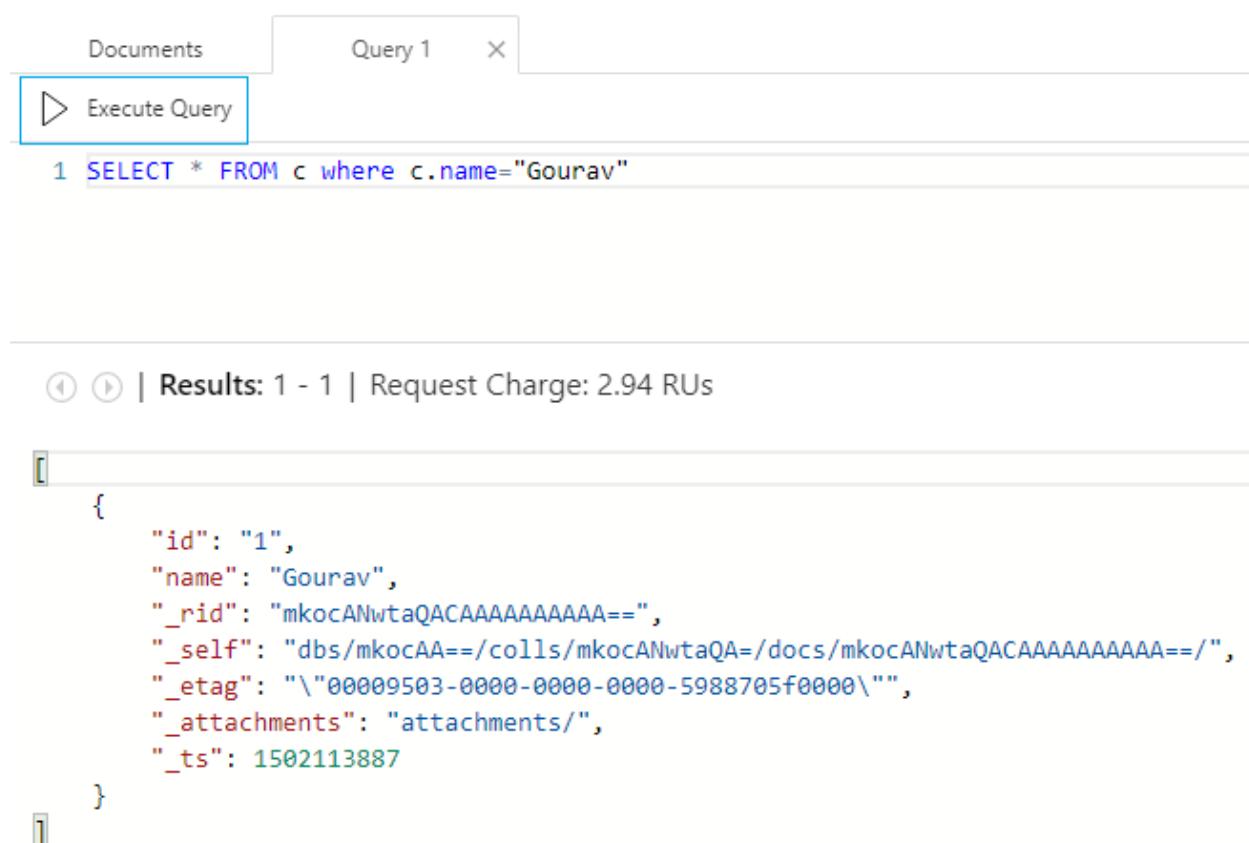
## Querying through the document in the collection of Document DB

### Steps to be followed -

- Create a new **SQL Query** from the menu option on the document in the collection.



- Write the query where name is “Gourav” and then execute the query.



The screenshot shows the Azure DocumentDB interface after executing the query. The 'Execute Query' button is highlighted. The query 'SELECT \* FROM c WHERE c.name="Gourav"' is shown in the text input field. Below the results, it says 'Results: 1 - 1 | Request Charge: 2.94 RUs'. The result is a JSON document:

```
{
  "id": "1",
  "name": "Gourav",
  "_rid": "mkocANwtaQACAAAAAAA==",
  "_self": "dbs/mkocAA==/colls/mkocANwtaQA=/docs/mkocANwtaQACAAAAAAA==/",
  "_etag": "\"00009503-0000-0000-0000-5988705f0000\"",
  "_attachments": "attachments/",
  "_ts": 1502113887
}
```

## 9. Mobile Services

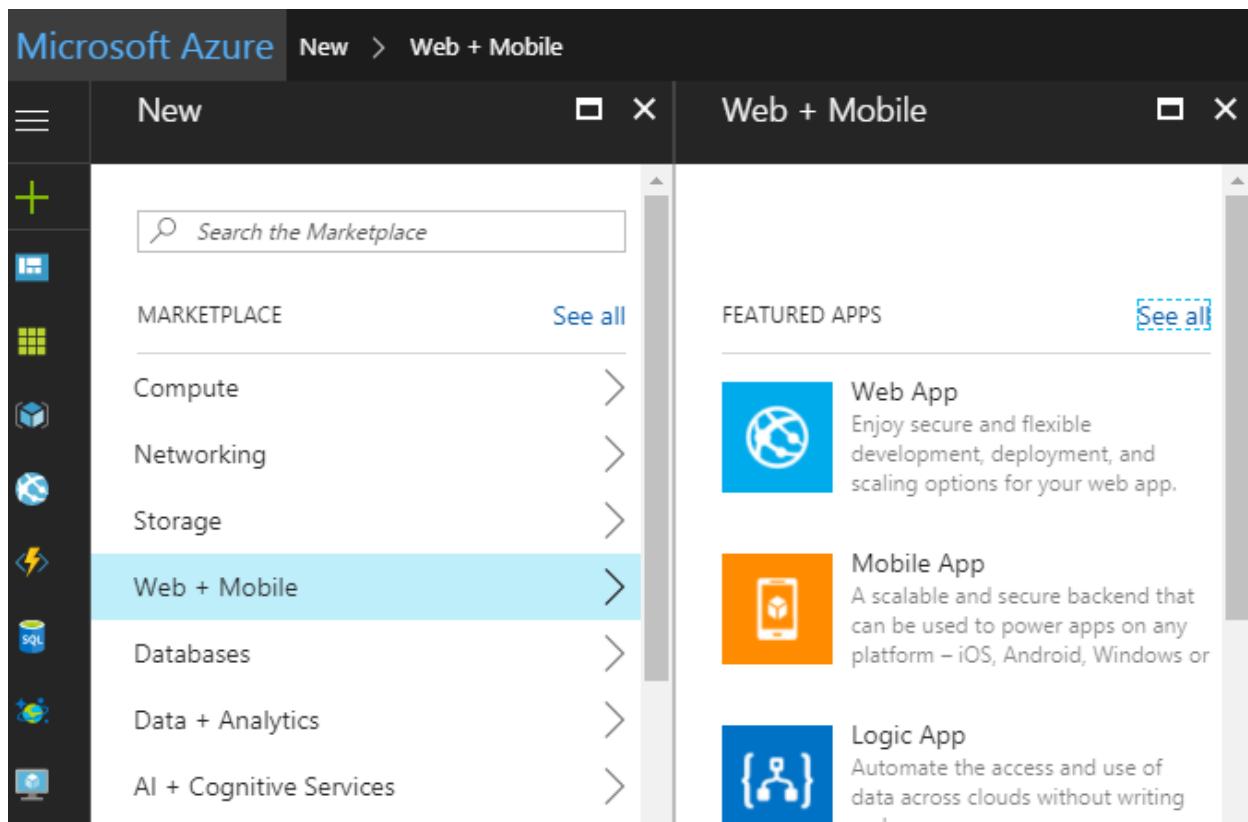
### What is Azure Mobile App?

- It allows the functionality of Azure App Service to add sign-in, push notifications, and data sync to your mobile app.
- Connect your app to enterprise systems and on-premises resources.
- Scale your app to millions of customers across multiple geographies.

### Create a Mobile App Service on Azure portal

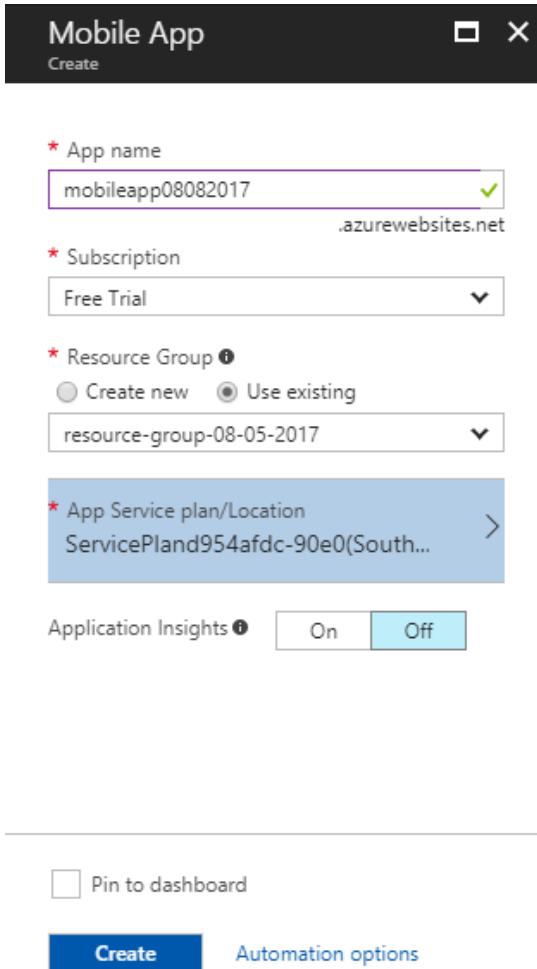
#### Steps to be followed -

- Open Azure portal and click on the **Add** symbol to add **Web+Mobile**. Then, select the Mobile App.



The screenshot shows the Microsoft Azure portal interface. At the top, there's a navigation bar with 'Microsoft Azure' on the left, 'New' in the center, and 'Web + Mobile' on the right. Below this is a search bar labeled 'Search the Marketplace'. On the left, there's a sidebar with various service icons: Compute, Networking, Storage, Web + Mobile (which is highlighted in blue), Databases, Data + Analytics, and AI + Cognitive Services. The main area is titled 'Web + Mobile' and contains two sections: 'FEATURED APPS' and 'See all'. Under 'FEATURED APPS', there are three items: 'Web App' (with a globe icon), 'Mobile App' (with a smartphone icon), and 'Logic App' (with a person icon). Each item has a brief description below it.

- Fill the configurations with the mobile app name and use the existing resource group and click on “Create”



**Mobile App**

Create

\* App name  
mobileapp08082017 .azurewebsites.net

\* Subscription  
Free Trial

\* Resource Group ⓘ  
Create new  Use existing  
resource-group-08-05-2017

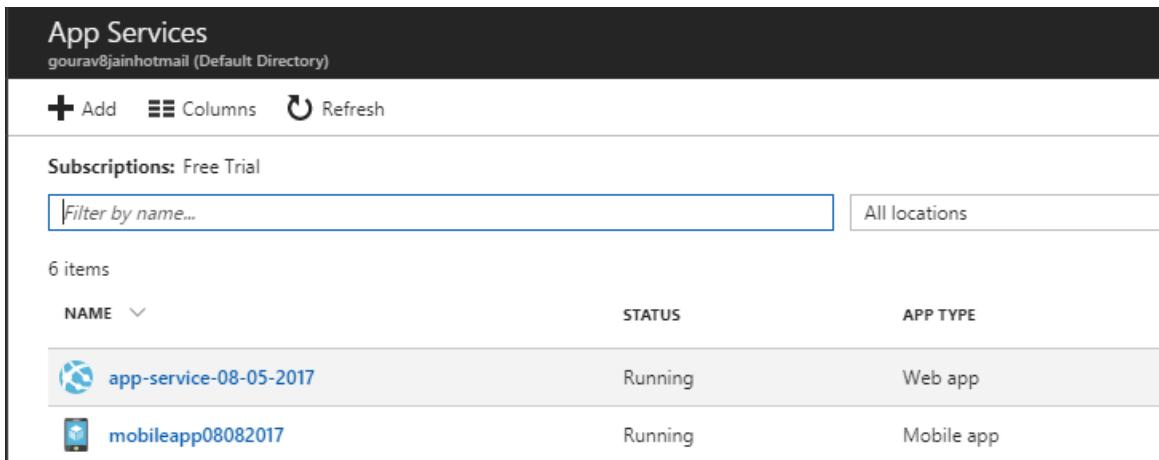
\* App Service plan/Location  
ServicePland954afdc-90e0(South...)

Application Insights ⓘ

Pin to dashboard

**Create** [Automation options](#)

- Go to the App Service’s section and see the newly created Mobile App.



**App Services**  
gourav8jainhotmail (Default Directory)

+ Add Columns ↻ Refresh

**Subscriptions:** Free Trial

All locations

6 items

NAME	STATUS	APP TYPE
 app-service-08-05-2017	Running	Web app
 mobileapp08082017	Running	Mobile app

- Open the app-service and click on the “Quick start” and choose the Xamarian.Android platform

mobileapp08082017 - Quickstart

App Service

Search (Ctrl+ /)

Filter settings

GENERAL

- iOS (Objective-C)
- iOS (Swift)
- Android
- Windows (C#)
- Windows 8.1 (C#)
- Xamarin.Android
- Xamarin.iOS
- Xamarin.Forms
- Cordova

Overview

Activity log

Access control (IAM)

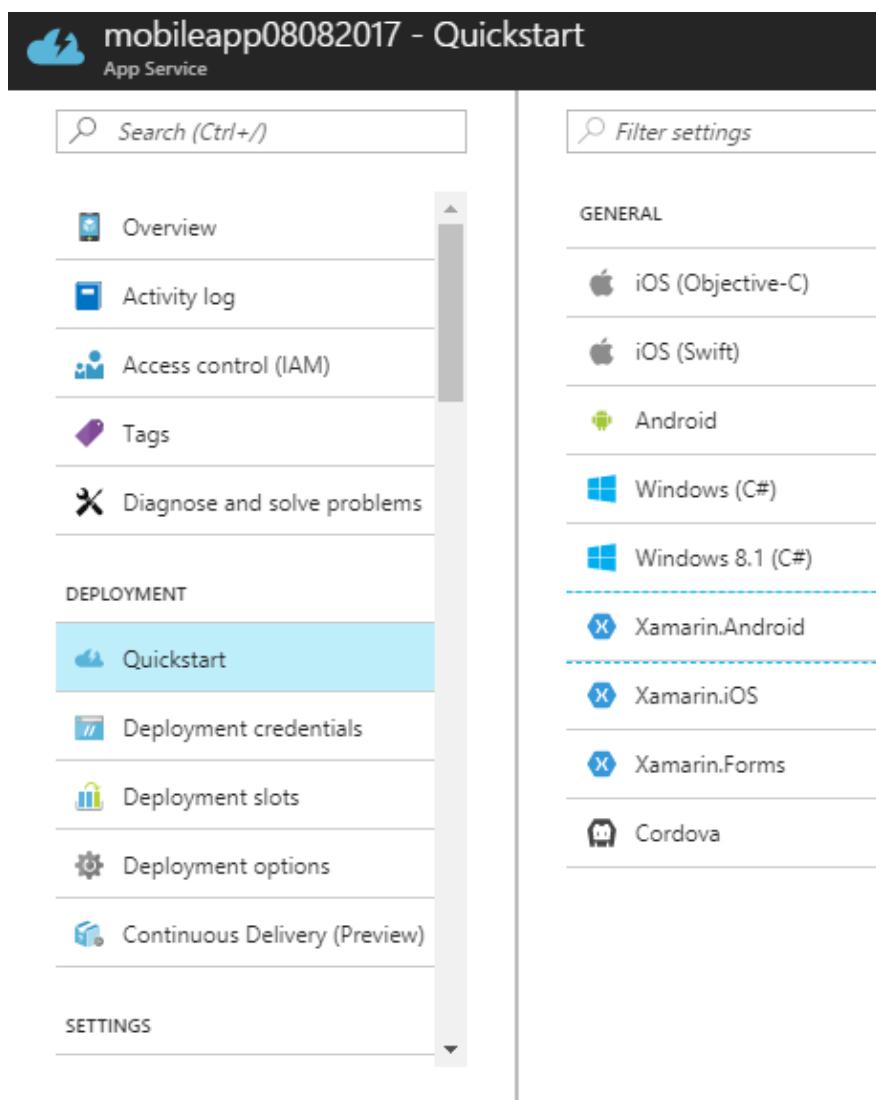
Tags

Diagnose and solve problems

DEPLOYMENT

- Quickstart
- Deployment credentials
- Deployment slots
- Deployment options
- Continuous Delivery (Preview)

SETTINGS



- Connect to the database. With that, we need to create a new database (with few options). Then, choose C# as your backend language.

Xamarin.Android  
Quick start

## 1 Connect a database



You already have a data connection

## 2 Create a table API



To store data in your backend, you need a table. Pick a backend language below and create a Todoltem table API.

Backend language:

[Download](#)

Once you've downloaded your personalized server project, extract it and open in Visual Studio. Right-click the project and select "Publish" to host the code in your mobile backend. The Todoltem table will be created automatically using Entity Framework.

- Then, configure the application and choose the “create new application” option.

## 3 Configure your client application

[CREATE A NEW APP](#) [CONNECT AN EXISTING APP](#)

On a Windows PC: [Install Visual Studio Community 2015](#)

On a Mac or Windows PC: [Install Xamarin for Windows](#)

Download your personalized Xamarin project, extract it, and then open it in Visual Studio or Xamarin Studio. The app is pre-configured to work with your hosted mobile backend.

[Download](#)

Run the Xamarin project to start working with data in your mobile backend.

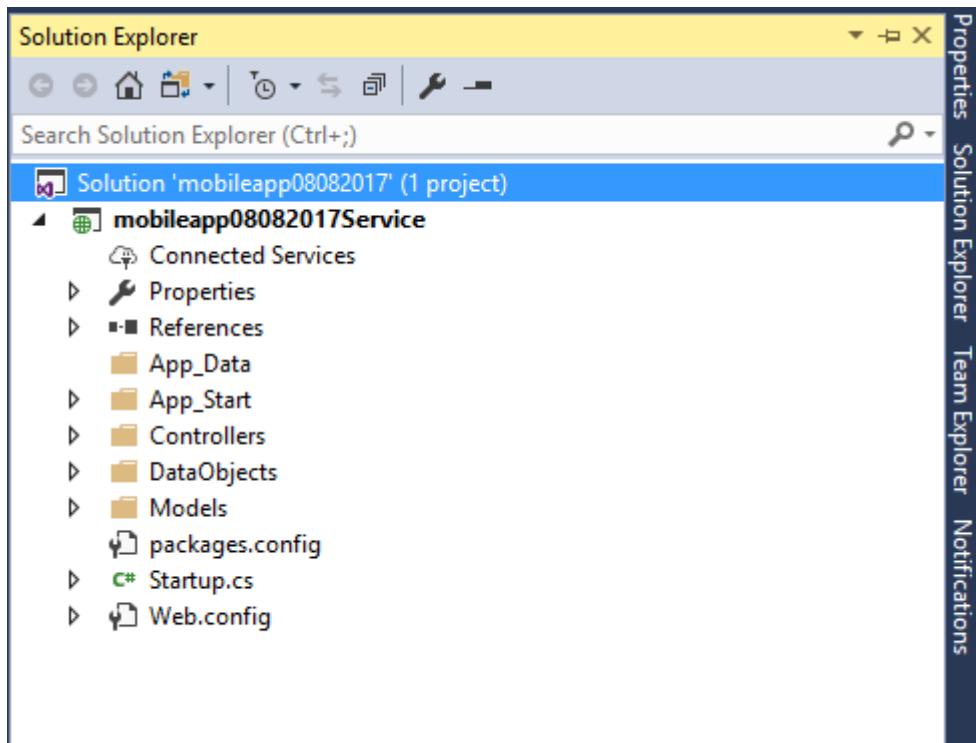
- Then click on the “Download” button mentioned in step-2 “Create a table API” and download the code mentioned in step-3 as well.

	mobileapp08082017_Xamarin_Android	8/8/2017 7:18 PM	Compressed (zipp...)	23 KB
	mobileapp08082017_Runtime	8/8/2017 7:18 PM	Compressed (zipp...)	14 KB

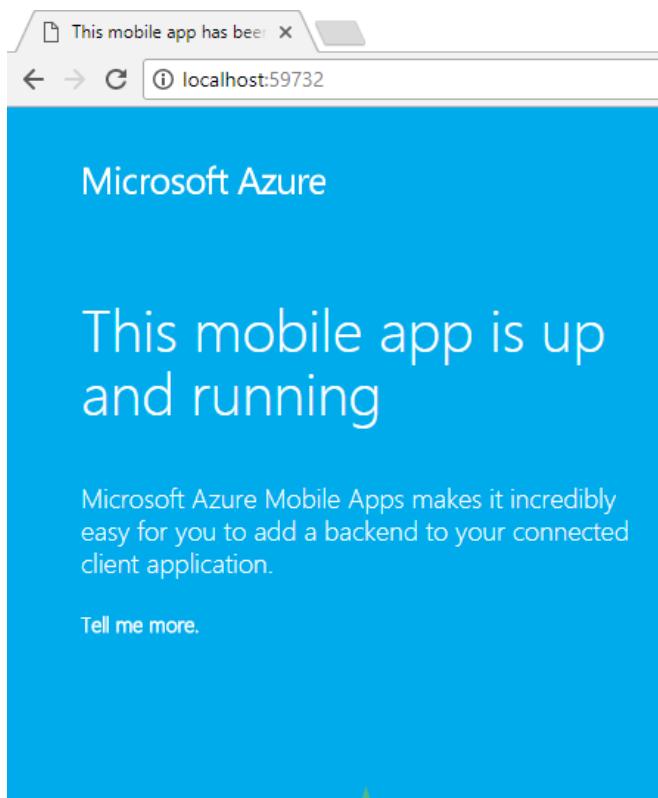
## Manage/Run the mobile app using VS 2017

### Steps to be followed -

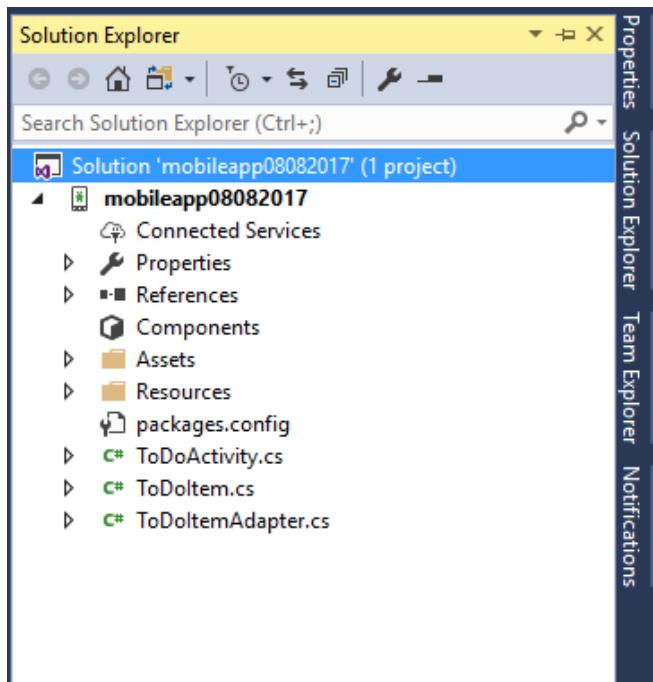
- Extract both the folders there and then, open the “mobileapp08082017\_Runtime” solution in VS 2017.



