# Microsoft Azure - Tables

Storing a table does not mean relational database here. Azure Storage can store just a table without any foreign keys or any other kind of relation. These tables are highly scalable and ideal for handling large amount of data. Tables can be stored and queried for large amount of data. The relational database can be stored using SQL Data Services, which is a separate service.

The three main parts of service are –

- Tables
- Entities
- Properties

For example, if 'Book' is an entity, its properties will be Id, Title, Publisher, Author etc. Table will be created for a collection of entities. There can be 252 custom properties and 3 system properties. An entity will always have system properties which are PartitionKey, RowKey and Timestamp. Timestamp is system generated but you will have to specify the PartitionKey and RowKey while inserting data into the table. The example below will make it clearer. Table name and Property name is case sensitive which should always be considered while creating a table.

## How to Manage Tables Using PowerShell

**Step 1** – Download and install Windows PowerShell as discussed previously in the tutorial.

**Step 2** – Right-click on 'Windows PowerShell', choose 'Pin to Taskbar' to pin it on the taskbar of your computer.

**Step 3** – Choose 'Run ISE as Administrator'.

### Creating a Table

**Step 1** – Copy the following commands and paste into the screen. Replace the highlighted text with your account.

**Step 2** – Login into your account.

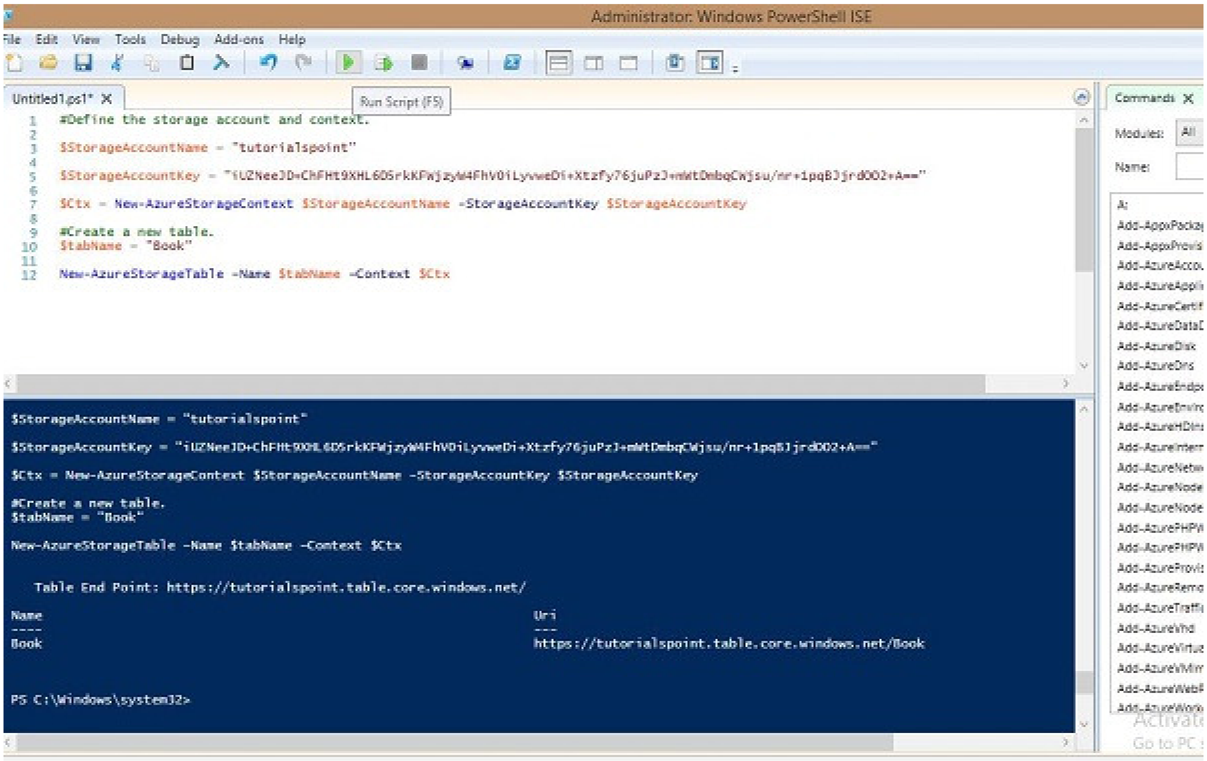
```
$StorageAccountName = "mystorageaccount"

$StorageAccountKey = "mystoragekey"
```

```
$Ctx = New-AzureStorageContext $StorageAccountName - StorageAccountKey

$StorageAccountKey
```

