# Module 6: Storing Tabular Data in Azure

# Demo: Implementing Azure Storage Tables

1. On the Start screen, locate and click the **Visual Studio 2017** tile.

**Note:** You might have to use the down arrow to locate the Visual Studio 2017 tile on your Start screen.

1. On the **File** menu, point to **New,** and then click **Project**.
2. In the **New Project** dialog box, perform the following steps:
3. Expand **Templates**, **Visual C#**, **Windows** and then click **Classic Desktop**.
4. Click the **Console Application** template.
5. In the **Name** box, enter the value **Contoso.Storage.Table**.
6. In the **Location** box, specify the value **AllFiles (F):\Mod06\Labfiles\Starter**
7. Click **OK**.
8. On the **View** menu, point to **Other Windows**, and then click **Package Manager Console**.
9. In the console, enter the following command:

* Install-Package Microsoft.Data.Services.Client -Version 5.6.0;

1. Press Enter.
2. After execution of the first command is completed, enter the following command:

* Install-Package WindowsAzure.Storage -Version 3.1.0.1;

1. Press Enter.
2. In the **Solution Explorer** pane, expand the **Contoso.Storage.Table** project.
3. Double-click the **Program.cs** file.
4. Add the following **using** statement at the top of the code file:

* using Microsoft.WindowsAzure.Storage;

1. Add the following **using** statement at the top of the code file:

* using Microsoft.WindowsAzure.Storage.Table;

1. At the end of the **Main** method and before the closing parenthesis, add the following code:

* CloudTableClient tableClient = CloudStorageAccount.DevelopmentStorageAccount.CreateCloudTableClient();

1. At the end of the **Main** method and before the closing parenthesis, add the following code:

* CloudTable table = tableClient.GetTableReference("roster");

1. At the end of the **Main** method and before the closing parenthesis, add the following code:

* table.CreateIfNotExists();

1. In the **Solution Explorer** pane, right-click the **Contoso.Storage.Table** project, point to **Add**, and then click **New Item**.
2. In the **Add New Item** dialog box, perform the following steps:
   1. Expand **Installed**, expand **Visual C# Items**, and then click **Code**.
   2. Click the **Class** template.
   3. In the **Name** box, type **Employee.cs**.
   4. Click **Add**.
3. In the **Employee** class, add the **public** accessor at the left side of the class definition:

* class Employee

1. Verify that the updated class definition reads as follows:

* public class Employee

1. Add the following **using** statement at the top of the code file:

* using Microsoft.WindowsAzure.Storage.Table;

1. In the **Employee** class, add the **inheritance** statement **: TableEntity** at the right side of the class definition:

* public class Employee

1. Verify that the updated class definition reads as follows:

* public class Employee : TableEntity

1. Within the **Employee** class, add the following line of code:

* public int YearsAtCompany { get; set; }

1. Within the **Employee** class, add the following method:

* ``` public override string ToString() {

} ```

1. Within the **ToString** method, add the following line of code:

* return RowKey + "\t\t[" + YearsAtCompany + "]";

1. In the **Solution Explorer** pane, expand the **Contoso.Storage.Table** project.
2. Double-click the **Program.cs** file.
3. At the end of the **Main** method and before the closing parenthesis, add the first Employee with a partition key of **IT** as shown below:

* Employee first = new Employee { PartitionKey = "IT", RowKey = "ibahena", YearsAtCompany = 7 };

1. Add a second employee with a partition key of **HR**, as shown below:

* Employee second = new Employee { PartitionKey = "HR", RowKey = "rreeves", YearsAtCompany = 12 };

1. Add a third employee with a partition key of **HR**, as shown below:

* Employee third = new Employee { PartitionKey = "HR", RowKey = "rromani", YearsAtCompany = 3 };

1. At the end of the **Main** method and before the closing parenthesis, create a new **TableOperation** that inserts the first Employee as shown below:

* TableOperation insertOperation = TableOperation.InsertOrReplace(first);

1. On the next line, use the **Execute** method on the table variable to execute the **TableOperation**, as shown below:

* table.Execute(insertOperation);

1. At the end of the **Main** method and before the closing parenthesis, create a new **TableBatchOperation** with the following code:

* TableBatchOperation batchOperation = new TableBatchOperation();

1. On the next line, add an **InsertOrReplace** operation to the batch for the second Employee, as shown below:

* batchOperation.InsertOrReplace(second);

1. On the next line, add an **InsertOrReplace** operation to the batch for the third Employee, as shown below:

* batchOperation.InsertOrReplace(third);

1. On the next line, use the **ExecuteBatch** method on the table variable to execute the **TableBatchOperation**, as shown below:

* table.ExecuteBatch(batchOperation);

1. At the end of the **Main** method and before the closing parenthesis, create a string filter to retrieve only entities with a partition key of **HR** by using the **TableQuery.GenerateFilterCondition** static method:

* string queryFilter = TableQuery.GenerateFilterCondition("PartitionKey", QueryComparisons.Equal, "HR");

1. On the next line, create a new **TableQuery** and invoke the **Where** method by using the string filter, as shown below:

* TableQuery<Employee> query = new TableQuery<Employee>().Where(queryFilter);

1. On the next line, write a header to the Console window, as shown below:

* Console.WriteLine("HR Employees\n");

1. On the next line, use a **foreach** loop to iterate over the results of the query, as shown below:

* ``` foreach (Employee hrEmployee in table.ExecuteQuery(query)) {

} ```

1. Within the loop, write the **Employee** object to the Console window, as shown below:

* Console.WriteLine(hrEmployee);

1. At the end of the main method and before the closing parenthesis, write a header to the Console window:

* Console.WriteLine("\n\n\n\nIT Employee\n");

1. On the next line, create a new **TableOperation** to retrieve the single entity with a partition key of **IT** and row key of **ibahena**:

* TableOperation retrieveOperation = TableOperation.Retrieve<Employee>("IT", "ibahena");

1. On the next line, execute the **TableOperation** by using the **Execute** method of the table variable and store the result in a *TableResult* variable, as shown below:

* TableResult result = table.Execute(retrieveOperation);

1. On the next line, cast the **Result** property of the *TableResult* variable to an **Employee** object, as shown below:

* Employee itEmployee = (Employee)result.Result;

1. On the next line, write the **Employee** object to the Console window, as shown below:

* Console.WriteLine(itEmployee);

1. On the Start screen, click the **Internet Explorer** tile.
2. In the *Address bar* navigate to the following address:

* <https://go.microsoft.com/fwlink/?LinkId=717179&clcid=0x409>

1. In the **Internet Explorer** download dialog box, click **Save**.

**Note:** The download of the *Azure Storage Emulator* executable typically takes around five minutes.

1. Click the **Windows File Explorer** icon in your Taskbar.
2. On the left navigation bar, expand the **This PC** node and click the **Downloads** node:
3. Double-click the **MicrosoftAzureStorageEmulator.msi** file to start the emulator.
4. In the **Microsoft Azure Storage Emulator Setup** wizard, select the checkbox next to the **"I accept the terms in the License Agreement"** statement.
5. Click the **Install** button to install the emulator.
6. Wait for the installer to complete.

* **Note:** The installer can take between two to five minutes.

1. Click the **Finish** button to close the installer wizard.
2. On the Start screen, type **Azure Storage Emulator**.
3. Click the **Microsoft Azure Storage Emulator** tile.
4. After the command-line application is finished, close the open console window.
5. Switch to the Contoso.Storage.Table – Microsoft Visual Studio window.
6. On the **Debug** menu, click **Start Without Debugging**.
7. View the output in the console window.
8. Press any key to close the console window.
9. Close the **Contoso.Storage.Table – Microsoft Visual Studio** application.