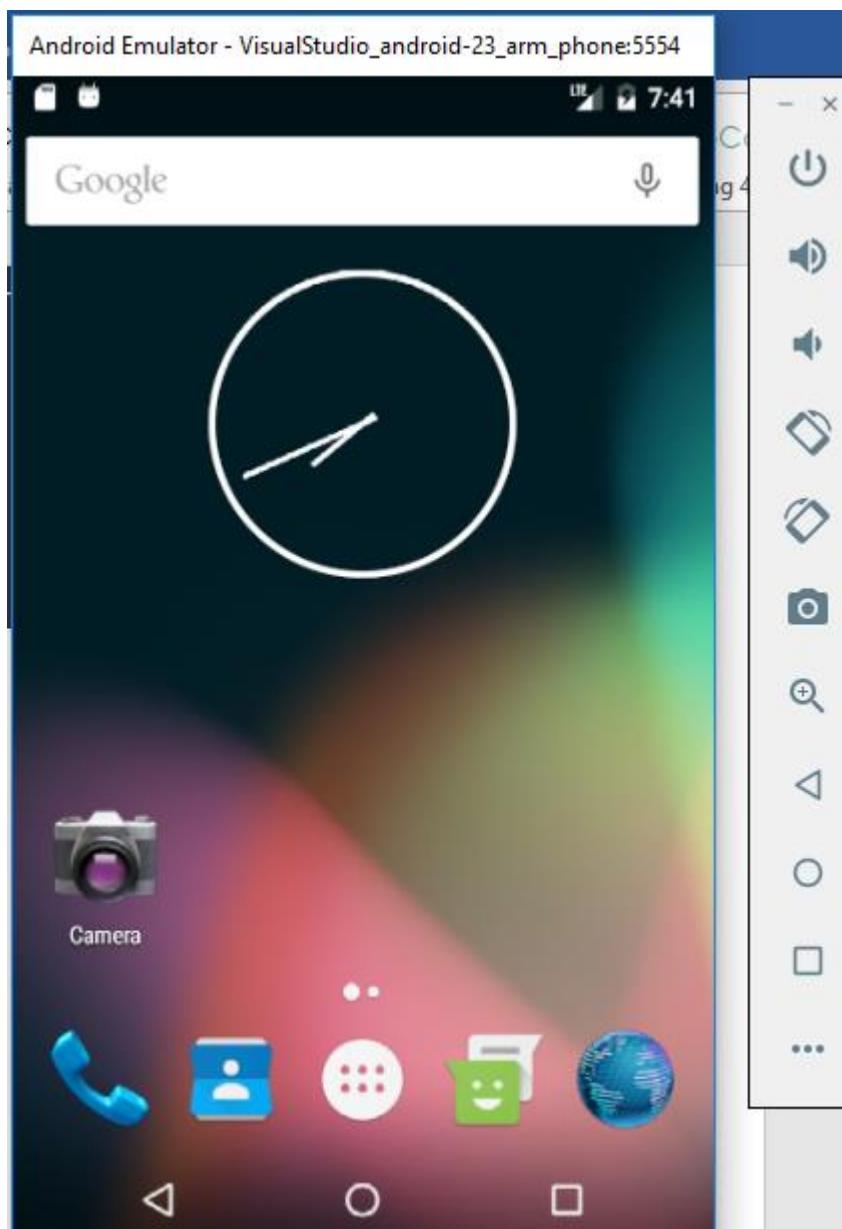
- Restore the package, build the application and then run the application using F5 and see the output below.



- Open the Xamarin folder following by opening the application. Then, restore the packages and build the application.



- Run the application and wait for some time to launch the android emulator and see the below screenshot for the output and then you can test with the Android version.



## 10. Connectors in Azure

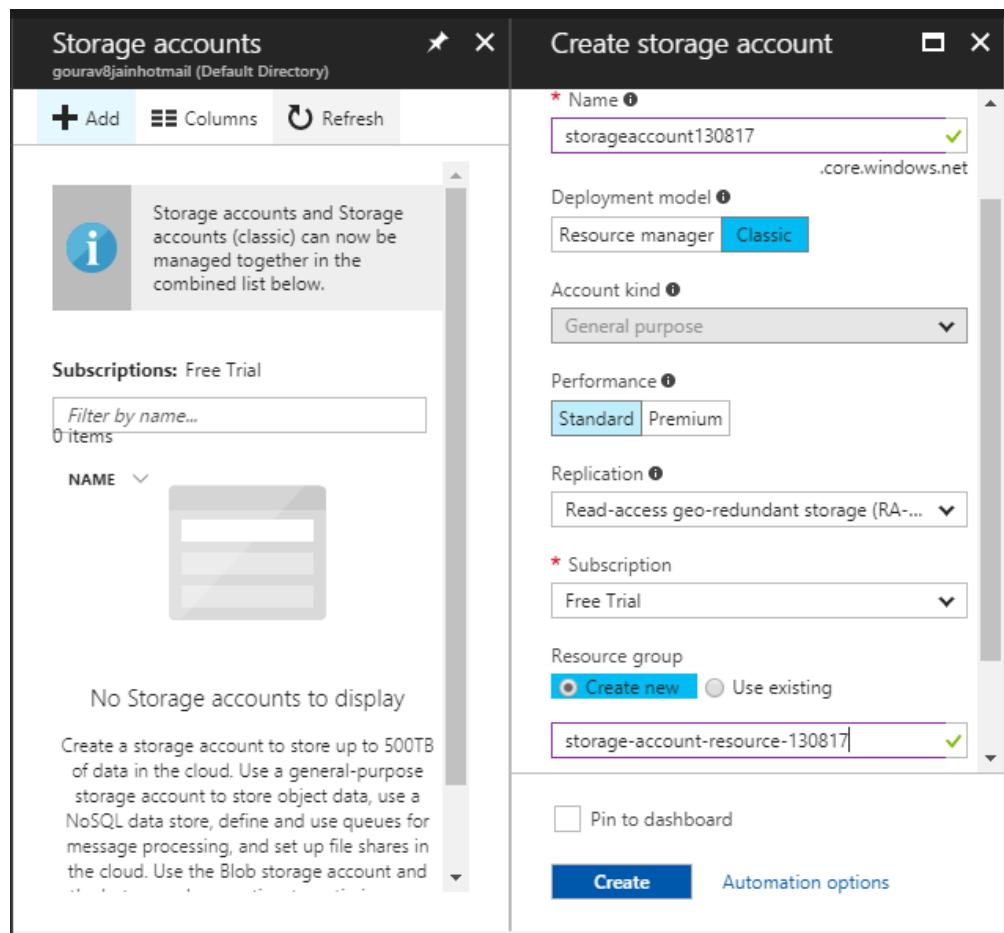
### What is Windows Azure Connector?

- It provides quick access to events, data, and actions across services, protocols, and platforms.
- It can be used as a trigger or an action in a logic app, and may require a configured connection to use (for example: authorizing a Twitter account to access or post on your behalf).

### Create Virtual Machines in Azure

#### Steps to be followed -

- Open Azure portal and go to **storage accounts** section. Click on the **Add** symbol to add “storage accounts” and then, fill-in the details with the name and resource-group details.



The screenshot shows the Azure Storage Accounts blade on the left and the 'Create storage account' dialog box on the right.

**Storage accounts blade (Left):**

- Header: Storage accounts, gourav8jainhotmail (Default Directory)
- Actions: + Add, Columns, Refresh
- Information: Storage accounts and Storage accounts (classic) can now be managed together in the combined list below.
- Subscriptions: Free Trial
- Filter by name...: 0 items
- NAME: (empty table)
- No Storage accounts to display
- Text: Create a storage account to store up to 500TB of data in the cloud. Use a general-purpose storage account to store object data, use a NoSQL data store, define and use queues for message processing, and set up file shares in the cloud. Use the Blob storage account and

**Create storage account dialog box (Right):**

- Name: storageaccount130817 (selected)
- Deployment model: Resource manager (selected)
- Account kind: General purpose
- Performance: Standard (selected)
- Replication: Read-access geo-redundant storage (RA...)
- Subscription: Free Trial (selected)
- Resource group:
  - Create new (selected)
  - Use existing
- Pin to dashboard:
- Buttons: Create (blue), Automation options

- Once the account is being created, go the storage accounts section.

**Storage accounts**  
gourav8jainhotmail (Default Directory)

**+ Add** **Columns** **Refresh**

**i** Storage accounts and Storage accounts (classic) can now be managed together in the

**Subscriptions:** Free Trial

Filter by name...	All types
1 items	
<b>NAME</b> <b>▼</b>	<b>TYPE</b> <b>▼</b>
 storageaccount130817	Storage account (classic)

- Open the storage account and see the blobs container.

**storageaccount130817**  
Storage account (classic)

**Search (Ctrl+ /)**

- Overview**
- Activity log
- Access control (IAM)
- Diagnose and solve problems

**SETTINGS**

- Access keys
- Configuration
- Shared access signature
- Properties
- Locks

**BLOB SERVICE**

- Containers

**Open in Explorer** **Move** **Delete**

Status  
Primary: Available, Secondary: Available  
Location  
South Central US, North Central US  
Subscription [\(change\)](#)  
**Free Trial**  
Subscription ID  
86db18a7-5367-4de9-8927-e459b44de6f5

**Services**

**Blobs**  
Object storage for understanding data  
[View metrics](#) [Configure CORS rules](#) [Setup custom domain](#)

**Files**  
File shares that use SMB 3.0 protocol  
[View metrics](#) [Configure CORS rules](#)

- Then click on the blobs option and open the blobs service.

Blob service  
storageaccount130817

**+** Container     Refresh

---

Essentials ^

Storage account  
[storageaccount130817](#)

Status  
Primary: Available, Secondary: Available

Location  
South Central US, North Central US

Subscription ([change](#))  
[Free Trial](#)

Subscription ID  
86db18a7-5367-4de9-8927-e459b44de6f5

---

 *Search containers by prefix*

---

**NAME**

---

You don't have any containers yet. Click '+ Container' to get started.

- Create a blob container and provide the name and access to private only.

**Blob service**  
storageaccount130817

+ Container    ⏪ Refresh

New container

\* Name                                  Access type ⓘ  
   

**OK**    Cancel

86db18a7-5367-4de9-8927-e459b44de6f5

NAME

You don't have any containers yet. Click '+ Container' to get started.

- Go to the blobs section and see the blobs container created just now.

**Blob service**  
storageaccount130817

+ Container    ⏪ Refresh

Essentials ▾

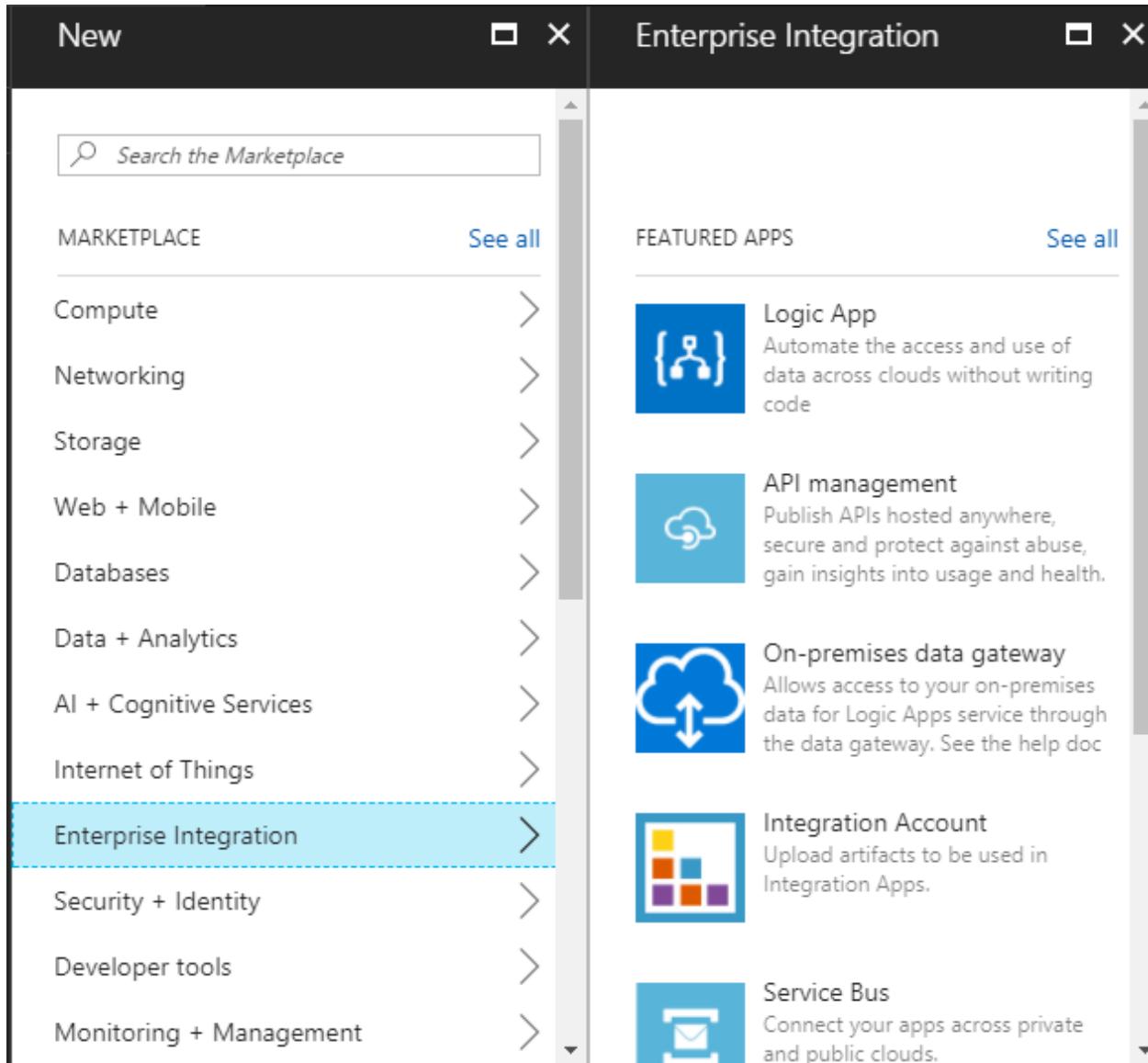
NAME

blob-container-13-08-17

## Create a logic App -- Enterprise Integration Connector

### Steps to be followed -

- Go to the portal and click on “Add” and under “Enterprise Integration” and choose Logic App.



- Fill-in the details with the name and choose the existing resource-group and then click on “Create”.

**Create logic app**

Logic App

\* Name  
logic-connector-13-08-17 ✓

\* Subscription  
Free Trial

\* Resource group ⓘ  
Create new  Use existing  
storage-account-resource-130817

Location  
South Central US

Log Analytics ⓘ  
 On  Off

 You can add triggers and actions to your Logic App after creation.

Pin to dashboard

**Create** Automation options

- See the Logic App Designer section under the newly created “Logic Connector”

Microsoft Azure All resources > logic-connector-13-08-17 > Logic Apps Designer

Logic Apps Designer

Introducing Azure Logic Apps

{ } Azure Logic Apps

Database icon, Folder icon, Graph icon, Cloud icon



## 11. Connecting with Twitter in Azure

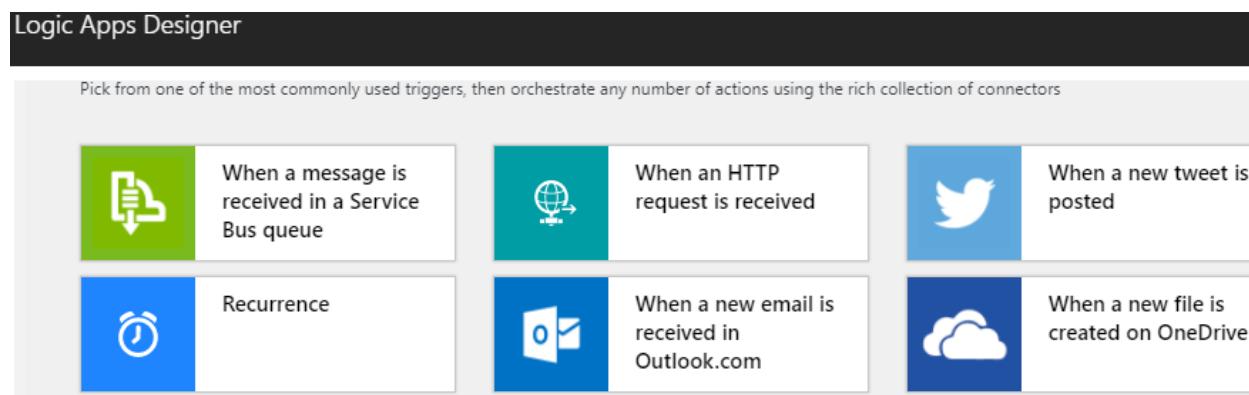
### Getting connected with Twitter Social App

#### Steps to be followed -

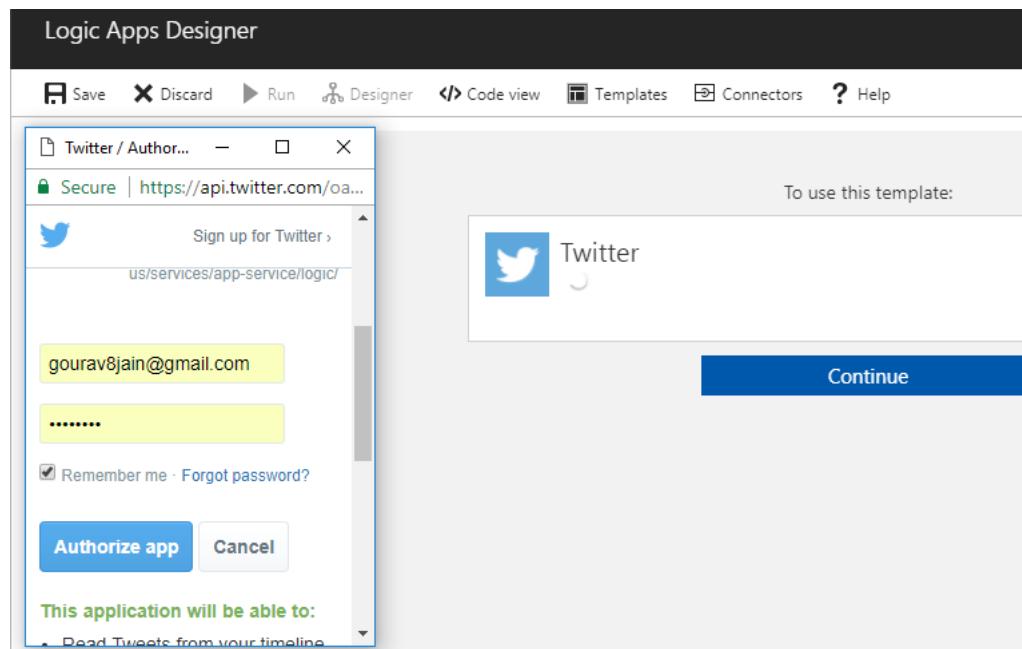
- Go to the resources section and see the logic-app connector.



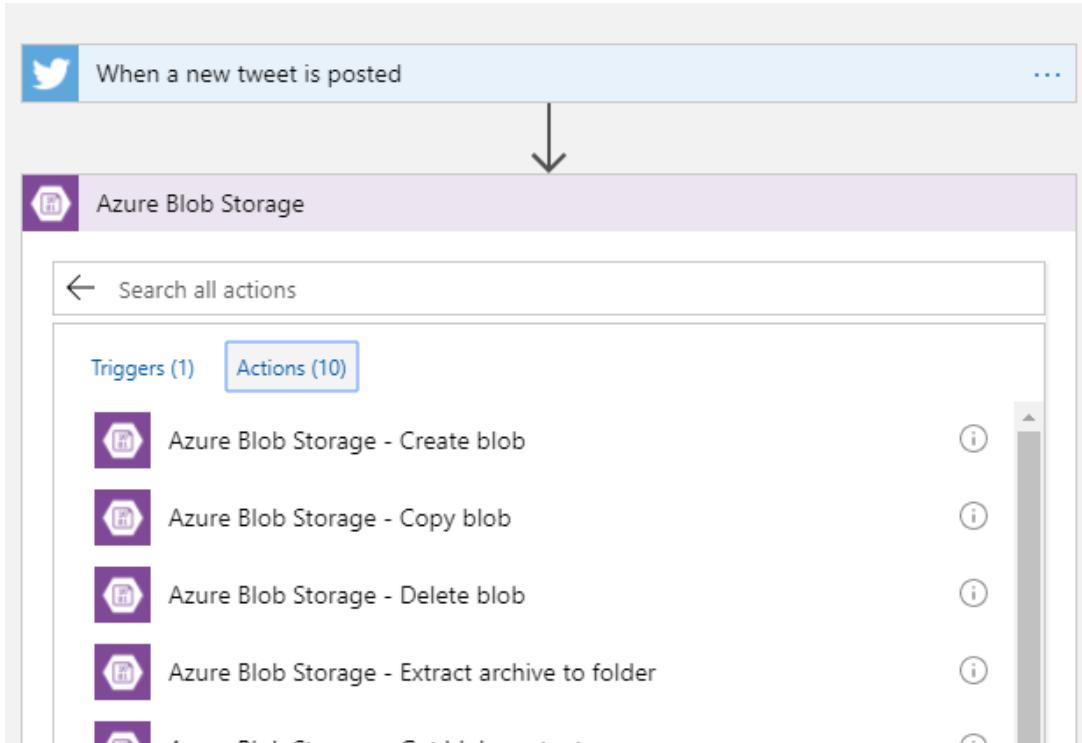
- Click on the option "When a tweet is posted".



- Sign-in with the twitter account and fill-in the username and password. Then, "Authorize App" and after that, click on the **Continue** button.



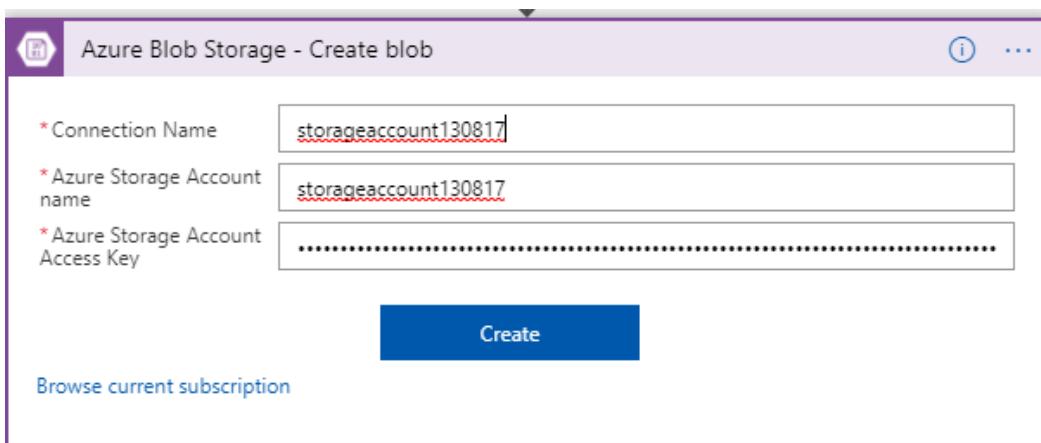
- Enter the Search text by which twitter posts will be noticed if the post contains “test” and then click on the new step (Add Action) and choose the step to be executed once there is a post with text “test” and then choose the Azure Storage Connector



The screenshot shows a logic app workflow. It begins with a trigger icon for Twitter, labeled "When a new tweet is posted". A downward arrow points from this trigger to an action icon for Azure Blob Storage. The Azure Blob Storage action card is open, showing a search bar at the top with "Search all actions" and tabs for "Triggers (1)" and "Actions (10)". The "Actions (10)" tab is selected, displaying five listed actions under the Azure Blob Storage category:

- Azure Blob Storage - Create blob
- Azure Blob Storage - Copy blob
- Azure Blob Storage - Delete blob
- Azure Blob Storage - Extract archive to folder
- (...)