**Step 3** – Create a new table.

```
$tabName = "Mytablename"

New-AzureStorageTable –Name $tabName –Context $Ctx
```

The following image shows a table being created by the name of 'book'.



```
#Define the storage account and context.

$StorageAccountName = "tutorialspoint"

$StorageAccountKey = "iUZNeeJD+ChFHt9XHL6DSrkKFWjzyW4FhV0iLyvweDi+Xtzfy76juPzJ+mWtDmbqCWjsu/nr+1pqBJjrdOO2+A=="

$Ctx = New-AzureStorageContext $StorageAccountName -StorageAccountKey $StorageAccountKey

#Create a new table.
$tabName = "Book"

New-AzureStorageTable -Name $tabName -Context $Ctx
```

```
$StorageAccountName = "tutorialspoint"

$StorageAccountKey = "iUZNeeJD+ChFHt9XHL6DSrkKFWjzyW4FhV0iLyvweDi+Xtzfy76juPzJ+mWtDmbqCWjsu/nr+1pqBJjrdOO2+A=="

$Ctx = New-AzureStorageContext $StorageAccountName -StorageAccountKey $StorageAccountKey

#Create a new table.
$tabName = "Book"

New-AzureStorageTable -Name $tabName -Context $Ctx


   Table End Point: https://tutorialspoint.table.core.windows.net/

Name                                                        Uri
----                                                        ---
Book                                                        https://tutorialspoint.table.core.windows.net/Book



PS C:\Windows\system32>
```

You can see that it has given the following end point as a result.

```
https://tutorialspoint.table.core.windows.net/Book
```

Similarly, you can retrieve, delete and insert data into the table using preset commands in PowerShell.

## Retrieve Table

```
$tabName = "Book"

Get-AzureStorageTable –Name $tabName –Context $Ctx
```

## Delete Table

```
$tabName = "Book"

Remove-AzureStorageTable –Name $tabName –Context $Ctx
```

## Insert rows into Table

```
function Add-Entity() {

   [CmdletBinding()]



   param(

      $table,

      [String]$partitionKey,

      [String]$rowKey,

      [String]$title,

      [Int]$id,

      [String]$publisher,

      [String]$author

   )



   $entity = New-Object -TypeName Microsoft.WindowsAzure.Storage.Table.DynamicTableEntity

      -ArgumentList $partitionKey, $rowKey



   $entity.Properties.Add("Title", $title)

   $entity.Properties.Add("ID", $id)

   $entity.Properties.Add("Publisher", $publisher)

   $entity.Properties.Add("Author", $author)





   $result = $table.CloudTable.Execute(

      [Microsoft.WindowsAzure.Storage.Table.TableOperation]

      ::Insert($entity))

}



$StorageAccountName = "tutorialspoint"

$StorageAccountKey = Get-AzureStorageKey -StorageAccountName $StorageAccountName
```

```
$Ctx = New-AzureStorageContext $StorageAccountName - StorageAccountKey
   $StorageAccountKey.Primary

$TableName = "Book"

$table = Get-AzureStorageTable –Name $TableName -Context $Ctx -ErrorAction Ignore

#Add multiple entities to a table.
Add-Entity -Table $table -PartitionKey Partition1 -RowKey Row1 -Title .Net -Id 1
   -Publisher abc -Author abc
Add-Entity -Table $table -PartitionKey Partition2 -RowKey Row2 -Title JAVA -Id 2
   -Publisher abc -Author abc
Add-Entity -Table $table -PartitionKey Partition3 -RowKey Row3 -Title PHP -Id 3
   -Publisher xyz -Author xyz
Add-Entity -Table $table -PartitionKey Partition4 -RowKey Row4 -Title SQL -Id 4
   -Publisher xyz -Author xyz
```

