## 6. Data Table Manipulations

**6.1 Objective**

Build a workflow using data table activities to join two library databases using matching student ID and display the output in a message box.

* Create a data table variable and populate it with student ID and name of students.
* Create another data table variable, and populate it with student ID and book names
* Join both the data tables based on matching student ID.
* Remove the student ID column and sort the final data table as per student names in alphabetical order from A to Z.
* Display the final data table containing the student and book names in a message box as a string.

**6.2 Process Overview**

* START
* Use two Build Data Table activities to create two tables. Store them in two DataTable variables called **dt\_users** and **dt\_overdueBooks**.
  + **dt\_users** variable contain ID of students and name of user as string.
  + **dt\_overdueBooks** variable contain ID of students and name of books as string.
* Use a Join Data Table activity. Choose the Inner type for the Join activity. Write the two column names to be used as Join criterion and create a new data table variable to store the output called **dt\_borrowedBooks**
* Use a Remove Data Column activity to delete duplicate column – student ID – by specifying its index.
* Use a Sort Data Table activity to sort the data table based on the name of students in alphabetical order from A to Z.
* Use an Output Data Table activity to print the content of the data table to a String variable.
* Use the Message Box activity to display the output.
* STOP

**6.3 Step by Step Process**

Step 1: Open UiPath Studio.

Step 2: Create a new process and name it as “Data Table Manipulations”.

Step 3: Drag a Sequence activity from the Activities panel and drop it in the Designer panel.

Step 4: Name the Sequence activity as “Sequence – ‘A workflow using data table activities to join two library databases’”.

Step 5: Right-click on the Sequence activity container and select *Annotations* from the context menu.

Step 6: Add an annotation : “This block of code demonstrates a workflow using data table activities to join two library databases using matching student ID and display output in a message box.”

Step 7: Drag and drop a Build Data Table activity and name it as “Build Data Table – Users”. Add an annotation: “Data table contains Columns Student ID, Student Name”.

Step 8: Create a variable through Variables panel for the Build Data Table activity as shown below:

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Variable type | Scope | Default |
| dt\_users | DataTable | Sequence - ' A workflow using  data table activities to join two library databases' |  |

Step 9: In the Properties panel of the Build Data Table activity, enter **dt\_users** in the Output property

Step 10: Click on the “Data Table” button and create a Data Table as shown below:

|  |  |
| --- | --- |
| Student ID  (String) | Student Name  (String) |

Step 11: Drag and drop a Build Data Table activity and name it as “Build Data Table – Overdue Books”. Add an annotation: “Datatable contains columns Student ID, Book Name”.

Step 12: Create a variable through Variables panel for the Build Data Table activity as shown below:

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Variable type | Scope | Default |
| dt\_overdueBooks | DataTable | Sequence - ' A workflow  using data table activities to join two library databases' |  |

Step 13: In the Properties panel of the Build Data Table activity, enter

**dt\_overdueBooks** in the Output property.

Step 14: Click on the “DataTable...” button and create a Data Table as shown below:

|  |  |
| --- | --- |
| Student ID  (String) | Book Name  (String) |

Step 15: Drag and drop Join Data Table activity and name it as “Join Data Tables - Join dt\_Users and dt\_overdueBooks Datatable”. Add an annotation: “This activity joins both the data tables resulting in a single datatable”.

Step 16: Click on the “Join Wizard” button.

Step 17: Enter **dt\_users** in Input Data Table 1, and enter **dt\_overdueBooks** in Input Data Table 2 text box.

Step 18: Select the Join Type as Inner, and in the Output Data Table text box, press

**Ctrl + K** to create a new variable called **dt\_borrowedBooks**.

Step 19: In the Column Table 1, enter the column index as ‘0’ (column index of Data Table ‘dt\_users’), in the Column Table 2 enter the column index as ‘0’ (column index of Data Table ‘dt\_overdueBooks’) and press OK.

Step 20: Drag and drop a Remove Data Column activity. Name it as “Remove Data Column of dt\_borrowedBooks”. Add an annotation: “This activity removes the duplicate column of Student ID”. In its Properties panel, enter 2 in ColumnIndex property and enter **dt\_borrowedBooks** in DataTable property.

Step 21: Create a variable through the Variables panel as shown below:

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Variable type | Scope | Default |
| dt\_OuputDataTable | DataTable | Sequence - ' A workflow using data table activities  to join two library |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | databases' |  |

Step 22: Drag and drop a Sort Data Table activity. Name it as “Sort Data Column of dt\_borrowedBooks”. Add an annotation: “This activity sorts the DataTable in an ascending order.” and pass the values in the Properties panel as shown below:

|  |  |
| --- | --- |
| Input DataTable | dt\_borrowedBooks |
| Output DataTable | dt\_OutputDataTable |
| Index | 1 |
| Order | Ascending |

Step 23: Create a variable through the Variables panel as shown below:

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Variable type | Scope | Default |
| DataTable | String | Sequence - ' a workflow using data table activities to join two  library databases' |  |

Step 24: Drag and drop an Output Data Table activity. Name it as “Output Data Column of dt\_OutputDataTable”., add an annotation: “This activity coverts DataTable's variable type from the datatable to string” and pass the values in the Properties panel as shown below:

|  |  |
| --- | --- |
| Input DataTable | dt\_OutputDataTable |
| Output Text | DataTable |

Step 25: Drag and drop a Message Box activity, name it as “Message Box - Text”, add an annotation: “Prints the String form of DataTable” and in its text area enter the variable **DataTable**.

Step 26: Save and run the workflow.