- Then fill-in details for the existing storage account details after extracting it from the storage account properties.

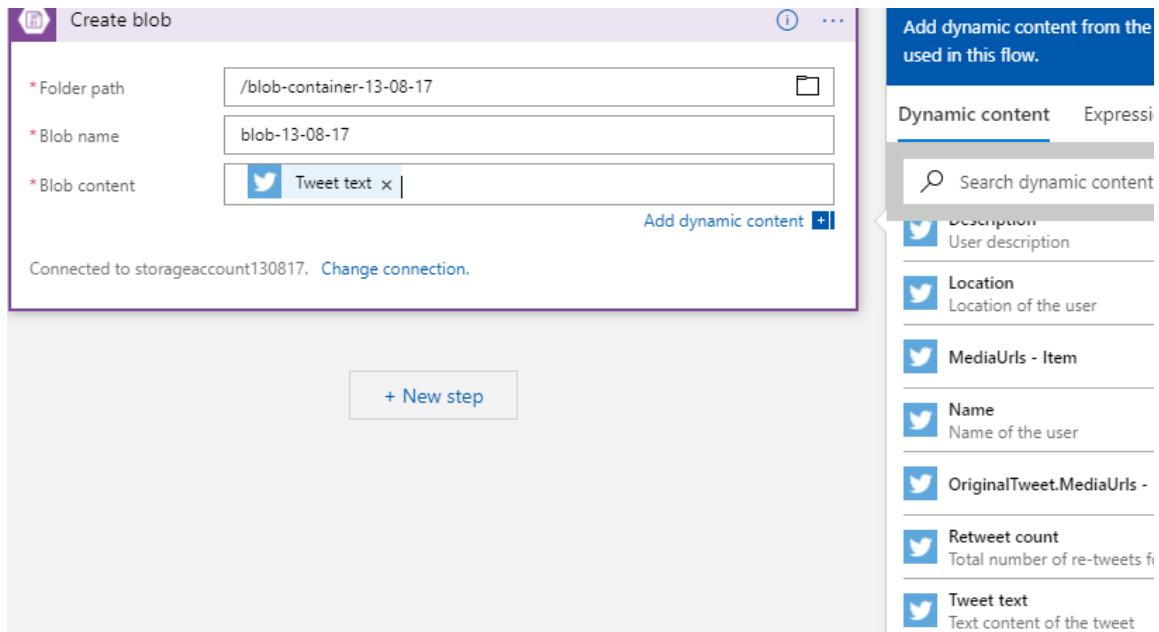


The screenshot shows the configuration dialog for the "Azure Blob Storage - Create blob" action. The title bar says "Azure Blob Storage - Create blob". The form contains three fields with red asterisks indicating they are required:

- \* Connection Name: storageaccount130817
- \* Azure Storage Account name: storageaccount130817
- \* Azure Storage Account Access Key: (redacted)

At the bottom of the dialog is a blue "Create" button.

- Then, fill-in details for folder-path, blob-name, and blob-content. So, whenever the post happens, the tweet text would be stored in the blob. Click on **Save** and press the **Run** button.



Create blob

\*Folder path: /blob-container-13-08-17

\*Blob name: blob-13-08-17

\*Blob content: Tweet text x |

Add dynamic content +

Connected to storageaccount130817. [Change connection.](#)

+ New step

Add dynamic content from the used in this flow.

Dynamic content Expressions

Search dynamic content

Description User description

Location Location of the user

MediaUrls - Item

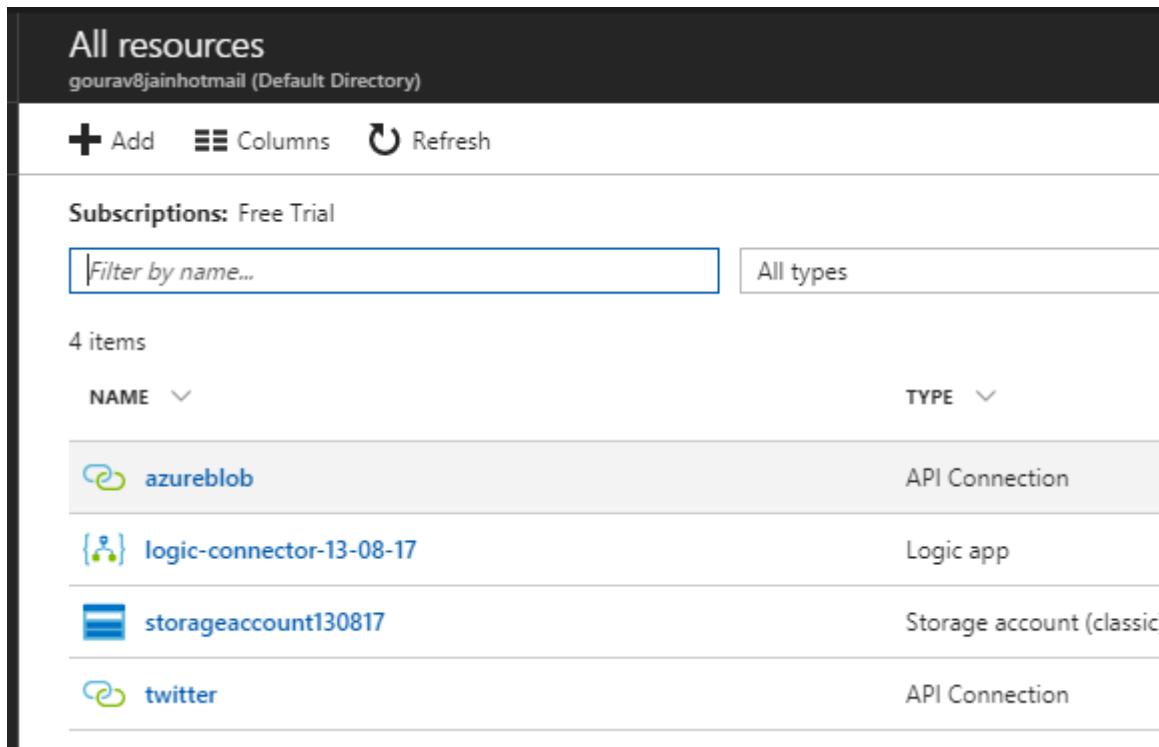
Name Name of the user

OriginalTweet.MediaUrls -

Retweet count Total number of re-tweets for this tweet

Tweet text Text content of the tweet

- After this, we will be able to see few extra resources for Azure-blob and twitter.



All resources

gourav8jainhotmail (Default Directory)

+ Add    Columns    Refresh

Subscriptions: Free Trial

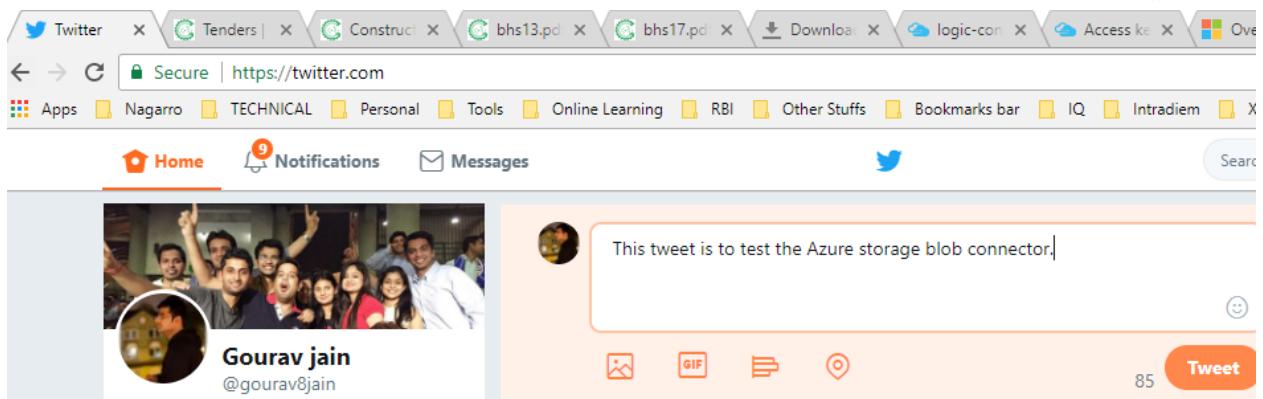
Filter by name...

All types

4 items

NAME	TYPE
azureblob	API Connection
logic-connector-13-08-17	Logic app
storageaccount130817	Storage account (classic)
twitter	API Connection

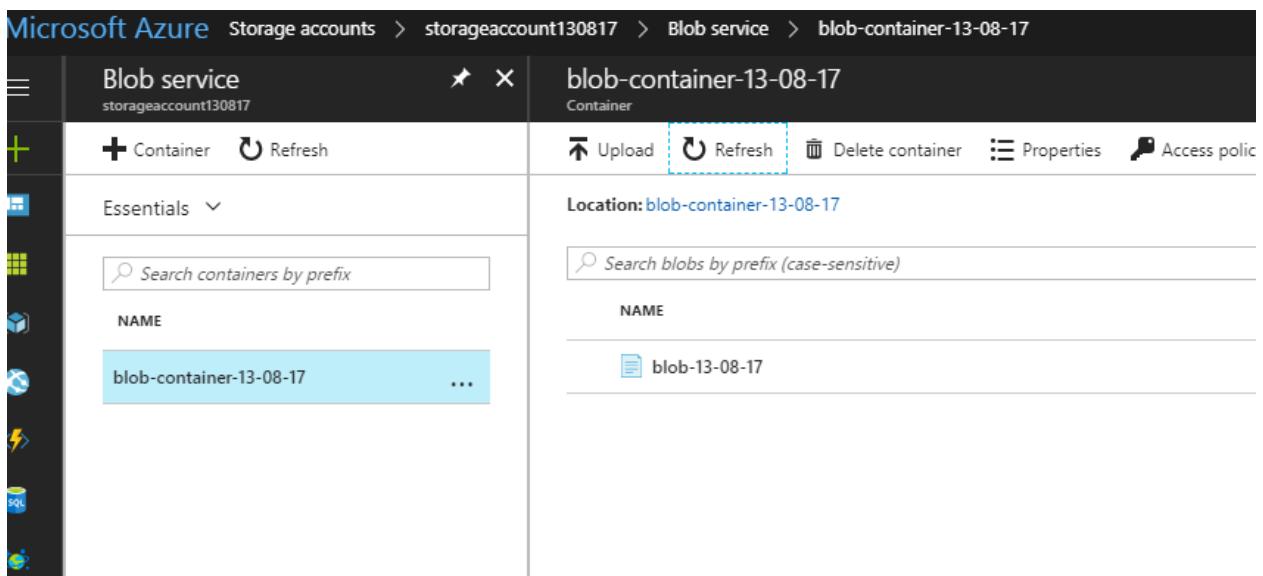
- To see this work, I will post a tweet in my profile and will see the stats here in Azure, go to the twitter account and post a tweet with text "test" and click on "Tweet".



This tweet is to test the Azure storage blob connector.

85 Tweet

- Wait for a minute, click on the blob-container and see the new blob is been created with the name – “blob-13-08-17” and see the content with-in that.



NAME
blob-13-08-17

- Click on the new blob created there.

**Blob properties**

blob-13-08-17

**Download** **Delete**

**NAME**  
blob-13-08-17

**URL**  
[https://storageaccount130817.blob.core...](https://storageaccount130817.blob.core.windows.net/) 

**LAST MODIFIED**  
8/13/2017, 6:14:22 PM

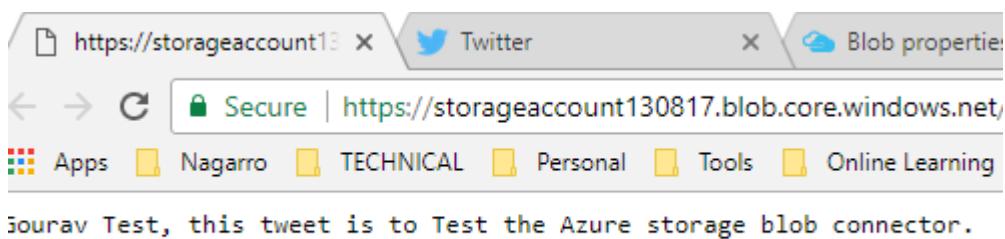
**TYPE**  
Block blob

**SIZE**  
68 B

**ETAG**  
0x8D4E24905DFF603

**CONTENT-MD5**  
[Hc7B8Bwpwmpf9z4MMznXTg==](#) 

- Click on the download button and see the result in the browser.



The screenshot shows a web browser window with the following details:

- Address bar: <https://storageaccount130817.blob.core.windows.net/>
- Tab title: Blob properties
- Toolbar buttons: Back, Forward, Stop, Refresh, Secure (green lock), and a search bar.
- Menu bar: Apps, Nagarro, TECHNICAL, Personal, Tools, Online Learning.
- Content area:

Gourav Test, this tweet is to Test the Azure storage blob connector.

## 12. Services Scheduler in Azure

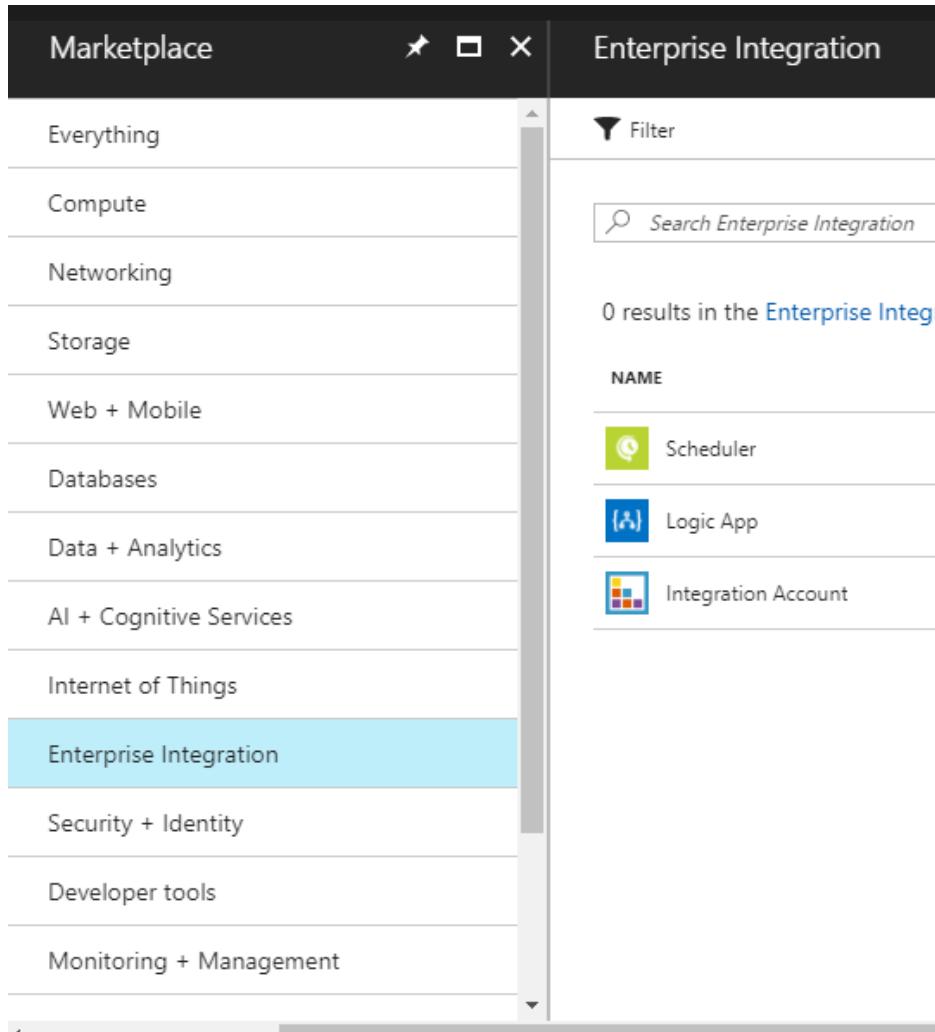
### What is Windows Azure Service Scheduler?

- It is a task scheduling service provided by Microsoft Azure.
- It can perform many actions regarding the job details in the scheduler and can also check Scheduler's monitoring and management capabilities.
- It can maintain multiple job collections.

### Create a scheduler service and jobs

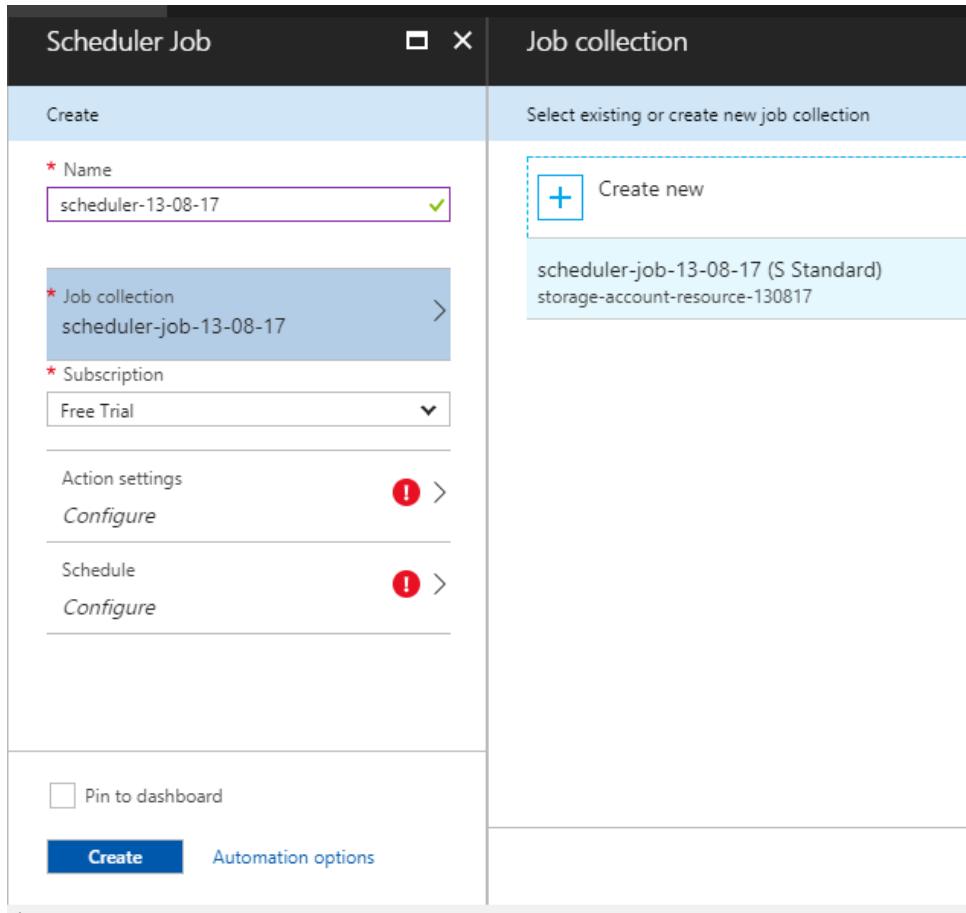
#### Steps to be followed -

- Open Azure portal and click on the Add button and choose Scheduler under Enterprise Integration category and then click on Create



The screenshot shows the Azure Marketplace interface. The left sidebar lists categories: Everything, Compute, Networking, Storage, Web + Mobile, Databases, Data + Analytics, AI + Cognitive Services, Internet of Things, Enterprise Integration (which is selected and highlighted in blue), Security + Identity, Developer tools, and Monitoring + Management. The main pane is titled "Enterprise Integration" and contains a search bar with "Search Enterprise Integration". Below the search bar, it says "0 results in the Enterprise Integr." and lists three items: "Scheduler" (represented by a green icon), "Logic App" (represented by a blue icon), and "Integration Account" (represented by a yellow icon).

- Fill-in the details with the name with creation of the new job giving a totally new name to the job i.e. scheduler-job-13-08-17 here.



Scheduler Job

Create

\* Name: scheduler-job-13-08-17

\* Job collection: scheduler-job-13-08-17

\* Subscription: Free Trial

Action settings

Schedule

Pin to dashboard

**Create**   [Automation options](#)

Job collection

Select existing or create new job collection

+ Create new

scheduler-job-13-08-17 (S Standard)  
storage-account-resource-130817

- Then, click on the Action Settings and configure it and there mention the URL which will be used for GET request.

Action settings

Action settings description

Action

Http

Method

Get

\* Url

http://get-customers

Headers

Name Value ...

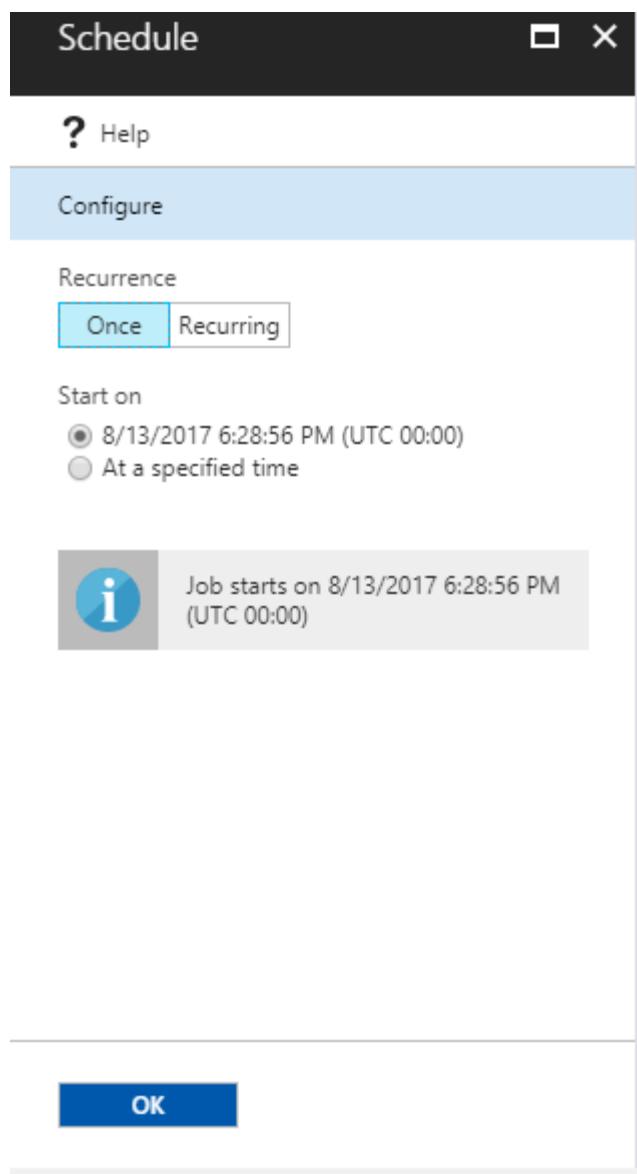
Optional settings

Authentication settings >

None

OK

- Then, click on the Schedule and configure it by choosing 'once' or 'recurring'.