## Retrieve Table Data

```
$StorageAccountName = "tutorialspoint"
$StorageAccountKey = Get-AzureStorageKey - StorageAccountName $StorageAccountName
$Ctx = New-AzureStorageContext – StorageAccountName $StorageAccountName -
   StorageAccountKey $StorageAccountKey.Primary;

$TableName = "Book"

#Get a reference to a table.
$table = Get-AzureStorageTable –Name $TableName -Context $Ctx

#Create a table query.
$query = New-Object Microsoft.WindowsAzure.Storage.Table.TableQuery

#Define columns to select.
$list = New-Object System.Collections.Generic.List[string]
```

```
$list.Add("RowKey")
$list.Add("ID")
$list.Add("Title")
$list.Add("Publisher")
$list.Add("Author")

#Set query details.
$query.FilterString = "ID gt 0"
$query.SelectColumns = $list
$query.TakeCount = 20

#Execute the query.
$entities = $table.CloudTable.ExecuteQuery($query)

#Display entity properties with the table format.

$entities  | Format-Table PartitionKey, RowKey, @{ Label = "Title";
Expression={$_.Properties["Title"].StringValue}}, @{ Label = "ID";
Expression={$_.Properties[“ID”].Int32Value}}, @{ Label = "Publisher";
Expression={$_.Properties[“Publisher”].StringValue}}, @{ Label = "Author";
Expression={$_.Properties[“Author”].StringValue}} -AutoSize
```

The output will be as shown in the following image.

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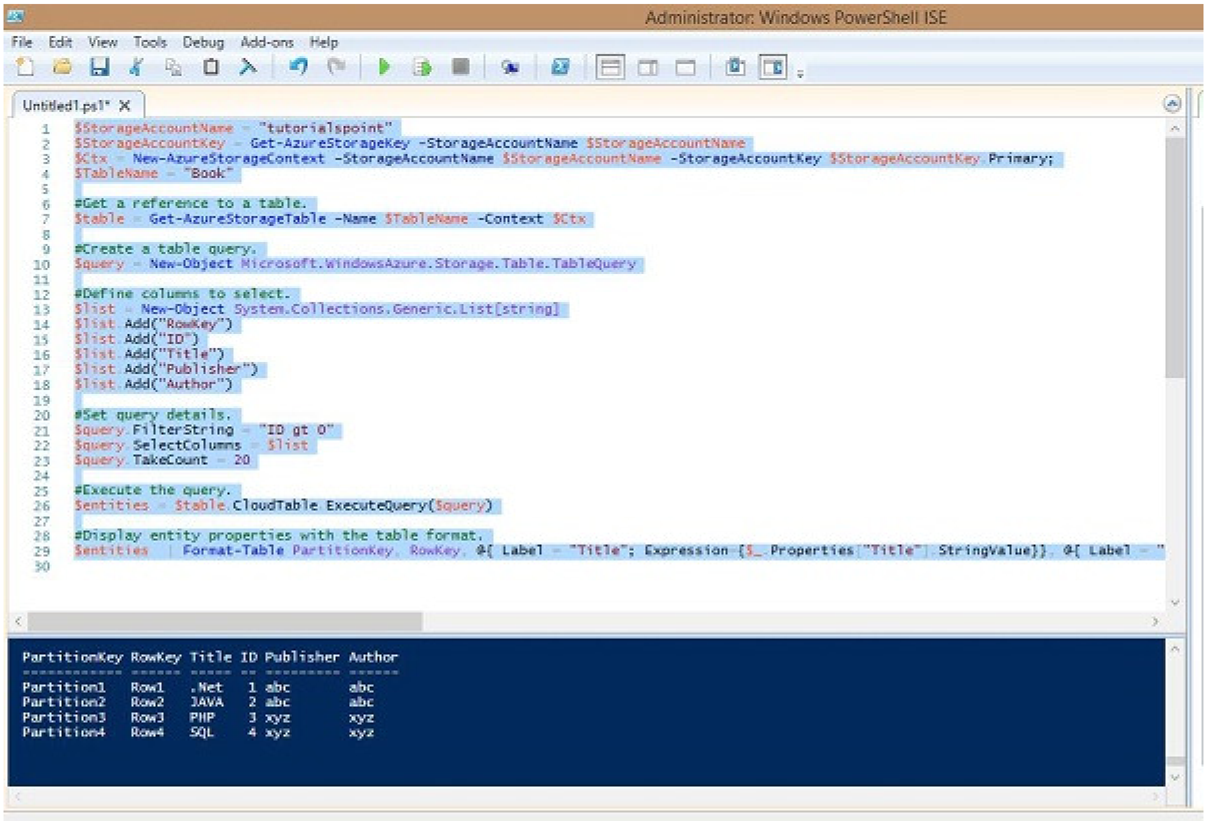

