

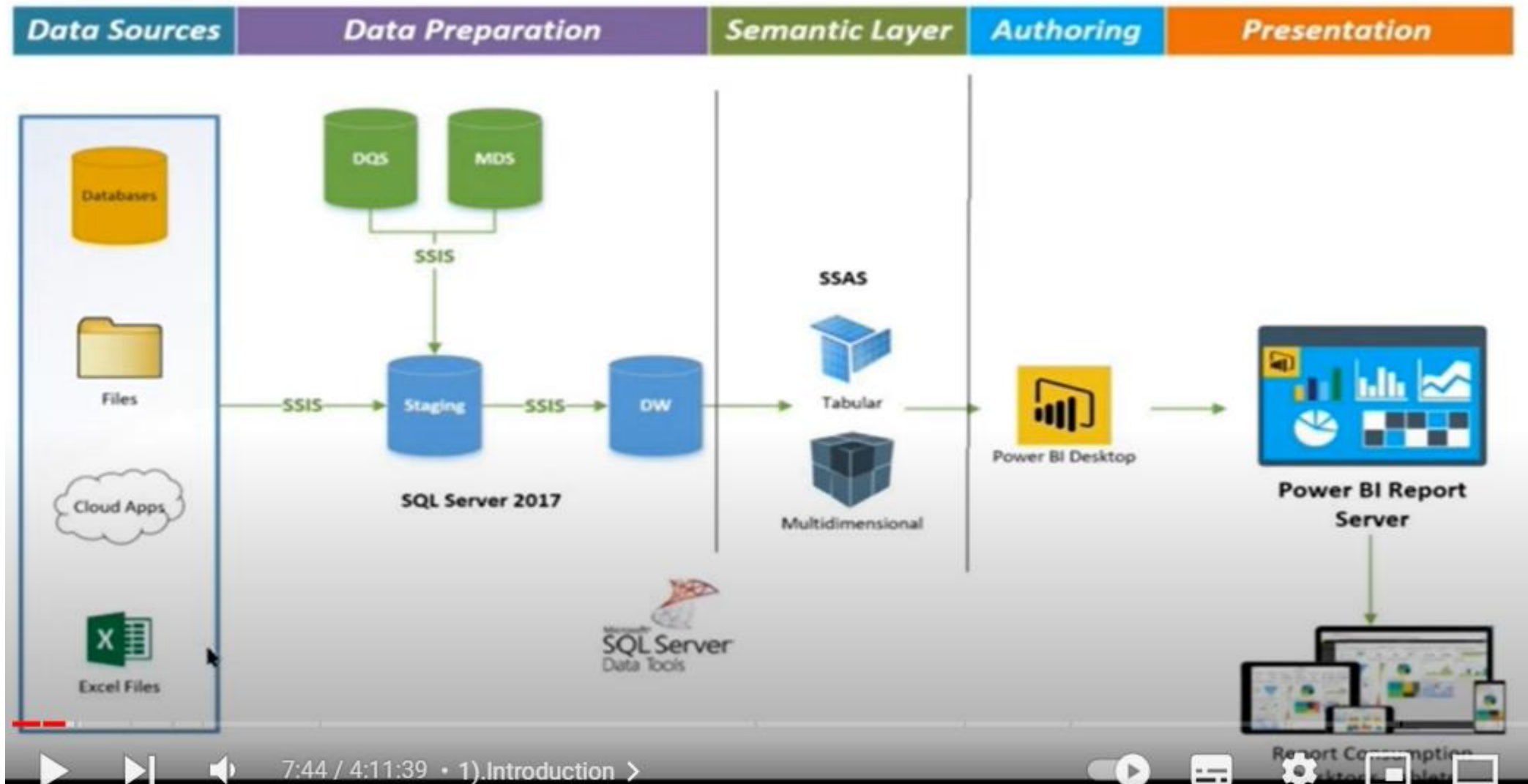


SSIS

SQL SERVER INTEGRATION



BI Architecture

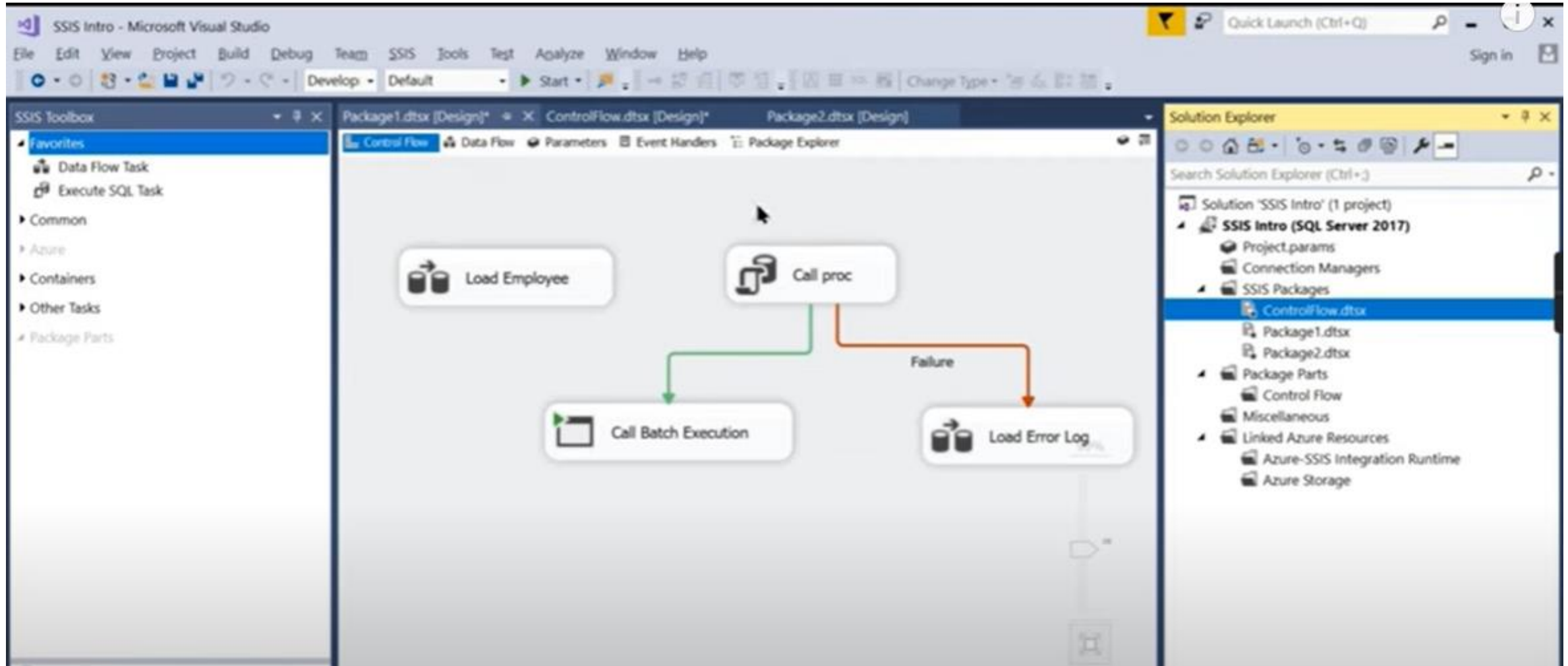


SQL Server Integration Services

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Control Flow

SQL Server Integration Services - Control Flow



SQL Server Integration Services - Control Flow

- **Control Flow Tasks:**

- Control Flow Tasks are the core building blocks in SQL Server Integration Services (SSIS) that perform specific operations within ETL processes.
- Common tasks include Execute SQL Task, File System Task, Data Flow Task, and Script Task.
- They control the sequence and flow of tasks within an SSIS package.

- **Containers:**

- Containers are used to group and organize tasks within SSIS packages.
- Examples of containers include Sequence Container, For Loop Container, and Foreach Loop Container.
- Containers help in managing the scope and execution of tasks, enhancing package organization.