- Once it will be created, you can go there and see the stats shown there.

scheduler-13-08-17  
Scheduler Job

Settings  Disable  Run now  Delete

Essentials ^ 

Resource group <a href="#">storage-account-resource-130817</a>	Status 0 of 2 successful
State	Last run
Enabled	7 secs ago
Location	Next run
South Central US	8/13/2017 6:36:26 PM (UTC 00:00)
Subscription name <a href="#">Free Trial</a>	Type Http
Subscription ID 86db18a7-5367-4de9-8927-e459b44de6f5	Scheduler Job Collection <a href="#">scheduler-job-13-08-17</a>

[All settings →](#)

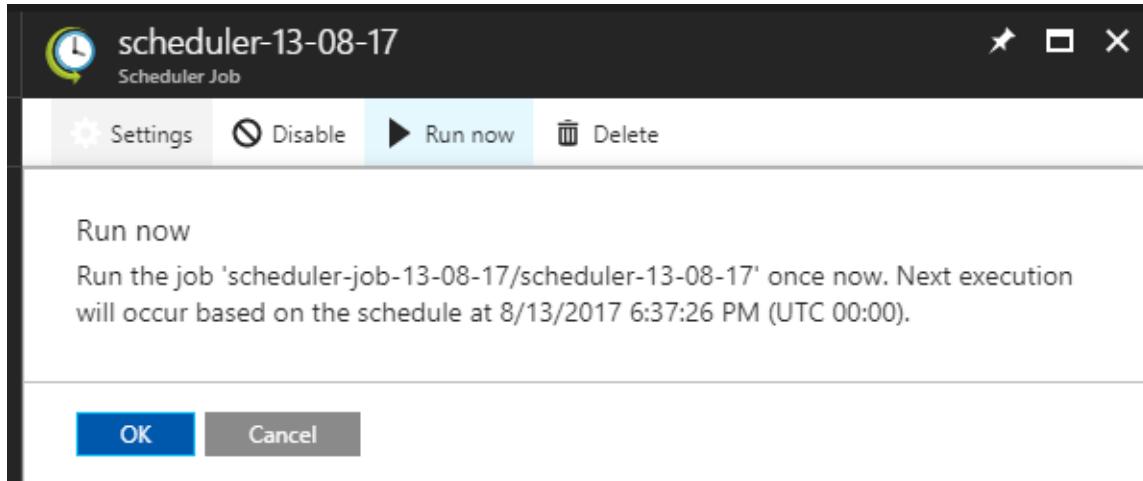
Summary

Schedule	Action
Once Start: 8/13/2017 6:28:56 PM (UTC 00:00) 	Http Method: GET <a href="http://get-customers">http://get-customers</a> 

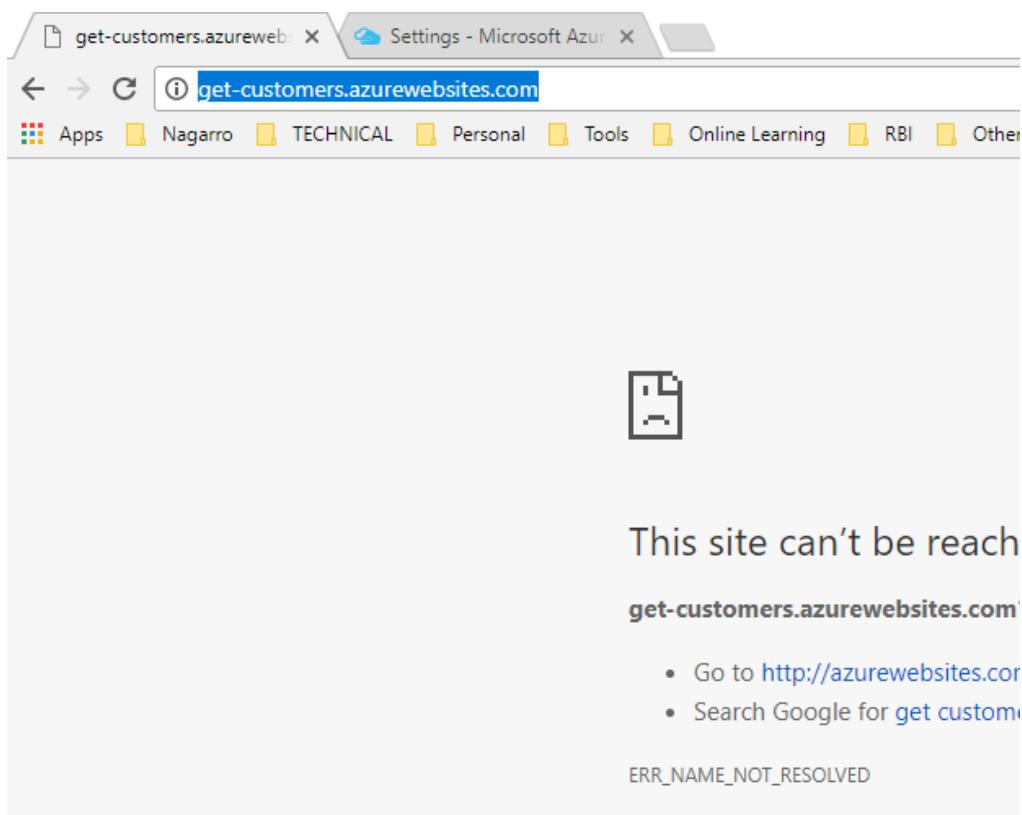
## Execute the schedule-service job

### Steps to be followed -

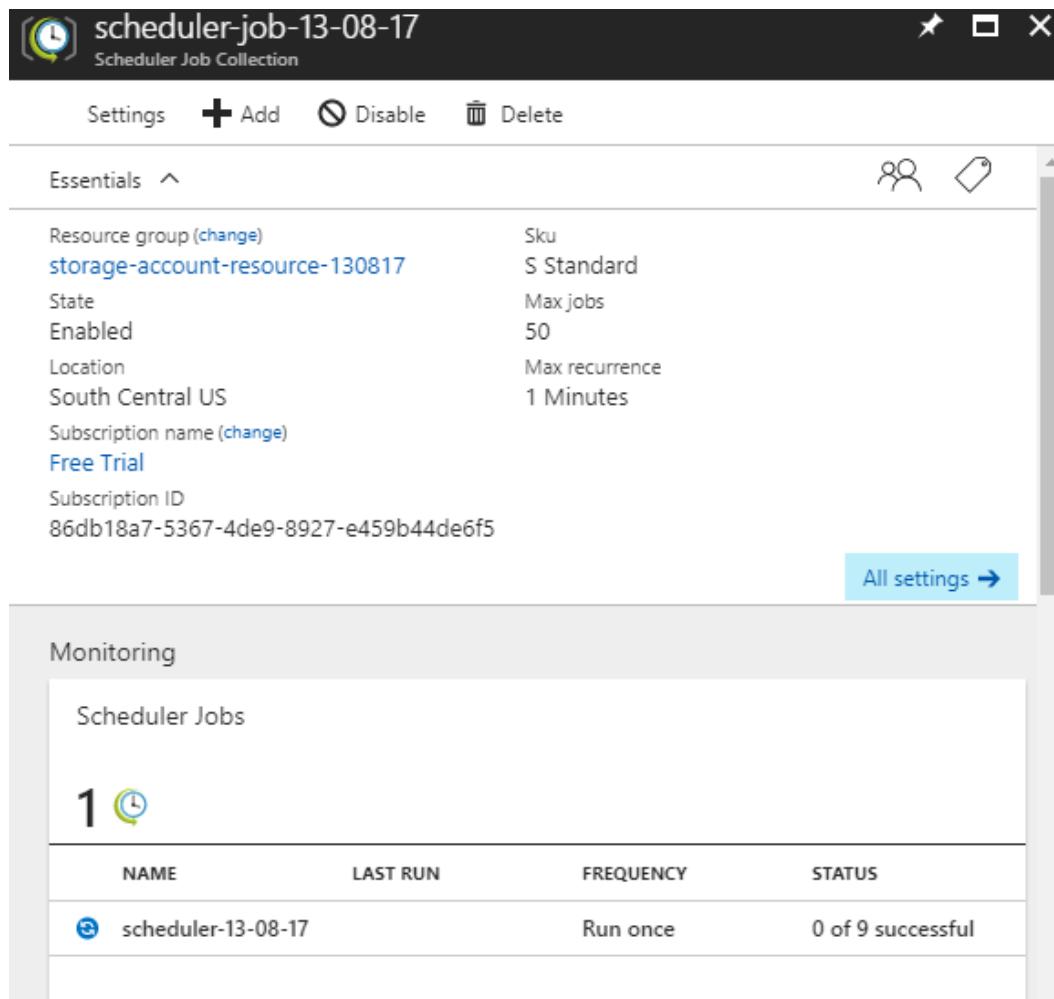
- Go to the scheduler-service and click on “Run now” there.



- Then, we will hit the URL which we mentioned in the action-settings i.e. <http://get-customers.Azurewebsites.com/>



- Then, I can see that the count has increased to 1 each time I hit the browser with the URL, i.e., the number of times scheduler job has been executed.



The screenshot shows the Azure Scheduler Job Collection interface. At the top, there's a navigation bar with a clock icon, the collection name 'scheduler-job-13-08-17', and standard window controls (star, square, X). Below the bar are buttons for 'Settings', '+ Add', 'Disable', and 'Delete'. A toolbar with user and export icons is on the right.

The main area is divided into sections:

- Essentials**:
  - Resource group ([change](#)): storage-account-resource-130817
  - Sku: S Standard
  - State: Enabled
  - Max jobs: 50
  - Location: South Central US
  - Max recurrence: 1 Minutes
  - Subscription name ([change](#)): Free Trial
  - Subscription ID: 86db18a7-5367-4de9-8927-e459b44de6f5
- All settings →** (button)
- Monitoring**:
  - Scheduler Jobs**
  - 1 job listed:

NAME	LAST RUN	FREQUENCY	STATUS
<a href="#">scheduler-13-08-17</a>		Run once	0 of 9 successful

## 13. Media Services in Azure

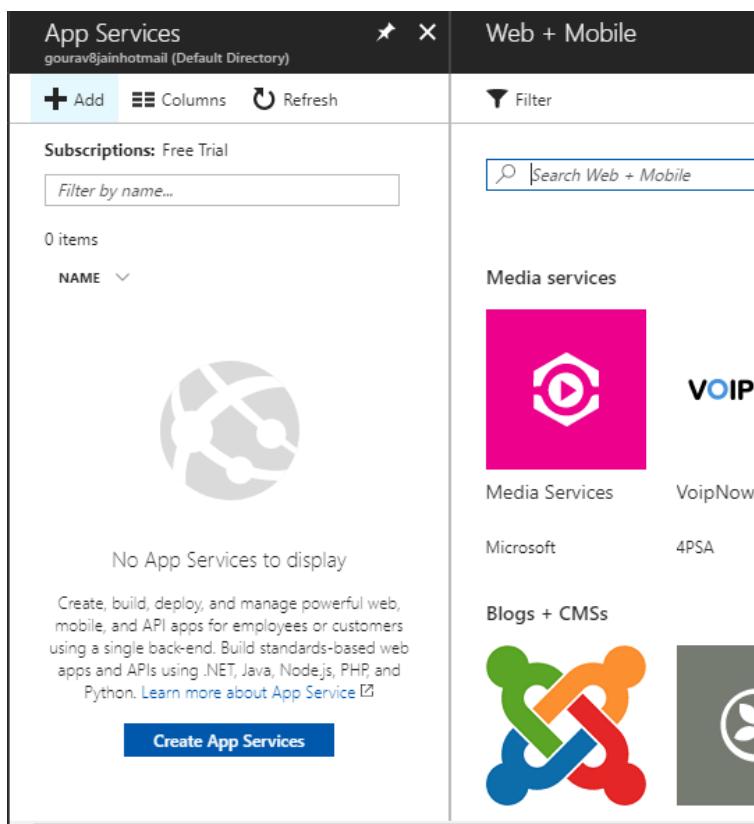
### What is Media Services in Azure?

- It helps you to build custom media workflows in the cloud.
- It's an end-to-end solution that's deliver audio and video virtually in any device anywhere.
- It offers end-to-end workflow which is very highly scalable in coding, packaging, storing and distribution of media content to a wide range of devices including TV, PC, and mobile devices.

### Create a scheduler service and jobs

#### Steps to be followed -

- Open Azure portal and click on the **Add** button. Choose **Media Services** under Web + Mobile category and then click on **Create**.



The screenshot shows the Azure portal interface for managing web and mobile services. The top navigation bar is labeled 'Web + Mobile'. On the left, there's a sidebar for 'App Services' with a message 'No App Services to display'. The main area shows a list of services under 'Media services':

Category	Service	Provider
Media services	Media Services	Microsoft
Media services	VoipNow	VoIPi
Blogs + CMSs	4PSA	

At the bottom of the page, there's a blue button labeled 'Create App Services'.

- Fill-in the details with the name and the creation of the Media Services.

**Media service** X

**CREATE MEDIA SERVICE ACCOUNT**

\* Account Name (lowercase only)  
mediaservices150817 ✓

\* Subscription  
Free Trial

\* Resource Group i  
 Create new  Use existing  
storage-account-resource-130817

\* Location  
South Central US

\* Storage Account  
*Please select a storage account* >

i Please note you can only choose Locally Redundant, Geo-Redundant and Read-only Access Geo-Redundant as storage type to work with Azure Media Services.

Pin to dashboard

**Create**   [Automation options](#)

- Then, create a storage account for that and incorporate it within that. Then, click OK.

**Create storage account** X

\* Name  
storageacc150817 ✓  
.core.windows.net

Performance i  
 Standard  Premium

Replication i  
Locally-redundant storage (LRS)

**OK**

- Then create the Media Services.

**Media service**

CREATE MEDIA SERVICE ACCOUNT

\* Account Name (lowercase only)  
mediaservices150817 

\* Subscription  
Free Trial

\* Resource Group  Create new  Use existing  
storage-account-resource-130817

\* Location  
South Central US

\* Storage Account  
storageacc150817 

 Please note you can only choose Locally Redundant, Geo-Redundant and Read-only Access Geo-Redundant as storage type to work with Azure Media Services.

Pin to dashboard

**Create** Automation options

- See the All resources section and check the newly created media service.

**All resources**  
gourav8jain@hotmail (Default Directory)

 Add  Columns  Refresh

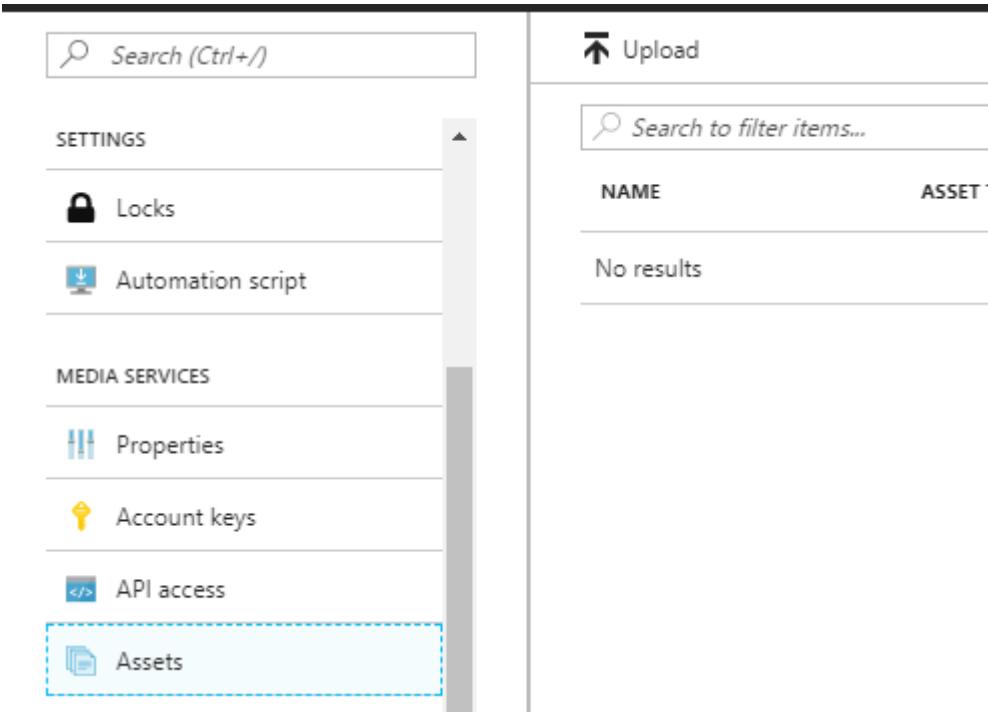
**Subscriptions:** Free Trial

Filter by name...	All resource groups	All
2 items		
NAME	TYPE	
 mediaservices150817	Media service	
 storageacc150817	Storage account	

## Upload media asset and access the same.

### Steps to be followed -

- Go to the Assets section and click on the **Upload** button.



The screenshot shows a software interface with a sidebar on the left and a main content area on the right.

**Left Sidebar:**

- Search bar: Search (Ctrl+ /)
- SETTINGS section:
  - Locks
  - Automation script
- MEDIA SERVICES section:
  - Properties
  - Account keys
  - API access
- Assets (highlighted with a dashed blue border)

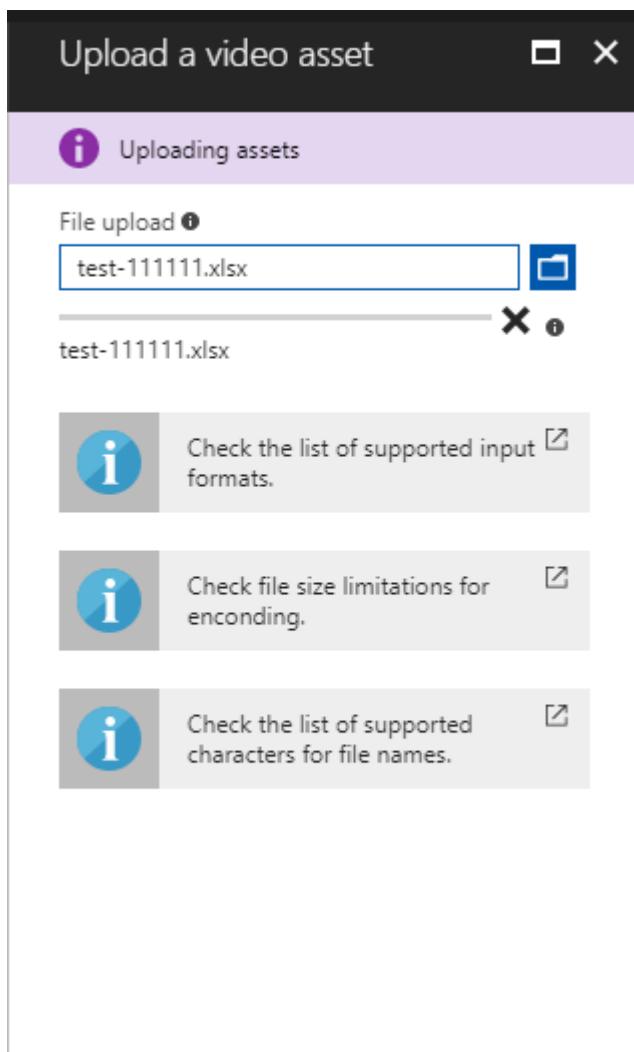
**Right Content Area:**

### Upload

Search to filter items...

NAME	ASSET 1
No results	

- Upload any file. Here, I have selected a blank .xlsx file.



- Go to the **File** section and click **Publish** to publish the .xlsx file.

NAME	TYPE	AUTHORIZATION POLICY ID
There are no keys in the asset.		

Delivery Policies

- Then, add the locator while publishing the URL –

Publish the asset □ X

SETTINGS

**By adding a locator to the asset,  
you publish the asset**

Locator type ●  
**Progressive**

\* Start date and time ●  
2017-08-15   4:55:51 PM

\* End date and time ●  
2117-08-15   4:55:51 PM

---

**Add**

- Click on the download button and copy the URL from there.

**Locator details**

□ X

---

 Delete

**Overview**

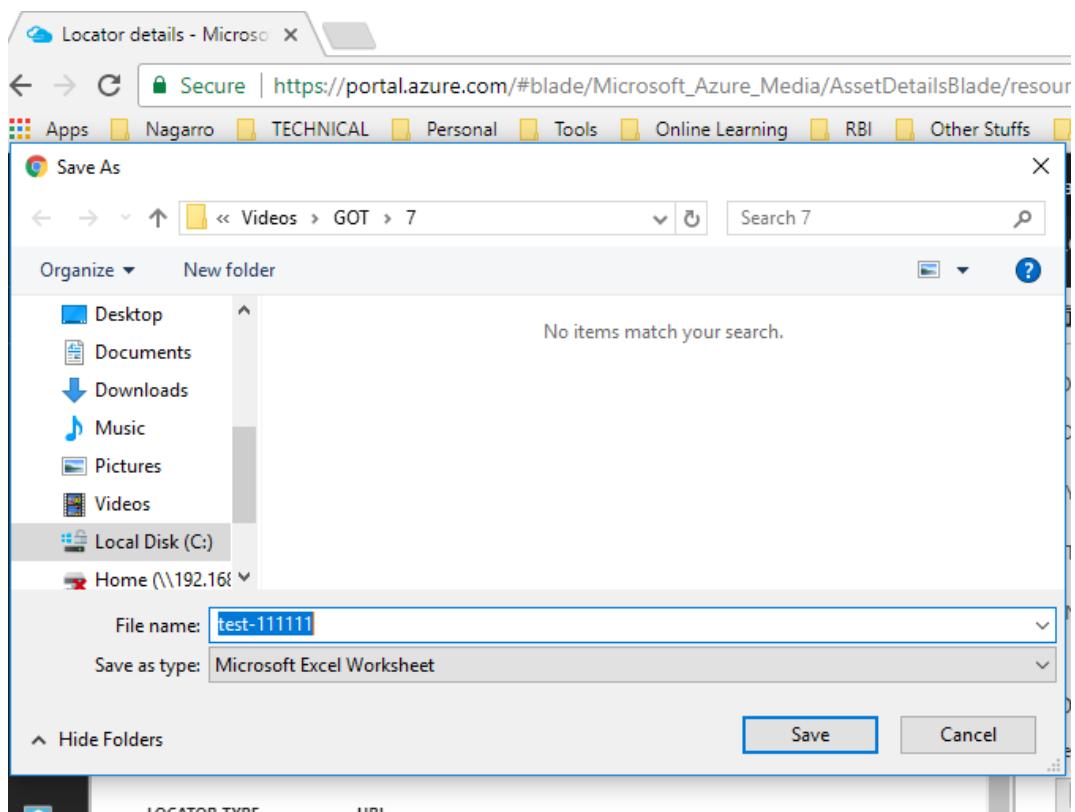
ID	nb:lid:UUID:49d22a95-c2e5-4860-ad86-eb06c8cd3e54
TYPE	Progressive
START DATE AND TIME	Tue, Aug 15, 2017, 16:55 GMT+5:30
END DATE AND TIME	Sun, Aug 15, 2117, 16:55 GMT+5:30

**Download URLs**

test-11111.xlsx

<https://storageacc150817.blob.core.windows.net/asset-6da11f79-82ed-4958-b56b-061894...> 

- As soon as click on the browser, to download the .xlsx file.