Administrator: Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
Untitled1.ps1*

```
$StorageAccountName = "tutorialspoint"
$StorageAccountKey = Get-AzureStorageKey -StorageAccountName $StorageAccountName
$Ctx = New-AzureStorageContext -StorageAccountName $StorageAccountName -StorageAccountKey $StorageAccountKey.Primary;
$TableName = "Book"

#Get a reference to a table.
$table = Get-AzureStorageTable -Name $TableName -Context $Ctx

#Create a table query.
$query = New-Object Microsoft.WindowsAzure.Storage.Table.TableQuery

#Define columns to select.
$list = New-Object System.Collections.Generic.List[string]
$list.Add("RowKey")
$list.Add("ID")
$list.Add("Title")
$list.Add("Publisher")
$list.Add("Author")

#Set query details.
$query.FilterString = "ID gt 0"
$query.SelectColumns = $list
$query.TakeCount = 20

#Execute the query.
$entities = $table.CloudTable.ExecuteQuery($query)

#Display entity properties with the table format.
$entities | Format-Table PartitionKey, RowKey, @{ Label = "Title"; Expression={$_.Properties["Title"].StringValue}}, @{ Label = "
```

```
PartitionKey RowKey Title ID Publisher Author
------------ ------ ----- -- --------- ------
Partition1   Row1   .Net   1 abc       abc
Partition2   Row2   JAVA   2 abc       abc
Partition3   Row3   PHP    3 xyz       xyz
Partition4   Row4   SQL    4 xyz       xyz
```

## Delete Rows from Table

```
$StorageAccountName = "tutorialspoint"


$StorageAccountKey = Get-AzureStorageKey - StorageAccountName $StorageAccountName

$Ctx = New-AzureStorageContext – StorageAccountName $StorageAccountName -

   StorageAccountKey $StorageAccountKey.Primary


#Retrieve the table.

$TableName = "Book"

$table = Get-AzureStorageTable -Name $TableName -Context $Ctx -ErrorAction

Ignore


#If the table exists, start deleting its entities.

if ($table -ne $null) {

   #Together the PartitionKey and RowKey uniquely identify every

   #entity within a table.
   $tableResult = $table.CloudTable.Execute(
      [Microsoft.WindowsAzure.Storage.Table.TableOperation]
      ::Retrieve(“Partition1”, "Row1"))

   $entity = $tableResult.Result;

   if ($entity -ne $null) {
      $table.CloudTable.Execute(
         [Microsoft.WindowsAzure.Storage.Table.TableOperation]
         ::Delete($entity))
   }
}
```