- **Precedence Constraints:**

- Precedence Constraints define the order of execution for tasks within an SSIS package.
- They specify the conditions that must be met for a task to run.
- Constraints ensure that tasks are executed in the desired sequence.

- **Significance of Control Flow:**

- Control Flow is a fundamental component of SSIS, governing the logical flow of ETL operations.
- Understanding Control Flow elements is essential for orchestrating data integration processes effectively.



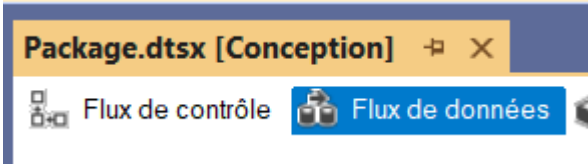
SQL Server Integration Services

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Data Flows

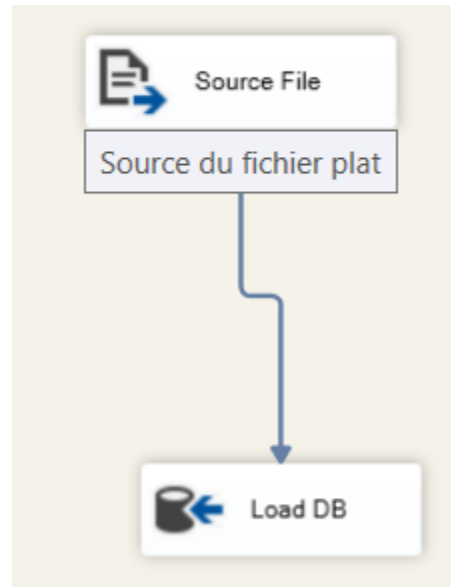
I.2 - SQL Server Integration Services - Control Flow

1



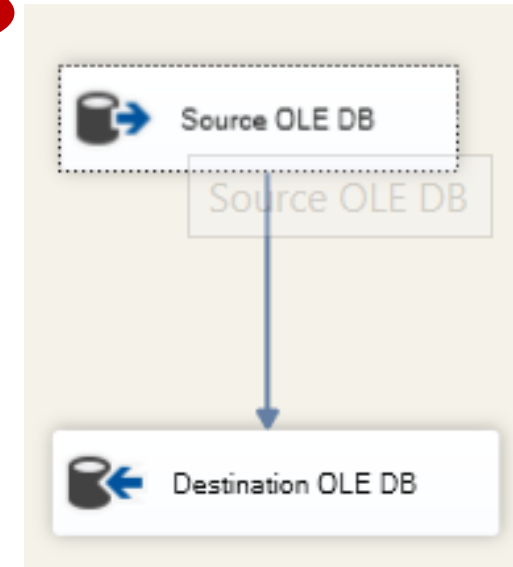
- We have modelled all the actions in the 'Data Flows' section