## 14. API apps in Azure

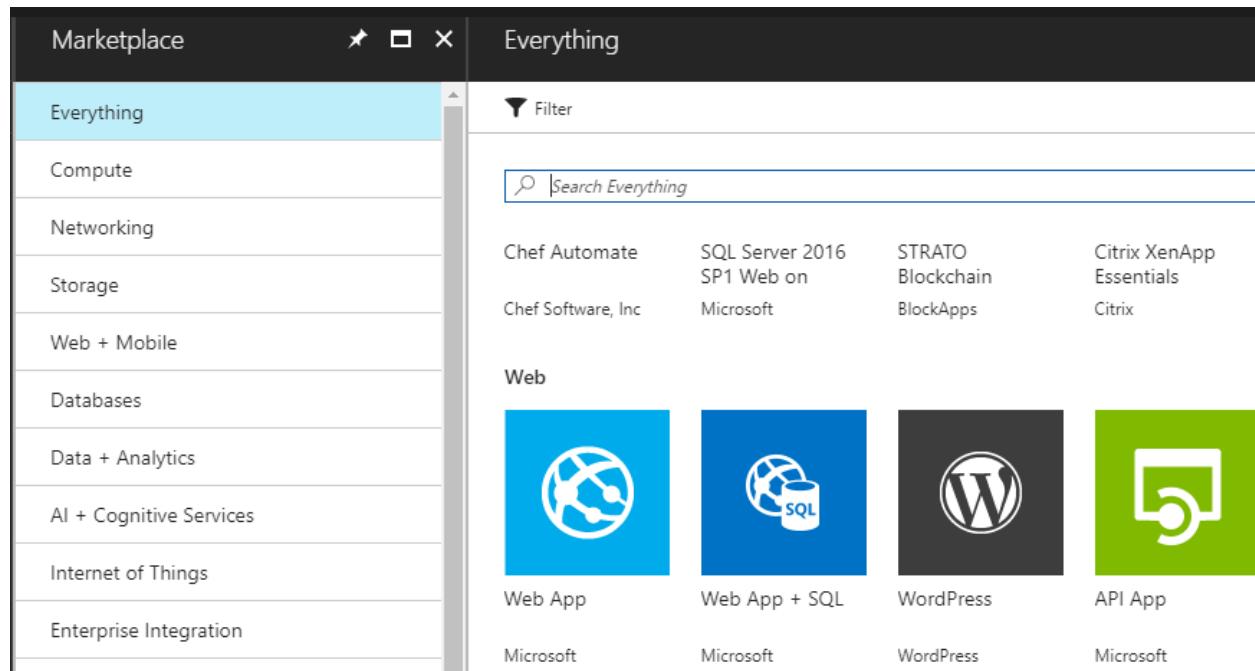
### What is API app in Azure?

- It makes it easier to develop, host, and consume APIs in the cloud and on-premises.
- It provides security, simple access control, hybrid connectivity, automatic SDK generation, and seamless integration with Logic Apps.
- It's a fully managed platform for web, mobile, and integration scenarios.

### Create a API app in Azure

#### Steps to be followed -

- Open Azure portal and click on the **Add** button. Choose **Everyone** and search for **API app**.



The screenshot shows the Azure Marketplace interface. On the left, there is a sidebar with categories: Everything (selected), Compute, Networking, Storage, Web + Mobile, Databases, Data + Analytics, AI + Cognitive Services, Internet of Things, and Enterprise Integration. The main area has a search bar labeled 'Search Everything'. Below the search bar, there are four cards representing different service types: 'Web App' (Microsoft), 'Web App + SQL' (Microsoft), 'WordPress' (WordPress), and 'API App' (Microsoft). Each card has its name, a small icon, and the provider's name below it.

Service Type	Provider
Web App	Microsoft
Web App + SQL	Microsoft
WordPress	WordPress
API App	Microsoft

- Fill-in the details with the name with creating the API app using the existing resource-group.

**API App**

Create

---

\* App name  
api-app-15-08-17 

.azurewebsites.net

\* Subscription  
Free Trial

\* Resource Group   
 Create new  Use existing

storage-account-resource-130817

---

\* App Service plan/Location  
ServicePlanca05ea13-9af6(South ...)

Application Insights   
 On  Off

---

Pin to dashboard

**Create** Automation options

- See the app-services section and check the newly created app-service.

**App Services**

gourav8jainhotmail (Default Directory)

---

 Add  Columns  Refresh

---

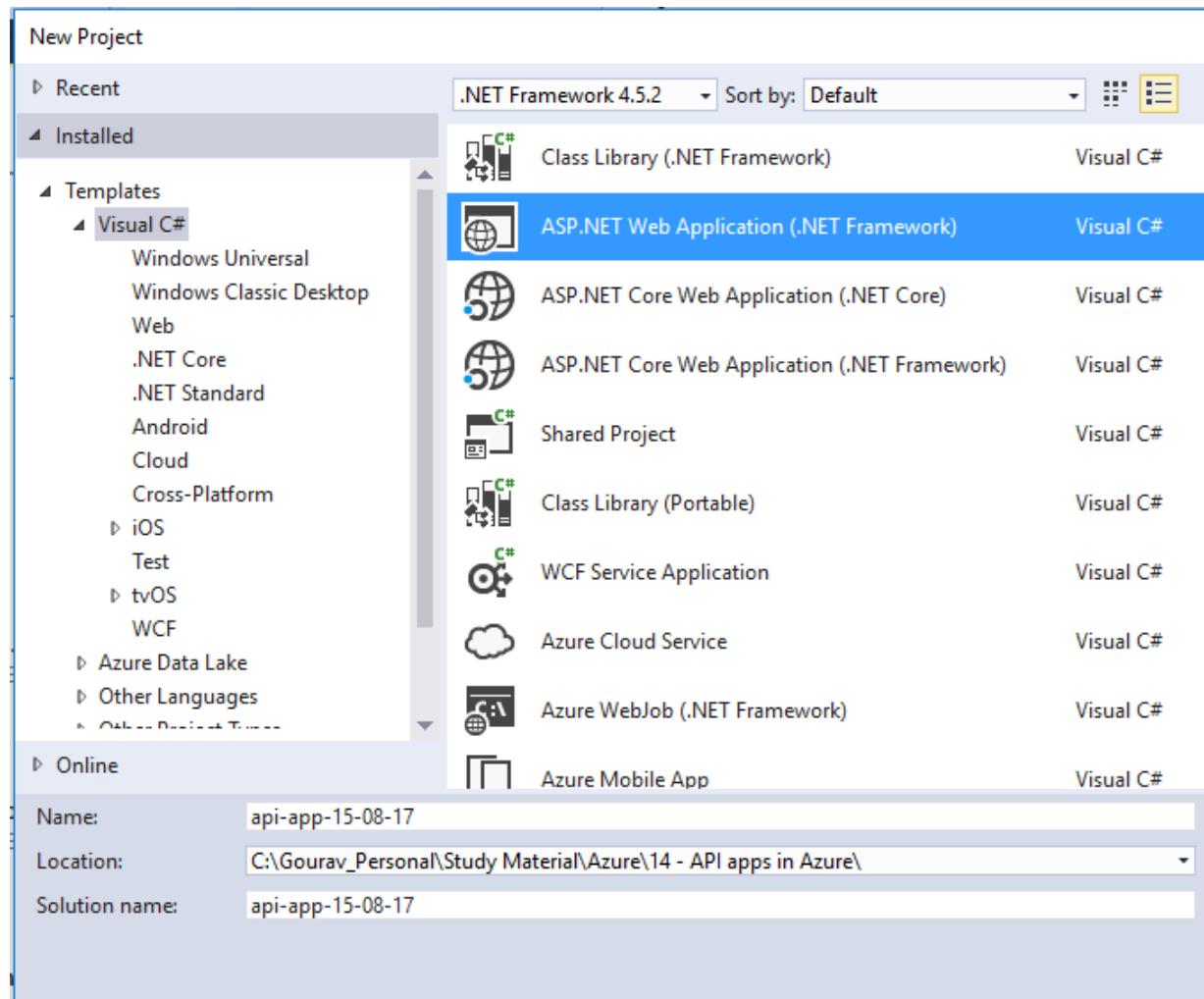
**Subscriptions:** Free Trial

Filter by name...	All resource groups
1 items	
NAME	STATUS
 api-app-15-08-17	Running

## Create an API application in VS 2017 and publish into Azure.

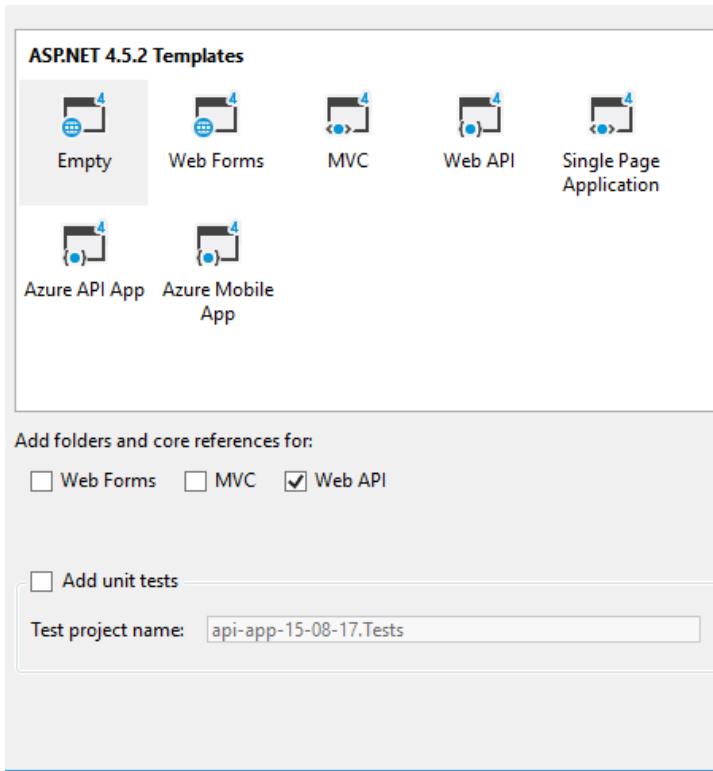
### Steps to be followed -

- Open VS 2017 and create a project with ASP.NET Web Application with the name “api-app-15-08-17”.

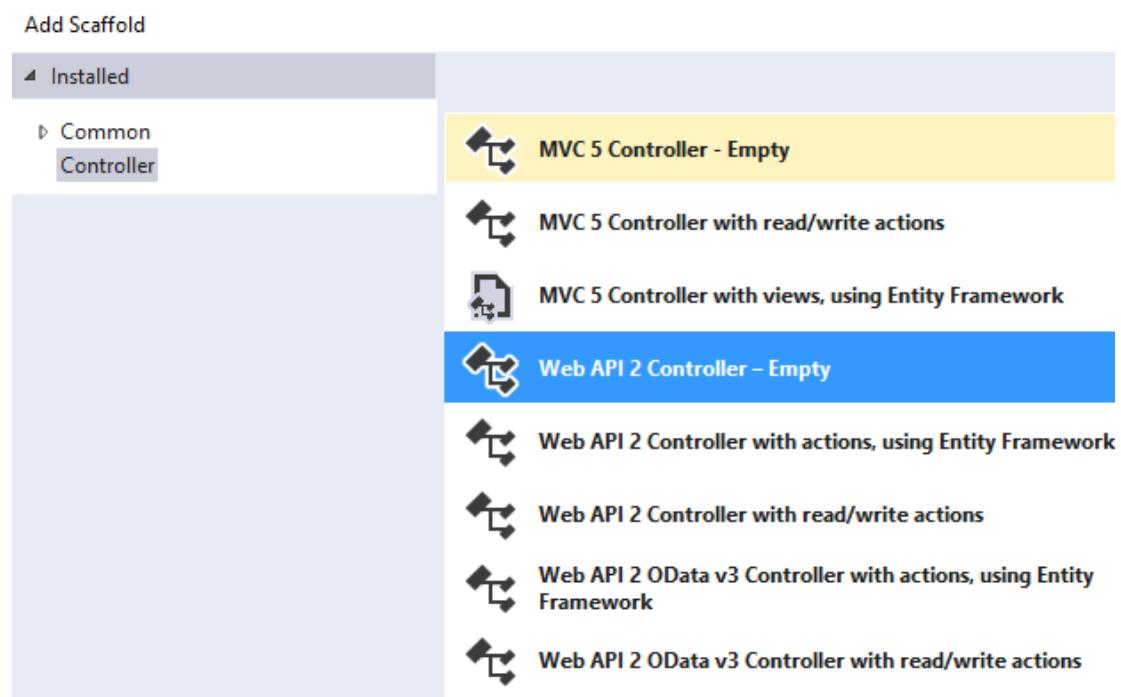


- Choose an empty template by selecting the Web API option and click on OK.

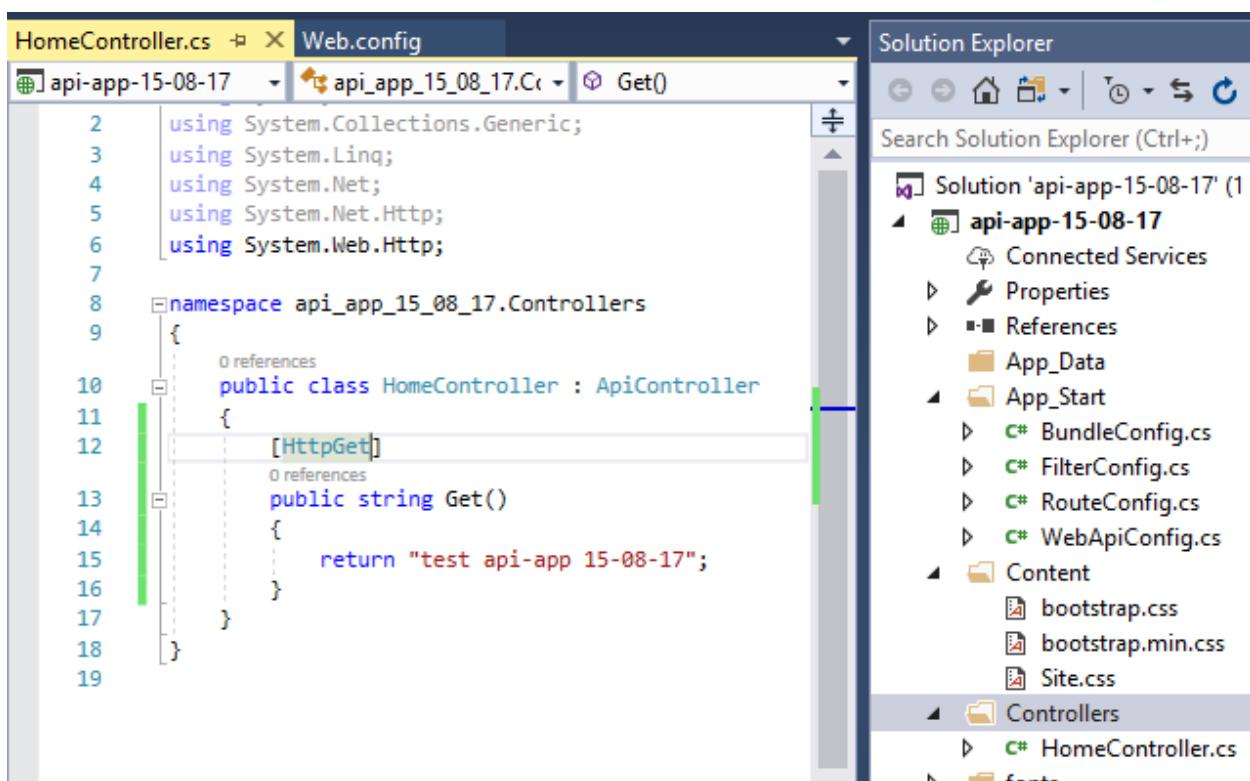
## New ASP.NET Web Application - api-app-15-08-17



- Create a Web API2 Empty Controller with the name **HomeController**.



- Write a simple method to return a string from the mothed **Get** with the HTTPGET verb.

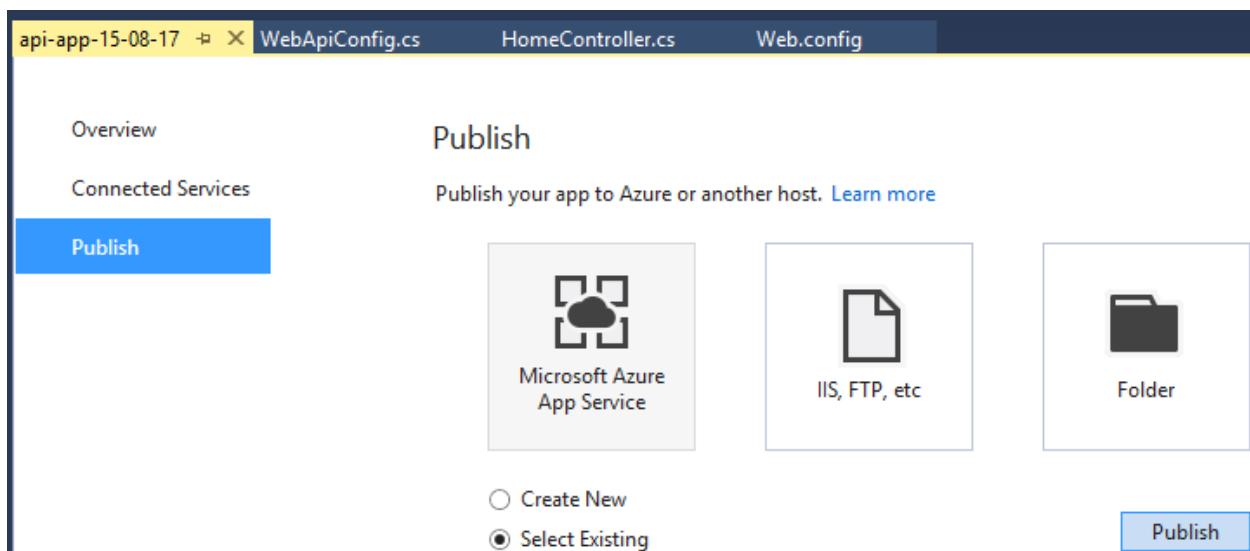


```

2   using System.Collections.Generic;
3   using System.Linq;
4   using System.Net;
5   using System.Net.Http;
6   using System.Web.Http;
7
8   namespace api_app_15_08_17.Controllers
9   {
10    [HttpGet]
11    public class HomeController : ApiController
12    {
13        public string Get()
14        {
15            return "test api-app 15-08-17";
16        }
17    }
18}
19

```

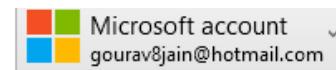
- Right click on the project and publish the application on the Azure cloud “API-APP”.



- Click on the publish and select the existing API app and click on OK. Wait for the time it gets published.

## App Service

Host your web and mobile applications, REST APIs, and more in Azure



Subscription

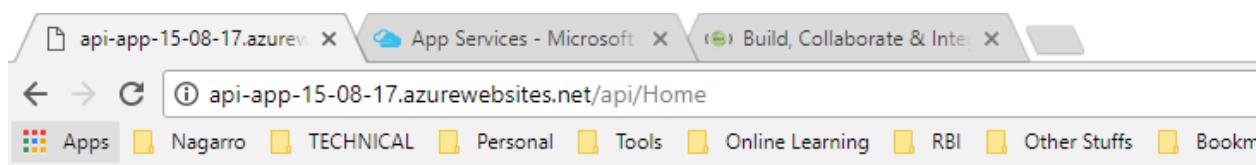
View

Search

OK

Cancel

- Open the browser with the URL to access the API method.



This XML file does not appear to have any style information associated with it. The document tree is shown below.

```
<string xmlns="http://schemas.microsoft.com/2003/10/Serialization/">test api-app 15-08-17</string>
```

## 15. Machine Learning

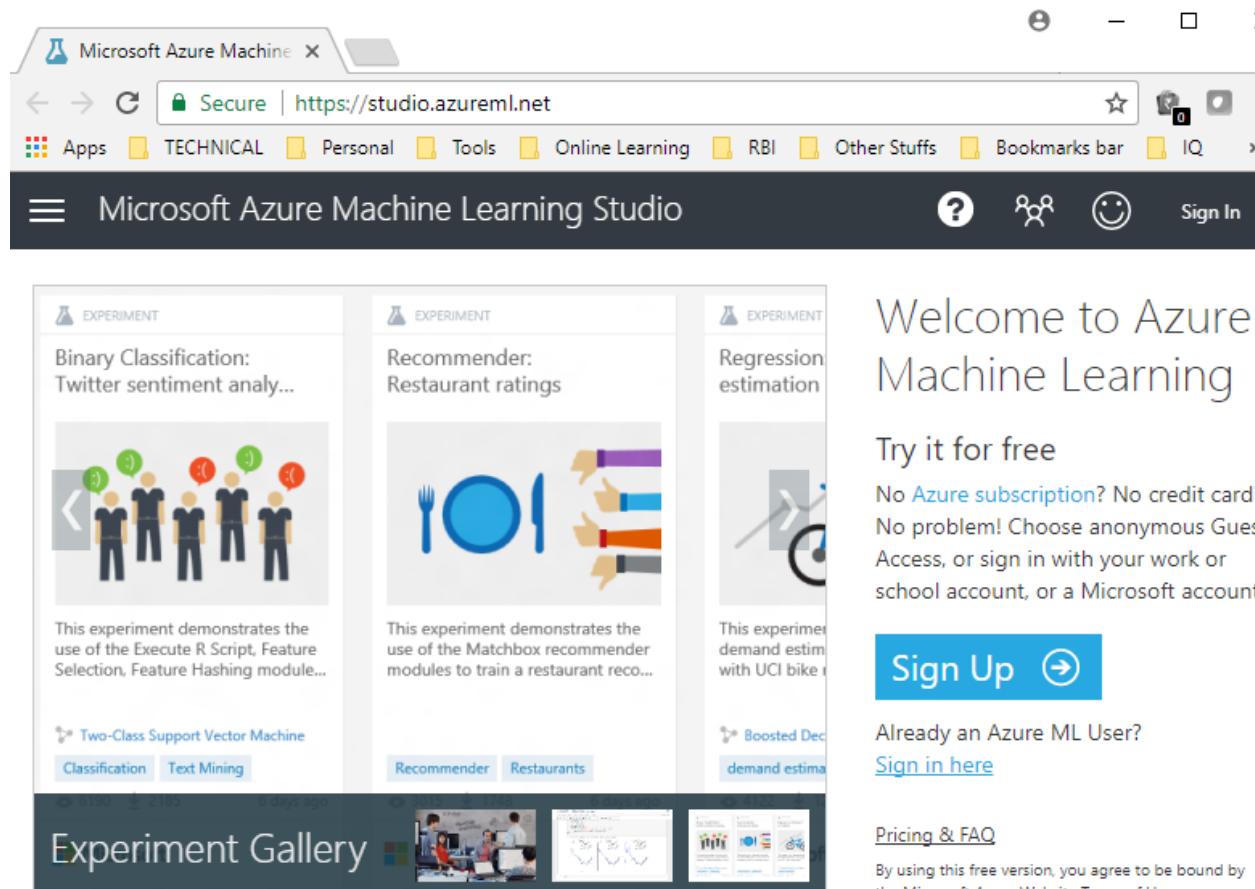
### What is Microsoft Azure Machine Learning?