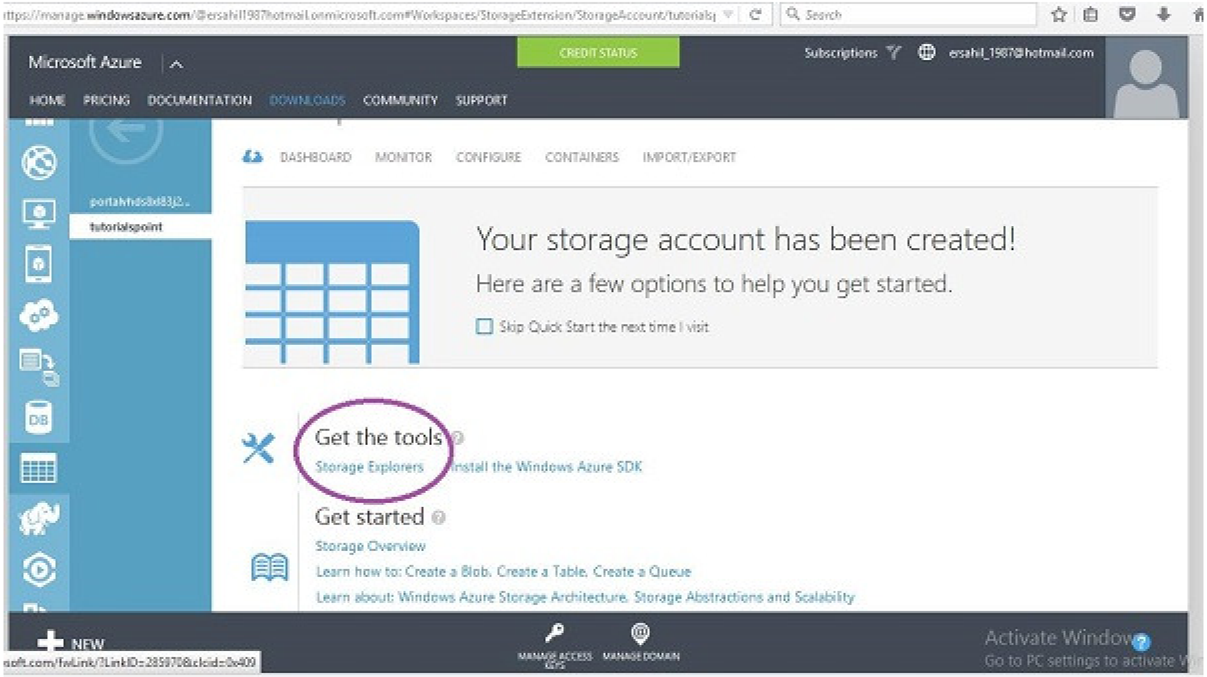
The above script will delete the first row from the table, as you can see that we have specified Partition1 and Row1 in the script. After you are done with deleting the row, you can check the result by running the script for retrieving rows. There you will see that the first row is deleted.

While running these commands please ensure that you have replaced the accountname with your account name, accountkey with your account key.

## How to Manage Table using Azure Storage Explorer

**Step 1** – Login in to your Azure account and go to your storage account.

**Step 2** – Click on the link ‘Storage explorer’ as shown in purple circle in the following image.



Your storage account has been created!

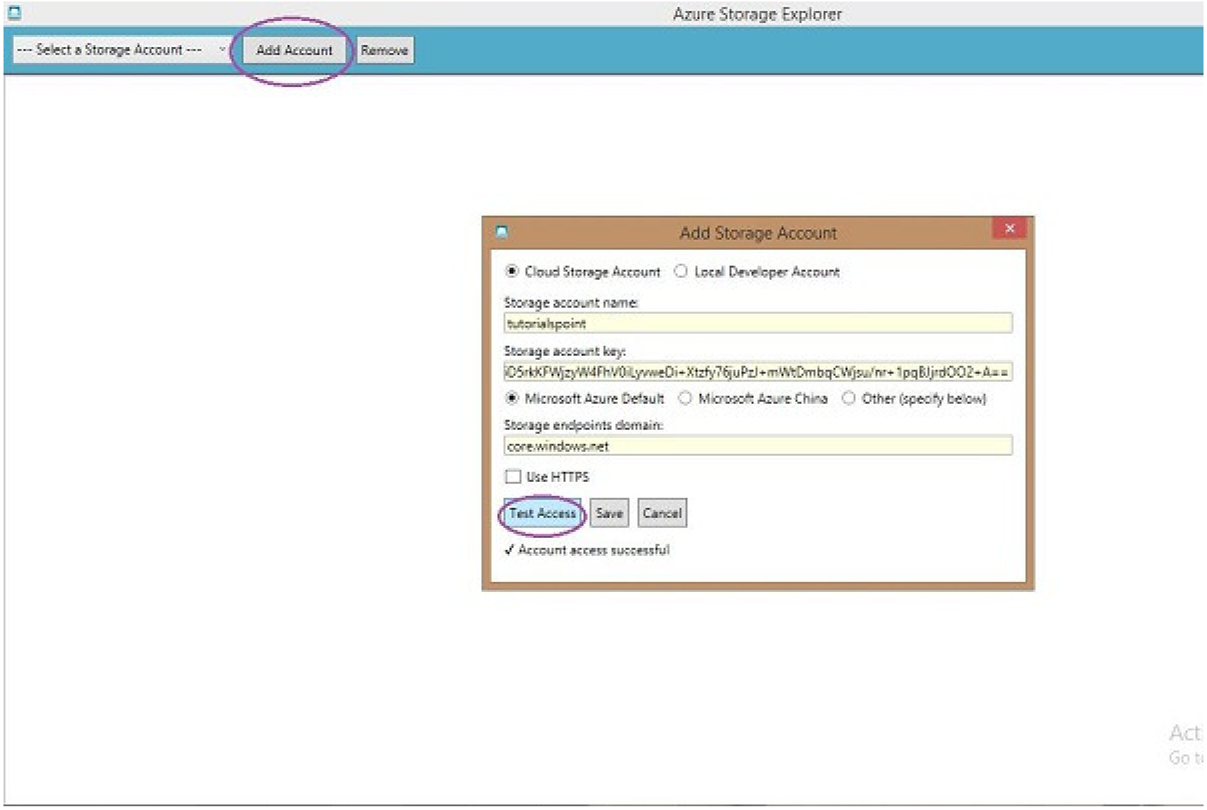
Here are a few options to help you get started.