- It's a data modeling environment from which we can get an end-to-end approach to a problem to an answer.
- Use Azure Machine Learning to deploy your model into production as a web service in minutes—a web service that can be called from any device, anywhere and that can use any data source.

### Login into the Azure Machine Learning portal

#### Steps to be followed -

- Open **Azure Machine Learning** portal sign-in to the application using your Azure credentials.



Welcome to Azure Machine Learning

Try it for free

No Azure subscription? No credit card? No problem! Choose anonymous Guest Access, or sign in with your work or school account, or a Microsoft account

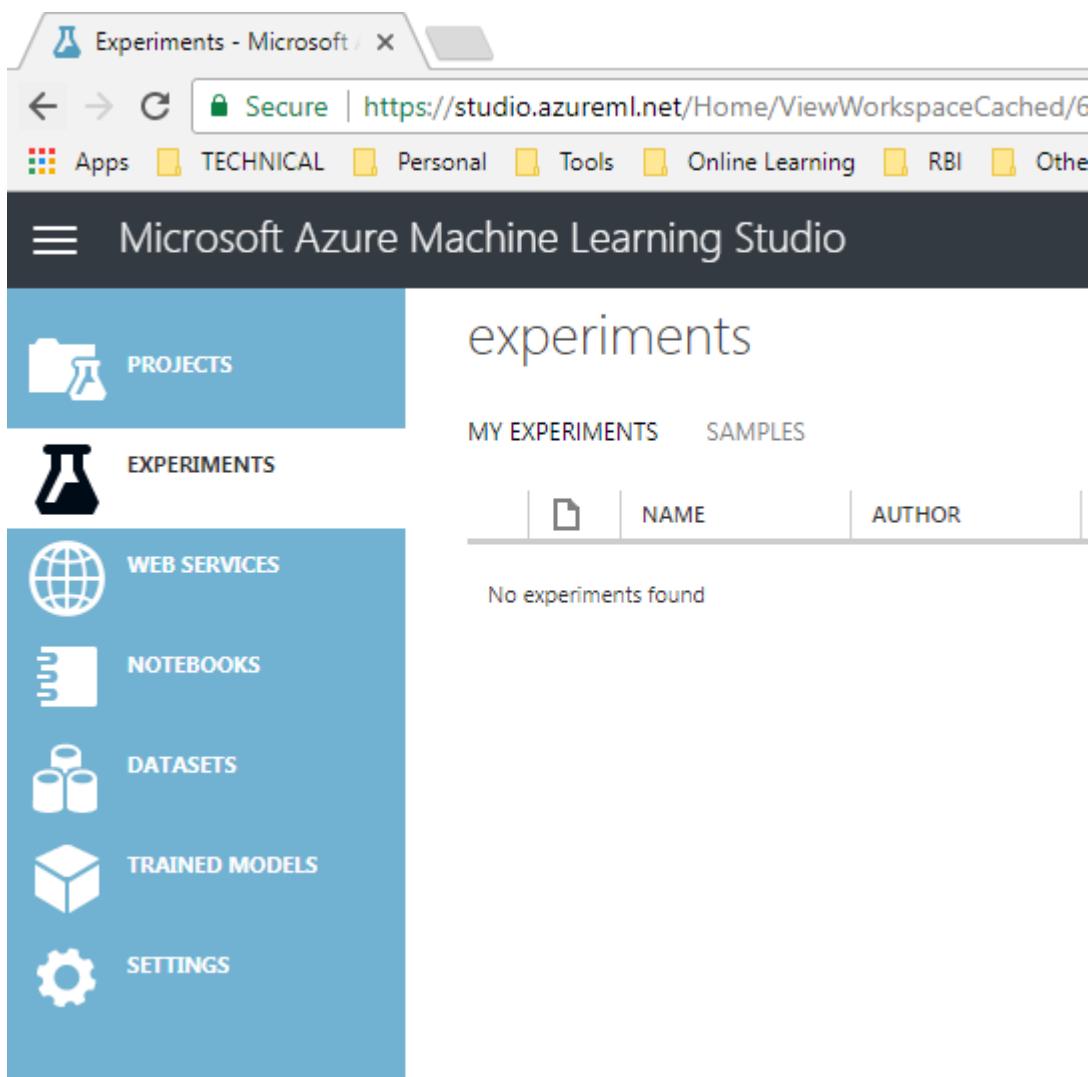
**Sign Up**

Already an Azure ML User? [Sign in here](#)

**Pricing & FAQ**

By using this free version, you agree to be bound by the Microsoft Azure Website Terms of Use.

- See the dashboard once you have logged-in into the portal.

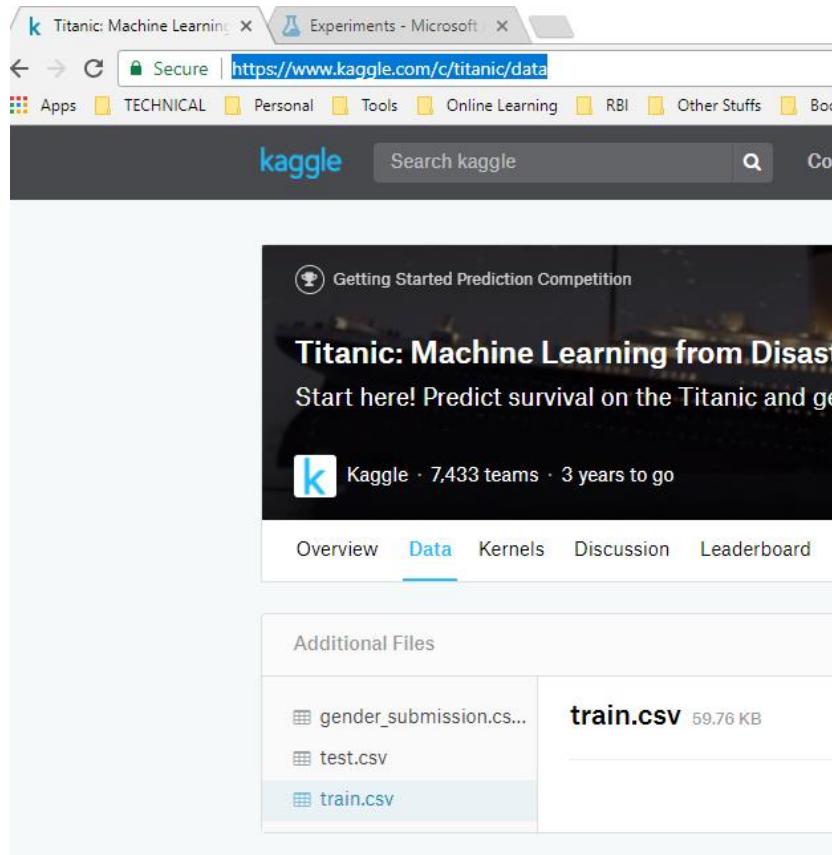


The screenshot shows the Microsoft Azure Machine Learning Studio interface. The left sidebar has a blue background with white icons and text. The 'EXPERIMENTS' icon is highlighted with a white background. Other items in the sidebar include 'PROJECTS', 'WEB SERVICES', 'NOTEBOOKS', 'DATASETS', 'TRAINED MODELS', and 'SETTINGS'. The main content area has a light gray background. At the top, there's a navigation bar with a back arrow, forward arrow, refresh button, and a secure connection indicator. The URL is https://studio.azureml.net/Home/ViewWorkspaceCached/6. Below the navigation is a horizontal menu with categories: Apps, TECHNICAL, Personal, Tools, Online Learning, RBI, and Others. A dark header bar says 'Microsoft Azure Machine Learning Studio'. The main content area has a title 'experiments' and two tabs: 'MY EXPERIMENTS' and 'SAMPLES'. Underneath is a search bar with fields for 'NAME' and 'AUTHOR'. A message 'No experiments found' is displayed.

## Extract the data from Titanic data-store and create a dataset in Azure

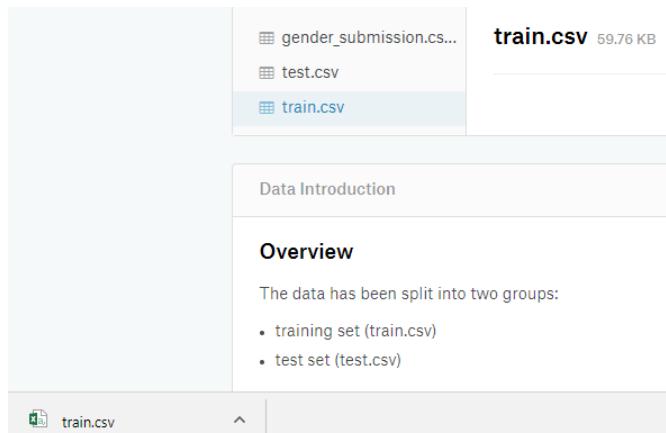
### Steps to be followed -

- Go to the following URL for Titanic data store -- <https://www.kaggle.com/c/titanic/data>



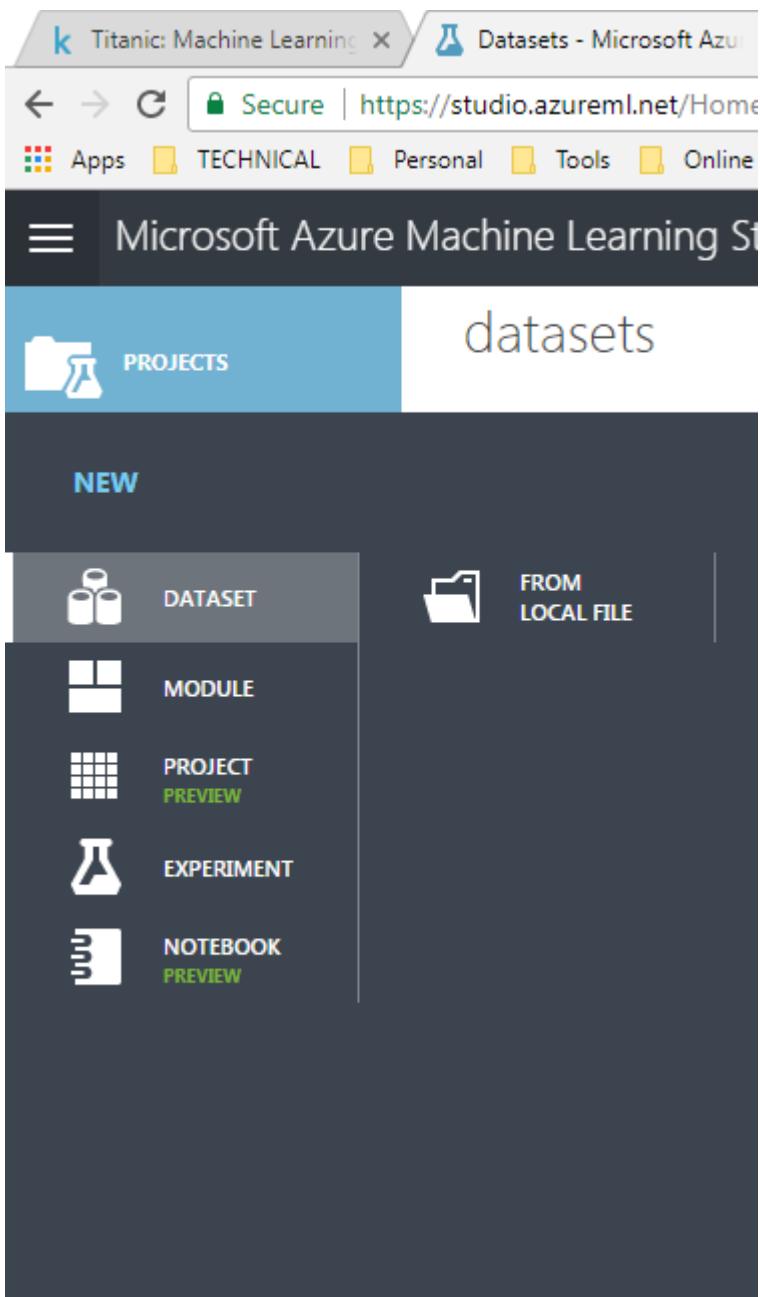
The screenshot shows the Kaggle competition page for 'Titanic: Machine Learning from Disaster'. The page has a dark header with the competition name and a 'Data' tab selected. Below the header, there's a section for 'Additional Files' containing 'train.csv', 'test.csv', and 'gender\_submission.csv'. The 'train.csv' file is highlighted with a blue selection bar.

- Download the train.csv file on the file system, which contains the mock-data for the titanic.



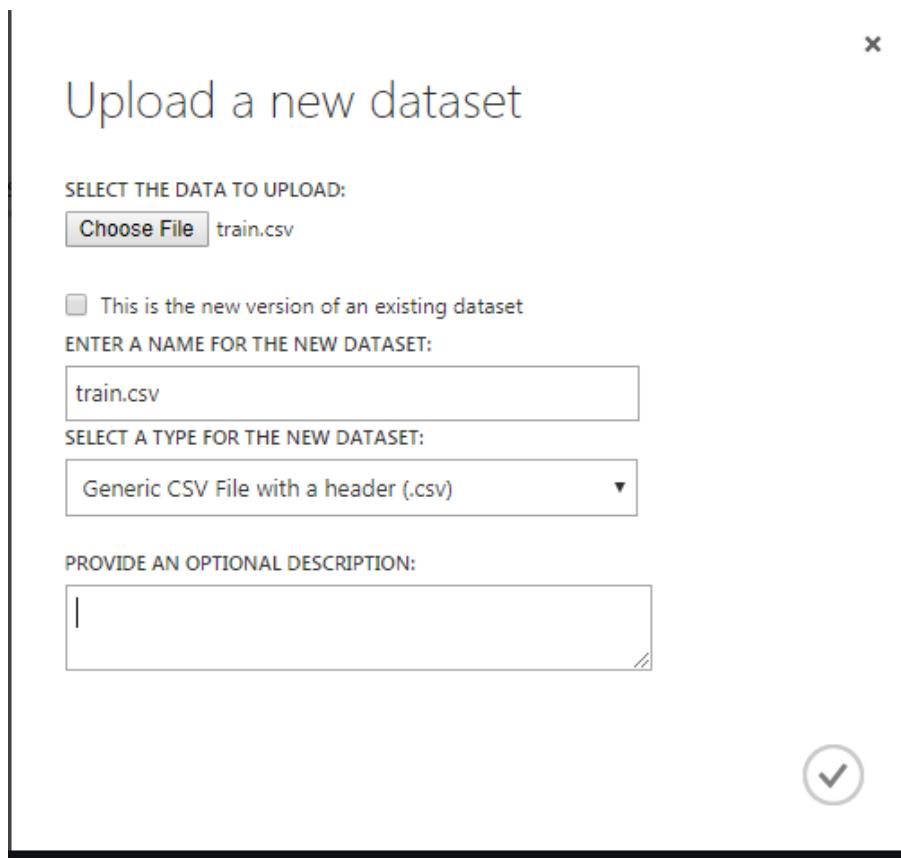
The screenshot shows the 'train.csv' file details in a browser. It displays the file size as 59.76 KB and provides a preview of the data. The preview table shows columns such as PassengerId, Survived, Pclass, Name, Sex, Age, SibSp, Parch, Ticket, Fare, Cabin, and Embarked. The first few rows of data are visible.

- Go to the portal and click on the Add button and select “Dataset” option from there.



The screenshot shows the Microsoft Azure Machine Learning Studio interface. At the top, there's a navigation bar with links for 'Secure' and the URL 'https://studio.azureml.net/Home'. Below the navigation bar, there are several categories: 'Apps', 'TECHNICAL', 'Personal', 'Tools', and 'Online'. A sidebar on the left is titled 'PROJECTS' and contains a 'NEW' section with icons and labels: 'DATASET' (selected), 'MODULE', 'PROJECT PREVIEW', 'EXPERIMENT', and 'NOTEBOOK PREVIEW'. The main content area is titled 'datasets'.

- Choose the local file i.e. train.csv and upload the data into the dataset.



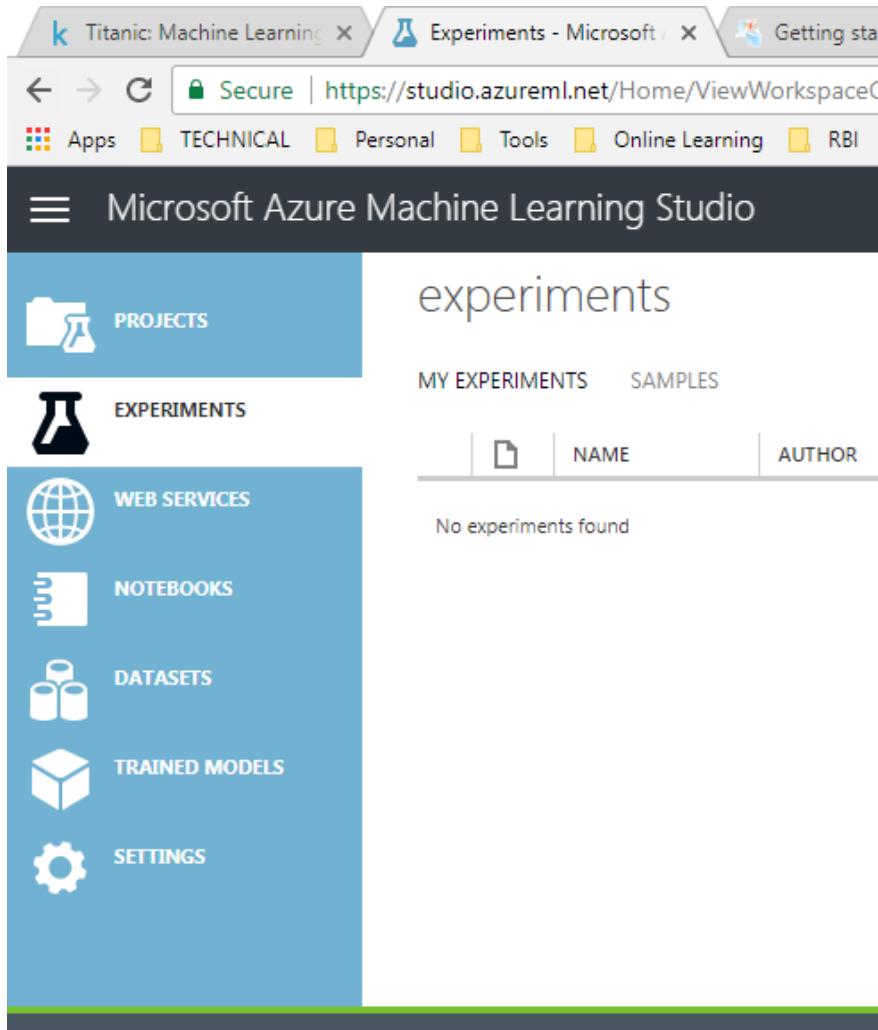
- See the dataset section and you will be able to see the newly created dataset there.

	NAME	SUBMITTED BY	DESCRIPTION	DATA TYPE
<input type="checkbox"/>	train.csv	gourav8jain		GenericCSV

## Create and execute an experiment in the Azure Machine Learning portal

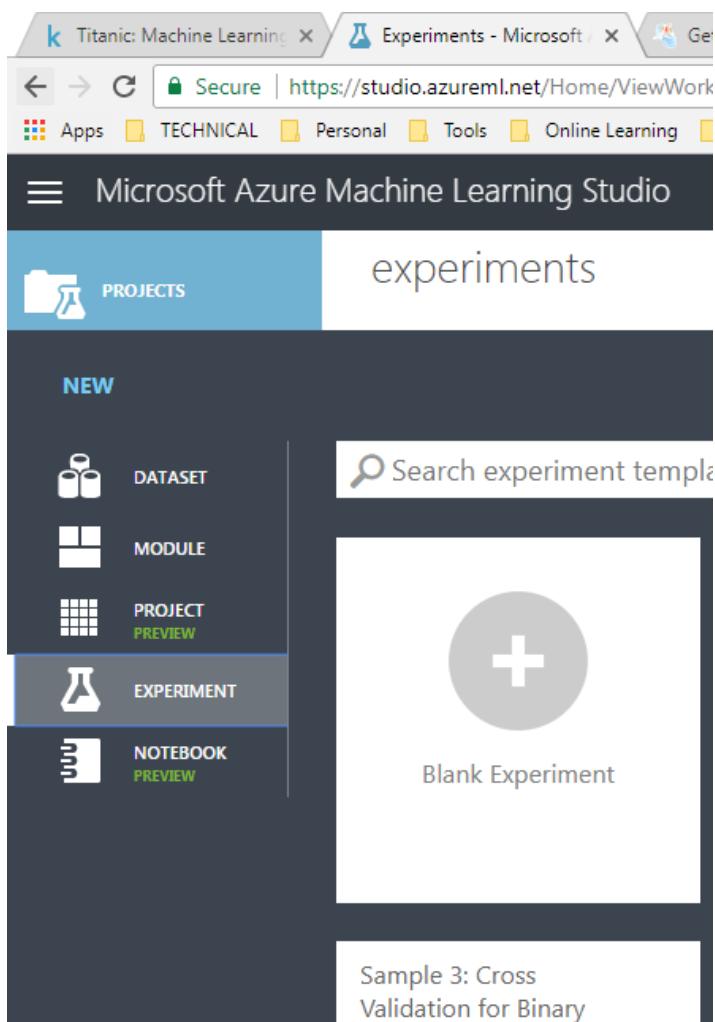
### Steps to be followed -

- Open Azure ML portal and click on the **Experiments** tab.



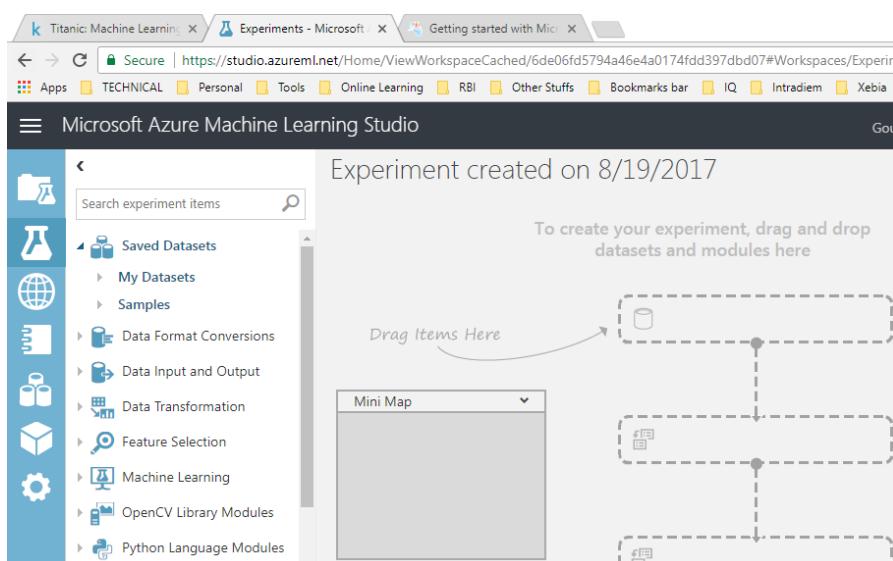
The screenshot shows the Microsoft Azure Machine Learning Studio interface. The browser title bar reads "Titanic: Machine Learning < Experiments - Microsoft < Getting sta". The address bar shows "Secure | https://studio.azureml.net/Home/ViewWorkspace". The top navigation bar includes links for Apps, TECHNICAL, Personal, Tools, Online Learning, and RBI. Below the navigation is a dark header bar with the text "Microsoft Azure Machine Learning Studio". On the left, there's a sidebar with icons for Projects, Experiments (selected), Web Services, Notebooks, Datasets, Trained Models, and Settings. The main content area is titled "experiments" and contains tabs for "MY EXPERIMENTS" and "SAMPLES". A search bar at the top of the content area has fields for "NAME" and "AUTHOR". Below the search bar, the message "No experiments found" is displayed.

- Click on the **Add** button and choose experiments. Then, add a blank experiment.



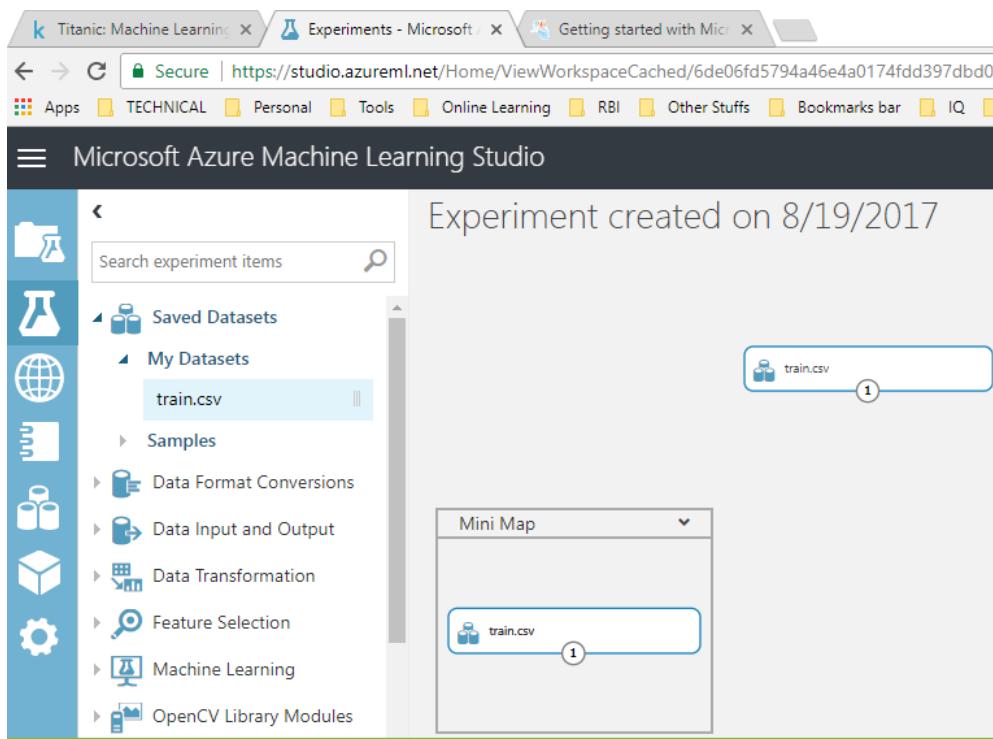
The screenshot shows the Microsoft Azure Machine Learning Studio interface. The main area is titled "experiments". On the left, there's a sidebar with a "NEW" section containing icons for DATASET, MODULE, PROJECT (PREVIEW), EXPERIMENT (selected), and NOTEBOOK (PREVIEW). A search bar at the top right says "Search experiment template". In the center, there's a large button with a plus sign labeled "Blank Experiment". At the bottom, there's a link labeled "Sample 3: Cross Validation for Binary".

- Go to the experiments section and see the saved datasets into that.



The screenshot shows the Microsoft Azure Machine Learning Studio interface. The main area is titled "Experiment created on 8/19/2017". On the left, there's a sidebar with a "Saved Datasets" section containing "My Datasets" and "Samples". Below that are other sections: Data Format Conversions, Data Input and Output, Data Transformation, Feature Selection, Machine Learning, OpenCV Library Modules, and Python Language Modules. A database icon is being dragged from the sidebar into a workspace area. The workspace has sections labeled "Drag Items Here" and "To create your experiment, drag and drop datasets and modules here". A "Mini Map" window is visible in the bottom left.

- Drag and drop the saved database into one of the sections.



Microsoft Azure Machine Learning Studio

Experiment created on 8/19/2017

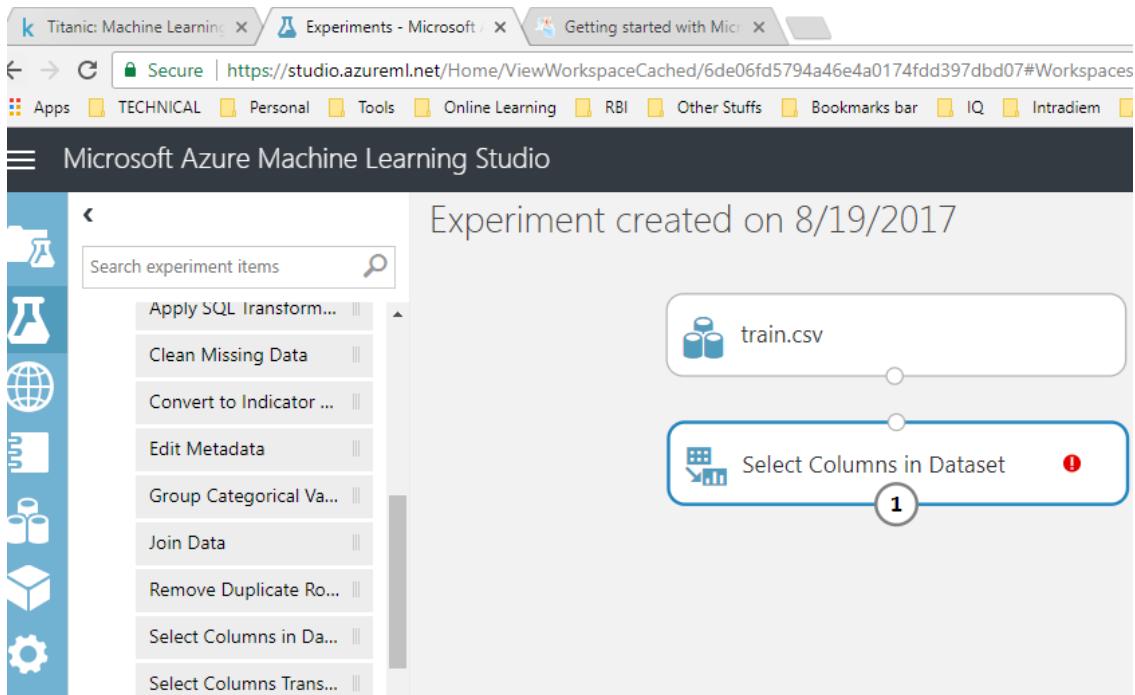
Search experiment items

- Saved Datasets
  - My Datasets
    - train.csv
  - Samples
- Data Format Conversions
- Data Input and Output
- Data Transformation
- Feature Selection
- Machine Learning
- OpenCV Library Modules

Mini Map

train.csv

- Go to the **Data Transformation** section and then select “Manipulation”. Then, choose **Select columns in DataSet**.



Microsoft Azure Machine Learning Studio

Experiment created on 8/19/2017

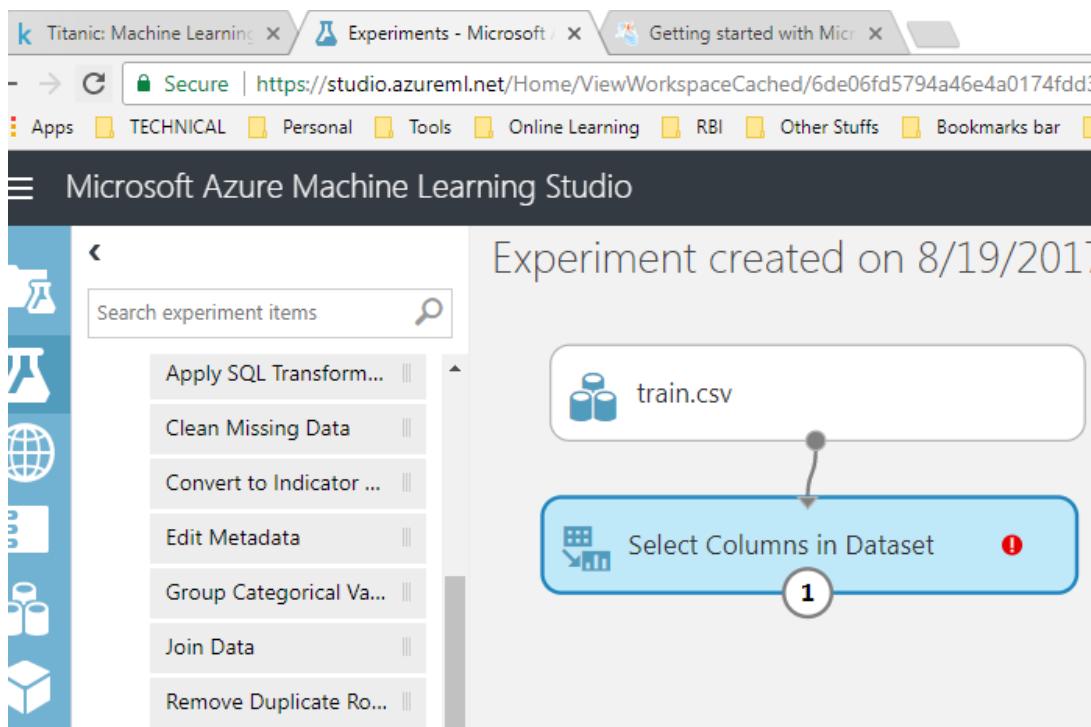
Search experiment items

Apply SQL Transform...  
Clean Missing Data  
Convert to Indicator ...  
Edit Metadata  
Group Categorical Va...  
Join Data  
Remove Duplicate Ro...  
**Select Columns in Da...**  
Select Columns Trans...

train.csv

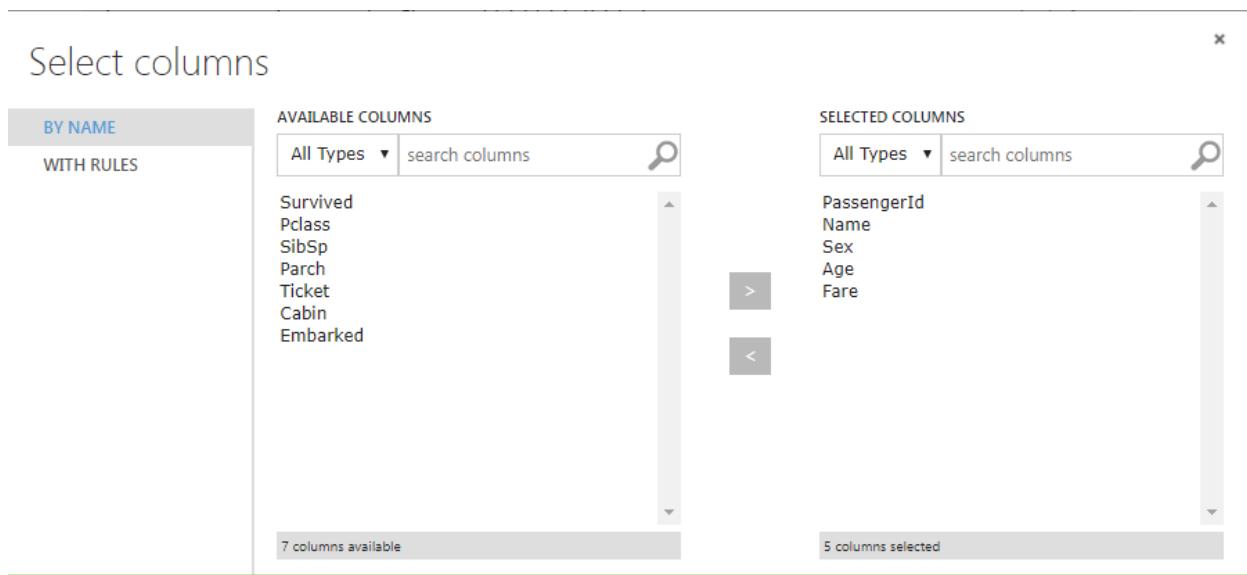
Select Columns in Dataset

- Connect the train.csv module with the “select columns in data-set”.



The screenshot shows the Microsoft Azure Machine Learning Studio interface. At the top, there are three browser tabs: 'Titanic: Machine Learning', 'Experiments - Microsoft', and 'Getting started with Mic...'. Below the tabs is a navigation bar with links: Apps, TECHNICAL, Personal, Tools, Online Learning, RBI, Other Stuffs, Bookmarks bar. The main title is 'Microsoft Azure Machine Learning Studio'. On the left, there's a vertical toolbar with icons for Apply SQL Transform, Clean Missing Data, Convert to Indicator, Edit Metadata, Group Categorical Va..., Join Data, and Remove Duplicate Ro... A search bar at the top says 'Search experiment items'. The main workspace shows a flow starting with a 'train.csv' dataset, which points to a 'Select Columns in Dataset' step. A tooltip for this step says '1'.

- Then click on the **Launch column selector** and then select a few columns only from left to right side.



The screenshot shows the 'Select columns' dialog box. It has two main sections: 'AVAILABLE COLUMNS' on the left and 'SELECTED COLUMNS' on the right. The 'AVAILABLE COLUMNS' section lists columns: Survived, Pclass, SibSp, Parch, Ticket, Cabin, Embarked. The 'SELECTED COLUMNS' section lists columns: PassengerId, Name, Sex, Age, Fare. Between the two sections are two sets of arrows: one pointing from available to selected and another pointing from selected to available. Both sections have 'All Types' dropdowns and search bars. The bottom of each section shows the count of columns: '7 columns available' and '5 columns selected'.

- Click on **Run** to run the experiment and then see the green tick sign.

☰ Microsoft Azure Machine Learning Studio

Experiment created on 8/19/2017

Search experiment items 

 Saved Datasets

- My Datasets
  - test.csv
  - train.csv
- Samples
  - Adult Census Income...
  - Airport Codes Dataset

 train.csv

 Select Columns in Dataset 

1

- Then, right click on the second step and click on the Visualize and see the selected columns of data only.

Experiment created on 8/19/2017 ➤ Select Columns in Dataset ➤ Results dataset

rows	columns				
891	5				
<hr/>					
view as	PassengerId	Name	Sex	Age	Fare
 	1	Braund, Mr. Owen Harris	male	22	7.25
	2	Cumings, Mrs. John Bradley (Florence Briggs Thayer)	female	38	71.2833
	3	Heikkinen, Miss. Laina	female	26	7.925
	4	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35	53.1
	5	Allen, Mr. William Henry	male	35	8.05
	6	Moran, Mr. James	male		8.4583

## 16. Azure Service Bus

### What is Azure Service Bus?

- Its communication engine which provides secure and reliable communication between components.
- It allows you to build applications and connect with different roles between Web and worker TL, you can use this for load labeling and or for decoupling where your web TS sent messages into a queue.
- It provides you Messaging and Relay Services and really helps to unblock enterprise data as well as business logic.
- It provides multi-tenant service to the connecting applications.

### Communication Types:

- **Queues:** It allows one directional communications.
- **Topics:** It allows one directional communications using subscriptions.
- **Relays:** It's responsible to provide bi-directional communications. It passes the messages on to destination application.
- **Event Hubs:** This is responsible to provide event and telemetry entry to the cloud

### Create a new Azure Service Bus

#### Steps to be followed -

- Open Azure portal and click on add and choose category “Enterprise Integration” and then select an option of “Service Bus”.

New



Search the Marketplace

Azure Marketplace

[See all](#)

Featured

[See all](#)

Get started



Logic App

[Create](#)

Compute



API management

[Create](#)

Networking



On-premises data gateway

[Create](#)

Storage



Integration Account

[Create](#)

Data + Analytics



AI + Cognitive Services



Service Bus

[Create](#)

Internet of Things

Enterprise Integration

Security + Identity

- Fill-in the details and use the existing resource-group and create a namespace with-in the service bus.

Create namespace X

Service Bus - PREVIEW

\* Name  
 ✓  
.servicebus.windows.net

\* Pricing tier >  
Standard

\* Subscription

\* Resource group i  
 Create new  Use existing  
 ▼

\* Location  
 ▼

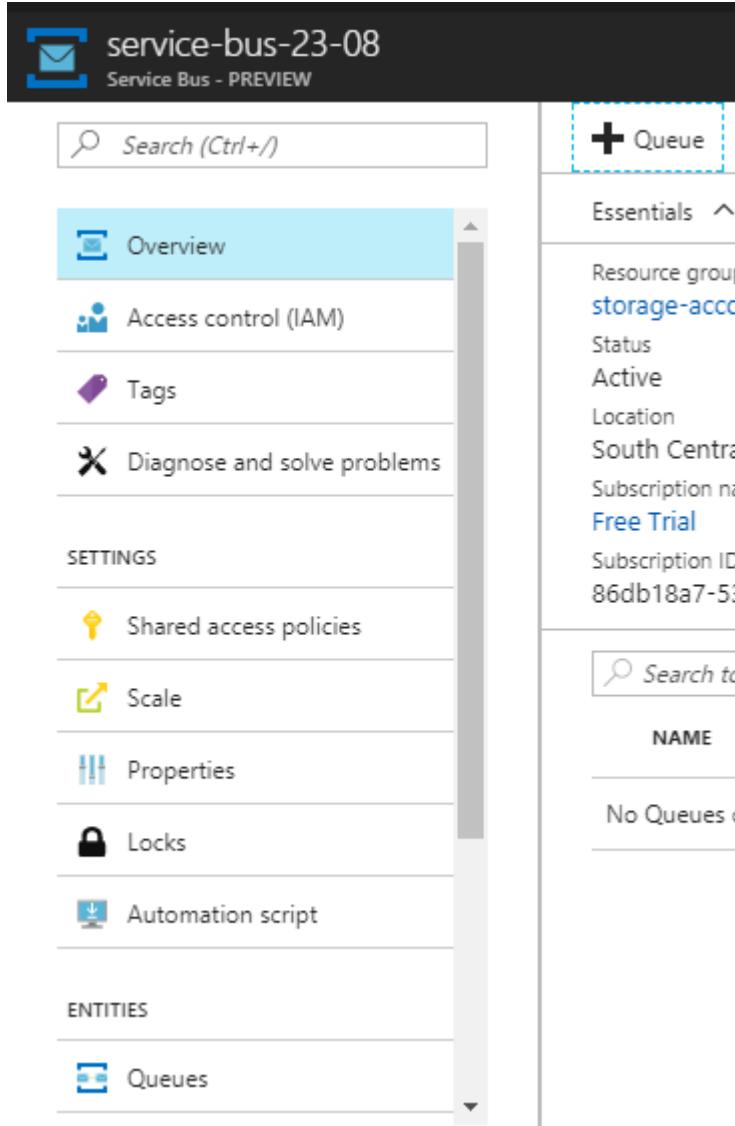
Pin to dashboard

Create Automation options

## Adding a queue and steps to access it from the Service Bus

### Steps to be followed -

- Open the service-bus and click on the **Add Queue** button.



The screenshot shows the Azure Service Bus - PREVIEW interface. At the top, there's a navigation bar with a mail icon and the text "service-bus-23-08" and "Service Bus - PREVIEW". Below the navigation bar is a search bar with the placeholder "Search (Ctrl+ /)". To the right of the search bar is a blue button with a plus sign and the text "Queue", which is highlighted with a dashed blue border. The main area is divided into sections: "Essentials" (Resource group: storage-acco, Status: Active, Location: South Central US, Subscription name: Free Trial, Subscription ID: 86db18a7-53), "SETTINGS" (Shared access policies, Scale, Properties, Locks, Automation script), and "ENTITIES" (Queues). The "Queues" section is currently selected, indicated by a blue highlight. On the right side of the "Queues" section, there's a "Search to" input field and a table with a single row: "NAME" and "No Queues created".

- Fill-in the details based on the requirement and create a queue with-in the service bus.

Create queue □ X

service-bus-23-08 - PREVIEW

\* Name  
 ✓

---

Max size  
 ✓

---

Message time to live (default)  
 ✓ hours ✓

---

Lock duration  
 seconds ✓

---

Move expired messages to the dead-letter subqueue

Enable duplicate detection

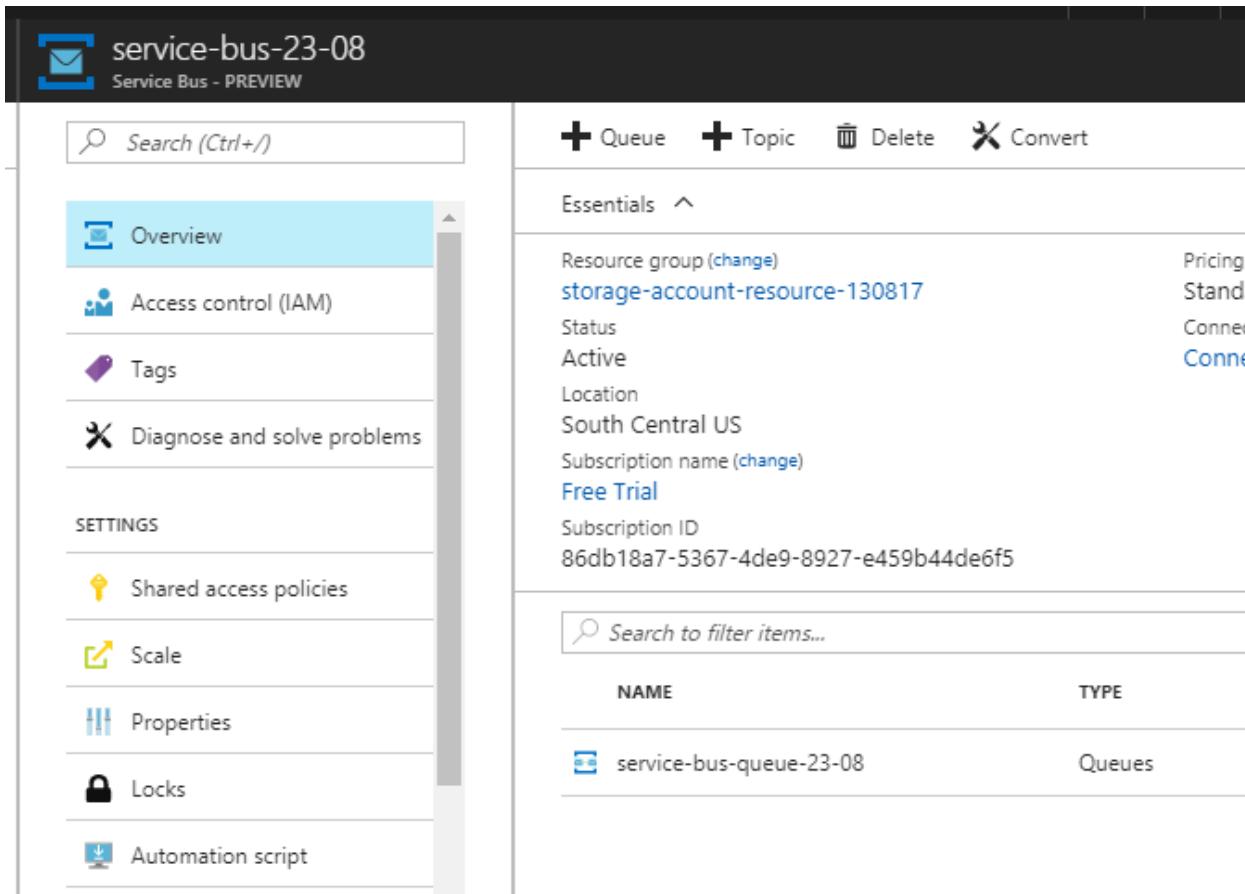
Enable sessions

Enable partitioning

---

**Create**

- See the service-bus section, where we can see the newly created “Queue”



The screenshot shows the Azure Service Bus - PREVIEW interface for a resource named "service-bus-23-08". The left sidebar contains navigation links: Overview (selected), Access control (IAM), Tags, Diagnose and solve problems, SETTINGS (Shared access policies, Scale, Properties, Locks, Automation script), and a search bar. The main content area has tabs for Queue, Topic, Delete, and Convert. The "Essentials" section displays basic information: Resource group (storage-account-resource-130817), Status (Active), Location (South Central US), and Subscription name (Free Trial). A table lists one item: NAME: service-bus-queue-23-08, TYPE: Queues.