□ Skip Quick Start the next time I visit

**Step 3** – Choose 'Azure Storage Explorer for Windows' from the list. It is a free tool that you can download and install on your computer.

**Step 4** – Run this program on your computer and click 'Add Account' button at the top.

**Step 5** – Enter 'Storage Account Name' and 'Storage account Key' and click 'Test Access. The buttons are encircled in following image.



● Cloud Storage Account ○ Local Developer Account

Storage account name:
tutorialspoint

Storage account key:
iD5rkKFWjzyW4FhV0iLyvweDi+Xtzfy76juPzJ+mWtDmbqCWjsu/nr+1pqBJjrdOO2+A==

● Microsoft Azure Default ○ Microsoft Azure China ○ Other (specify below)

Storage endpoints domain:
core.windows.net

□ Use HTTPS

✓ Account access successful

**Step 6** – If you already have any tables in storage you will see in the left panel under 'Tables'. You can see the rows by clicking on them.

## Create a Table

**Step 1** – Click on 'New' and enter the table name as shown in the following image.

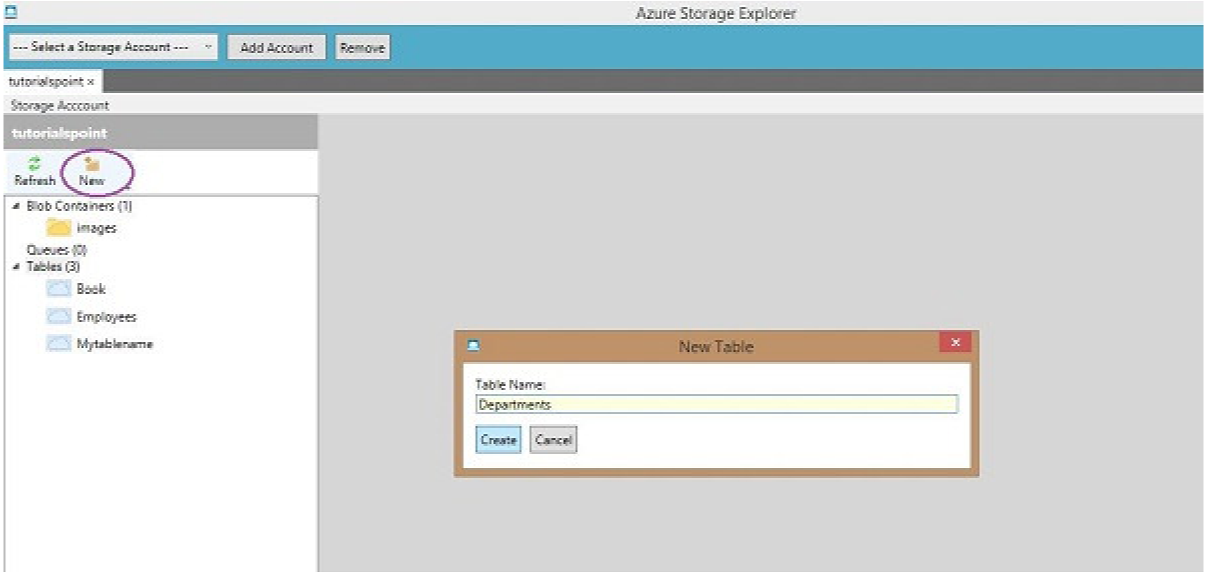