NAME	TYPE
service-bus-queue-23-08	Queues

- Add policies into the queue so that it can be accessible to the end-user, here create a "Write" policy with the send option.

Add SAS Policy X  
Service Bus - PREVIEW

\* Policy name  
 ✓

Manage

Send

Listen

---

**Create**

- Add another policy into the queue so that it can be accessible to the end-user, here create a “Read” policy with the listen option.

Add SAS Policy

Service Bus - PREVIEW

\* Policy name  
 ✓

Manage

Send

Listen

---

**Create**

- Click on the “Write” policy and see the “Primary connection string” there and how-so ever would like to write anything into the queue, provide this connecting string along with primary key to the person to access the same.

SAS Policy: Write X

PREVIEW

---

Manage

Send

Listen

Primary Key  
+EPUFcGleAriSXxh90NpiL/+c1LkgXVaL6tER/31iSI=

Secondary Key  
w+/2aN4H7m3g1kEwqz0vFyLNL3BxVQraj8lvX20Zt5c=

Primary Connection String  
Endpoint=sb://service-bus-23-08.servicebus.windows.net;/Sha...

Secondary Connection String  
Endpoint=sb://service-bus-23-08.servicebus.windows.net;/Sha...

## 17. Azure Cognitive Services

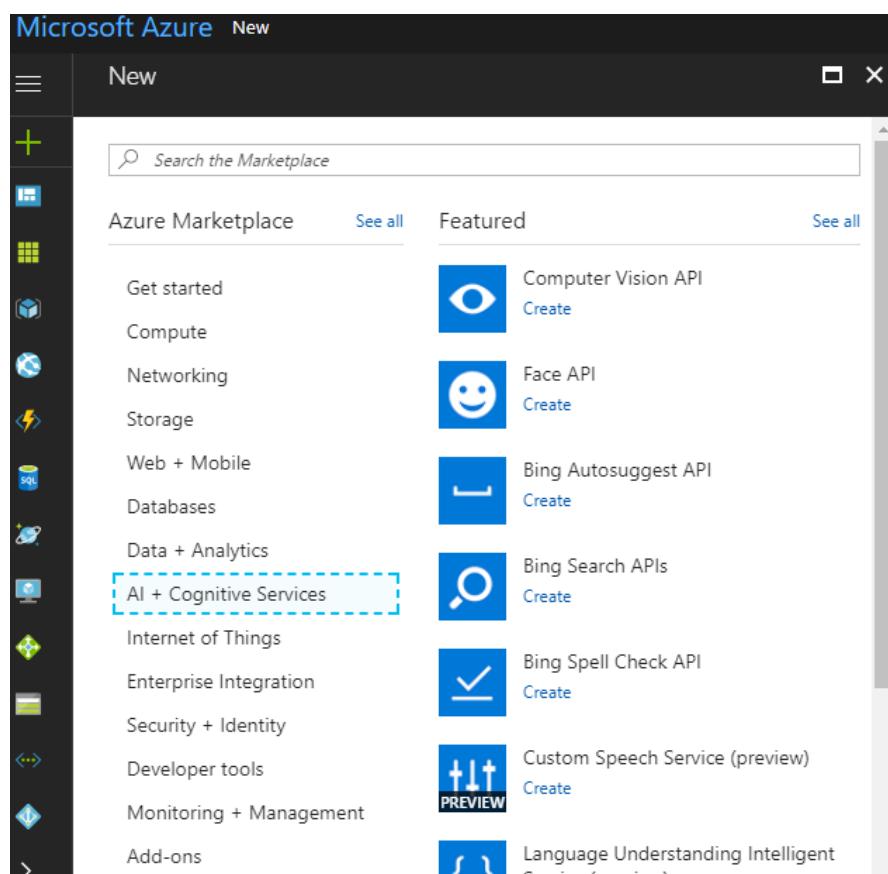
### What is Azure Cognitive Services?

- It was formerly named as Project Oxford.
- These are a set of APIs, SDKs and services available to developers to make their applications more intelligent, engaging and discoverable.
- It expands on Microsoft's evolving portfolio of machine learning APIs and enables developers to easily add intelligent features – such as emotion and video detection; facial, speech and vision recognition; and speech and language understanding – into their applications.
- Here Vision is for more personal computing experiences and enhanced productivity aided by systems that increasingly can see, hear, speak, understand and even begin to reason.

### Create a new Azure Cognitive Service

#### Steps to be followed -

- Open Azure portal and click on **Add**. Choose category “**Cognitive Services**” and then, select an option of “**Bing Search APIs**”.



- Fill-in the details and create a new resource-group and click on “Create”.

**Create**

Bing Search APIs

\* Name  
cognitive-service-25-08 ✓

\* Subscription  
Free Trial

\* Pricing tier ([View full pricing details](#))  
S1 (10 Calls per second, 1K Calls per month) ▾

Resource group  
 Create new  Use existing  
 conginive-servie-resouce-group-25-08 ✓

\* Resource group location ⓘ  
Southeast Asia

\* I confirm I have read and understood the notice below.  
 Microsoft will use data you send to the Cognitive Services to improve Microsoft products and services. Where you send personal data to the Cognitive Services, you are responsible for

Pin to dashboard

**Create** [Automation options](#)

- Go the “All resources” section and see the newly created “Cognitive-service” named as “cognitive-service-25-08”.

All resources	
gourav8jainhotmail (Default Directory)	
<input type="button"/> Add	<input type="button"/> Columns
<input type="button"/> Refresh	
Subscriptions: Free Trial	
<input type="text"/> Filter by name...	<input type="button"/> All resource groups
	▼
	All types
1 items	
NAME ▾	TYPE ▾
 cognitive-service-25-08	Cognitive Services

- Open the particular cognitive service and see the different options present there

cognitive-service-25-08  
Cognitive Services

Search (Ctrl+ /)

- Overview
- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems

RESOURCE MANAGEMENT

- Keys
- Quick start
- Pricing tier
- Properties
- Locks
- Automation script

Delete

Essentials

Resource group (change)  
**conginive-servie-resouce-group-25-08**

Status  
Active

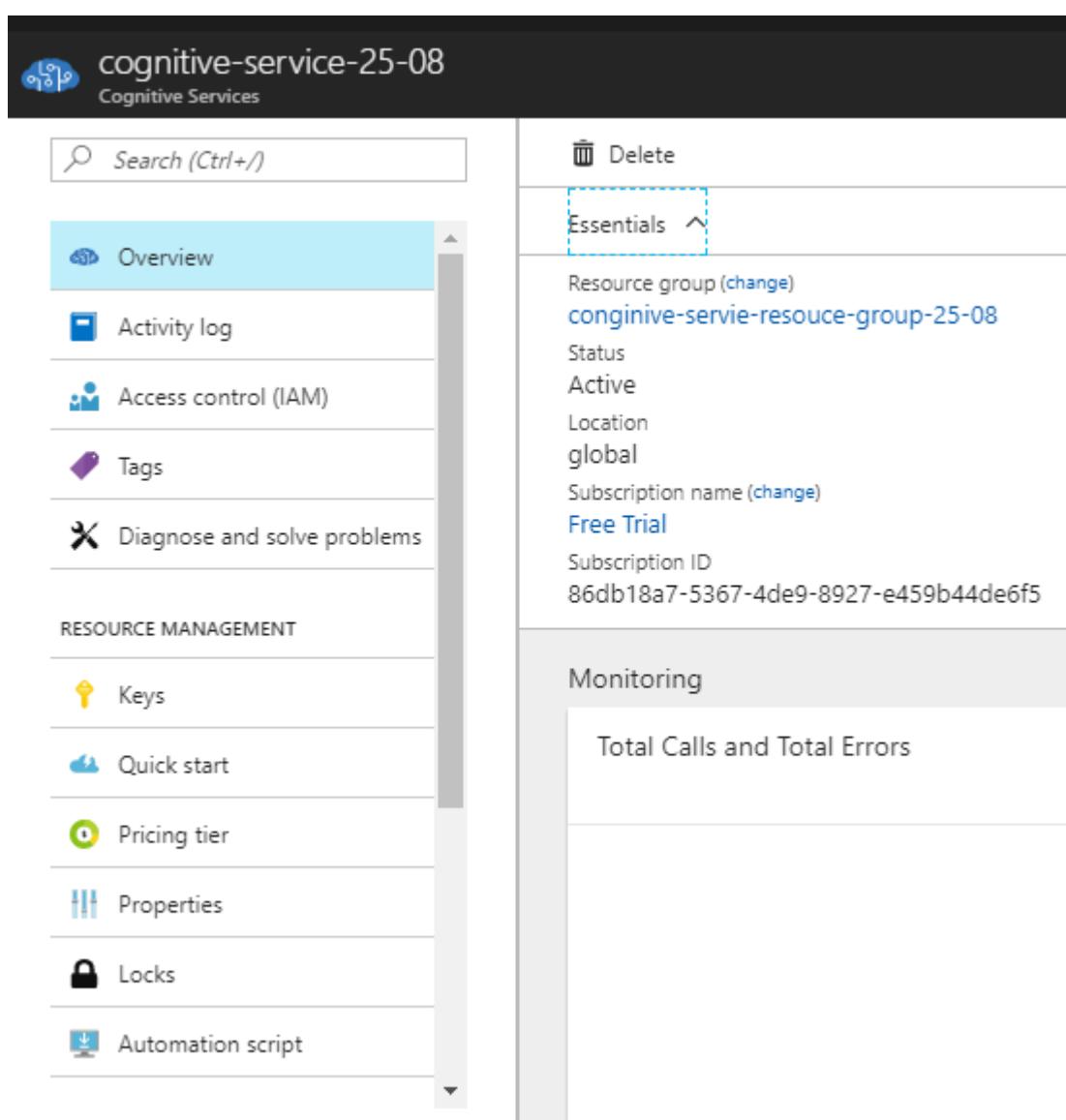
Location  
global

Subscription name (change)  
**Free Trial**

Subscription ID  
86db18a7-5367-4de9-8927-e459b44de6f5

Monitoring

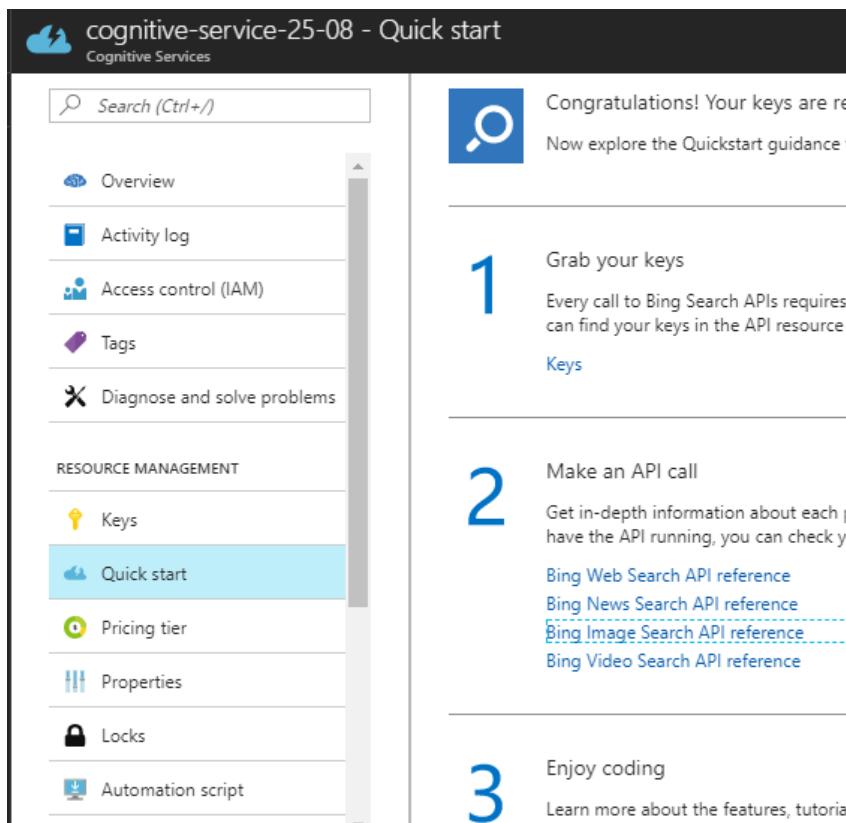
Total Calls and Total Errors



## Access the cognitive service

### Steps to be followed -

- In the opened section of the cognitive-service, click on the “**quick-start**” option and see all the four steps.

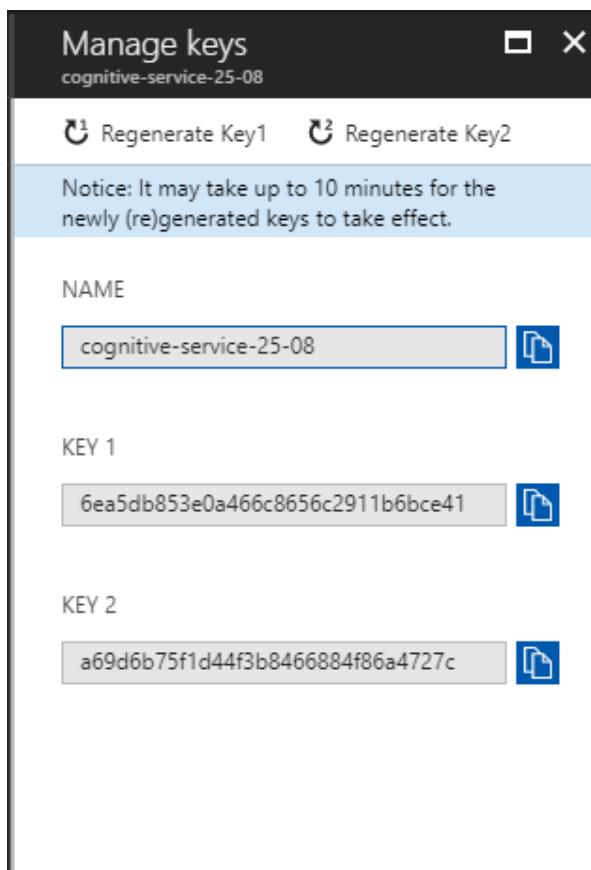


The screenshot shows the Azure Cognitive Services Quick Start page. On the left, there's a sidebar with a search bar and links like Overview, Activity log, Access control (IAM), Tags, and Diagnose and solve problems. Under Resource Management, the Keys link is selected, and the Quick start link is also highlighted. The main content area starts with a success message: "Congratulations! Your keys are ready." It then lists three steps:

- 1 Grab your keys**: Every call to Bing Search APIs requires an API key. You can find your keys in the API resource keys.
- 2 Make an API call**: Get in-depth information about each API. If you have the API running, you can check your logs.
- 3 Enjoy coding**: Learn more about the features, tutorials, and samples.

Links for the Bing Web, News, Image, and Video Search API references are provided under step 2.

- Click on the first section and grab the keys and store it in your file system – may be in notepad file.



- Click on the second option and choose “Bing Image Search API reference”



Congratulations! Your keys are ready.

Now explore the Quickstart guidance to get up and running with Bing Search APIs.

**1**

### Grab your keys

Every call to Bing Search APIs requires a subscription key. This key needs to be either passed directly in the API call or stored in an environment variable. You can find your keys in the API resource 'Overview' or 'Keys' from the left menu.

[Keys](#)

**2**

### Make an API call

Get in-depth information about each properties and methods of the API. Test your keys and see how they perform. Once you have the API running, you can check your consumption and the API health on Azure portal.

[Bing Web Search API reference](#)

[Bing News Search API reference](#)

[Bing Image Search API reference](#)

[Bing Video Search API reference](#)

- Click on the link and it will open a documentation link for us, read that article thoroughly although I will demonstrate whatever is written in article in coming points.

# Image Search API v5 reference

2017-4-15 • 46 min to read • Contributors 

The Image Search API lets you send a search query to Bing and get back a list of relevant images. This section provides technical details about the query parameters and headers that you use to request images and the JSON response objects that contain them. For examples that show how to make requests, see [Searching the Web for Images](#).

For information about the headers that requests should include, see [Request Headers](#).

For information about the query parameters that requests should include, see [Query Parameters](#).

For information about the JSON response objects that responses may include, see [Response Objects](#).

For information about permitted use and display of results, see [Bing Search API Use and Display requirements](#).

- Now grab the first end-point from there to search the image using cognitive service API's

## Endpoints

To request images, send a GET request to one of the following URLs:

Endpoint	Description
<a href="https://api.cognitive.microsoft.com/bing/v5.0/images/search">https://api.cognitive.microsoft.com/bing/v5.0/images/search</a>	Returns images that are relevant to the users search query. You can also use this endpoint to get insights about an image, such as webpages that include the image.
<a href="https://api.cognitive.microsoft.com/bing/v5.0/images/trending">https://api.cognitive.microsoft.com/bing/v5.0/images/trending</a>	Returns images that are trending based on search requests made by others. The images are broken out into different categories. For example, Popular People Searches.  For a list of markets that support trending images, see <a href="#">Trending Images</a> .

- Install postman and let's try out this API and try to search any image – for that paste the URL at postman and provide the request headers and the key, you can paste which you grabbed in previous steps and mention the query string – here I mentioned – apple

▶ **Image Search API**

GET  Params **Send**

Authorization Headers (2) Body Pre-request Script Tests

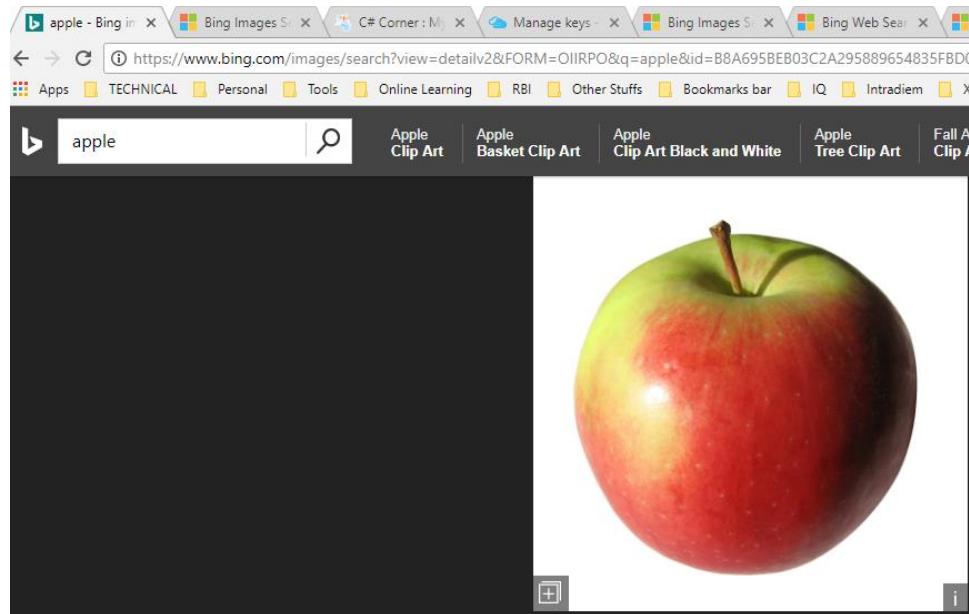
Key	Value	Description	...	Bulk Edi
<input checked="" type="checkbox"/> BingAPIs-Market	en-us			
<input checked="" type="checkbox"/> Ocp-Apim-Subscription-Key	6ea5db853e0a466c8656c2911b6bce41			
<input type="checkbox"/>	New key	Description		

- Click on send and see the image of “apple” string in bing.com, here you can see the total results as – 983 as well.

Raw Preview JSON 

```
{
  "totalEstimatedMatches": 973,
  "value": [
    {
      "name": "Musings of a Runner Girl: I Spent $27 on Apples",
      "webSearchUrl": "https://www.bing.com/cr?IG=D61B318FB0D904F37A7516017ED027952&CID=3D69CEA38C566B636A596033AC367AA&rd=1&h=M3qw-dI5HS2cIKcitvP5MAPNjBaLoG_ln5KuS0g1h44&v=1&r=https%3a%2f%2fwww.bing.com%2fimages%2fsearch%3fview%3ddetailly%26FORM%3dOIRPO%26q%3dapple%26id%3d88A6958EB03C2A295889654835FB00A588066561%26simid%3d607999265793641740&p=DevEx,5007.1",
      "ThumbnailUrl": "https://ts4.mm.bing.net/th?id=OIP.f3ei9NVjmP1lmM-jLn-1BQD6D6&pid=Api",
      "datePublished": "2012-08-20T12:00:00",
      "contentUrl": "http://www.bing.com/cr?IG=D61B318FB0D904F37A7516017ED027952&CID=3D69CEA38C566B636A596033AC367AA&rd=1&h=1lg0_wdFUzyalhcS4nirPfxESsJtRFm8UeK9w0kuMBY&v=1&r=http%3a%2f%2f1.bp.blogspot.com%2f-sm2PC8kW-14%2FUDP7Z4%2fz80IK2f91oeuE9Ncs%2fs1600%2fapple.jpg&p=DevEx,5009.1",
    }
  ]
}
```

- Copy one of the web-links from there and paste it on the browser and see the result.



## 18. Bibliography

- <https://channel9.msdn.com/Series/Microsoft-Azure-Tutorials>
- <https://docs.microsoft.com/en-us/Azure/guides/developer/Azure-developer-guide>
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- [https://www.tutorialspoint.com/microsoft\\_Azure/](https://www.tutorialspoint.com/microsoft_Azure/)
- <https://www.lynda.com/Azure-training-tutorials/1700-0.html>
- <https://app.pluralsight.com/library/courses/Azure-fundamentals/table-of-contents>