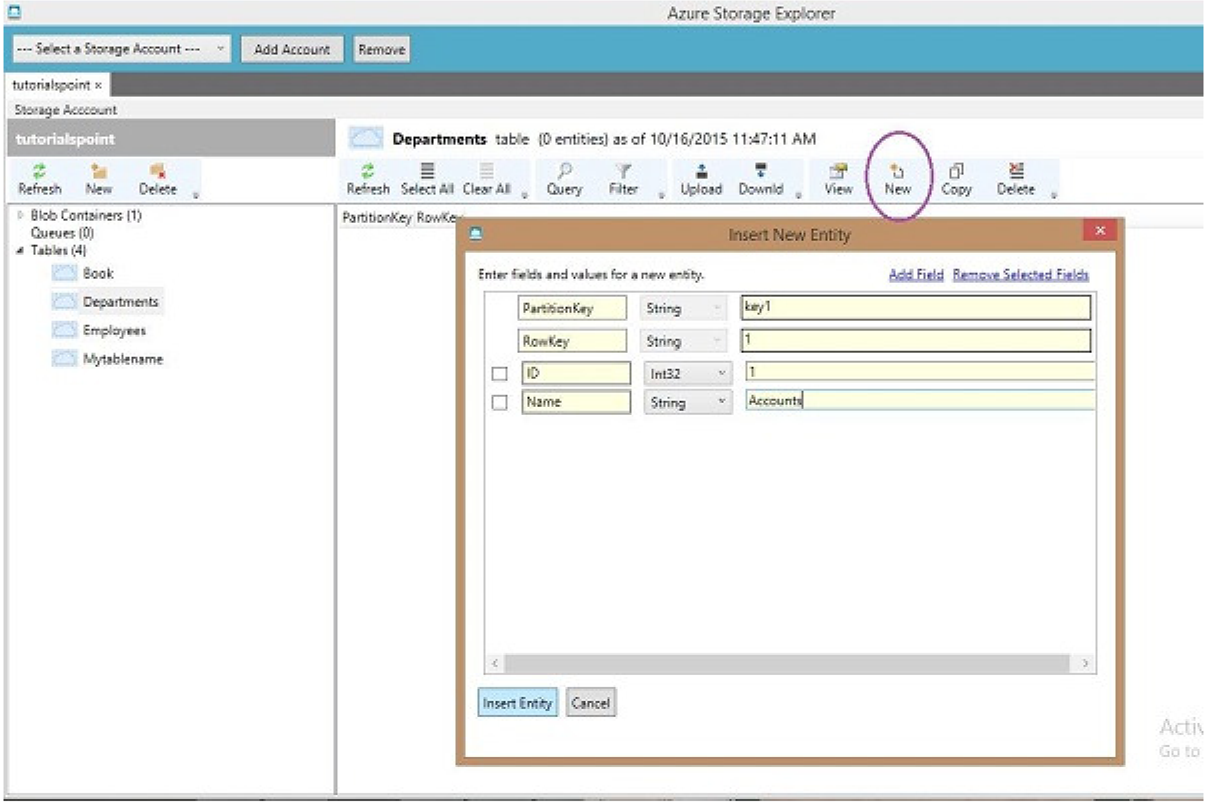
Table Name:
Departments

## Insert Row into Table

**Step 1** – Click on ‘New’.

**Step 2** – Enter Field Name.

**Step 3** – Select data type from dropdown and enter field value.



**Departments** table (0 entities) as of 10/16/2015 11:47:11 AM

Enter fields and values for a new entity.

|  |  |  |  |
|---|---|---|---|
|  | PartitionKey | String | key1 |
|  | RowKey | String | 1 |
| □ | ID | Int32 | 1 |
| □ | Name | String | Accounts |

**Step 4** – To see the rows created click on the table name in the left panel.

Azure Storage Explorer is very basic and easy interface to manage tables. You can easily create, delete, upload, and download tables using this interface. This makes the tasks very easy for developers as compared to writing lengthy scripts in Windows PowerShell.