1.1



- Data was loaded from a flat file to a database

1.2

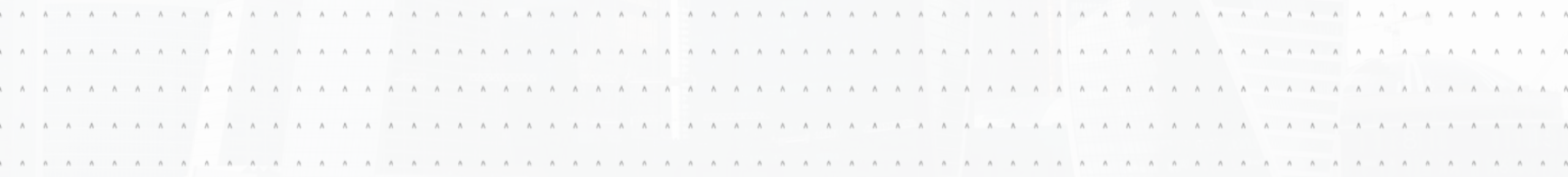


- Data from one database was transferred to another database

SQL Server Integration Services

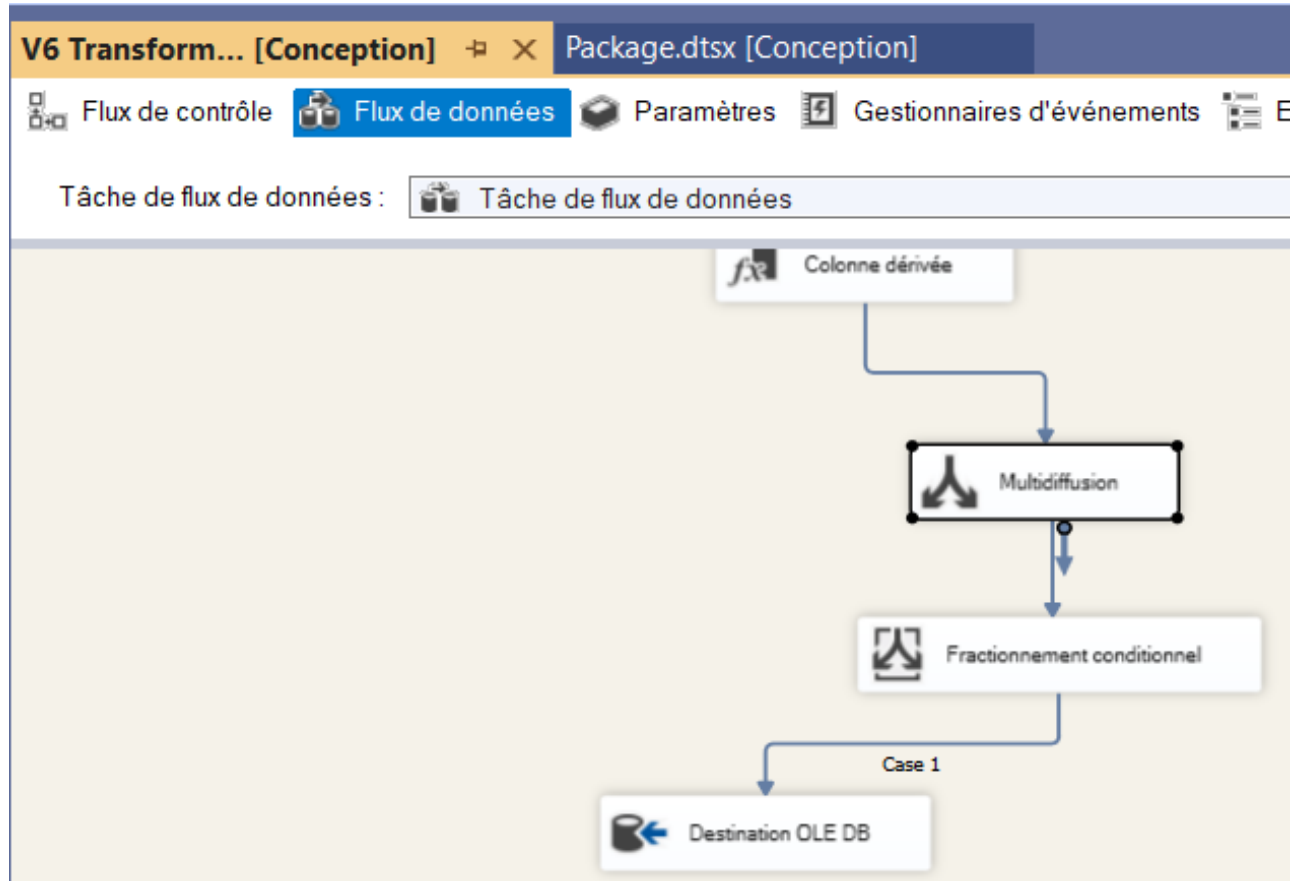
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1.3) SSIS Main Transformations



I.3 - SQL Server Integration Services – SSIS Main Transformations

- **Multi-Diffusion and Conditional Separation**



- **Multi-Diffusion**

Multicast transformation allows you to redistribute your input to one or more outputs

- **Conditional Separation**

The conditional separation transformation allows its input to be redistributed to one or more outputs according to certain established conditions

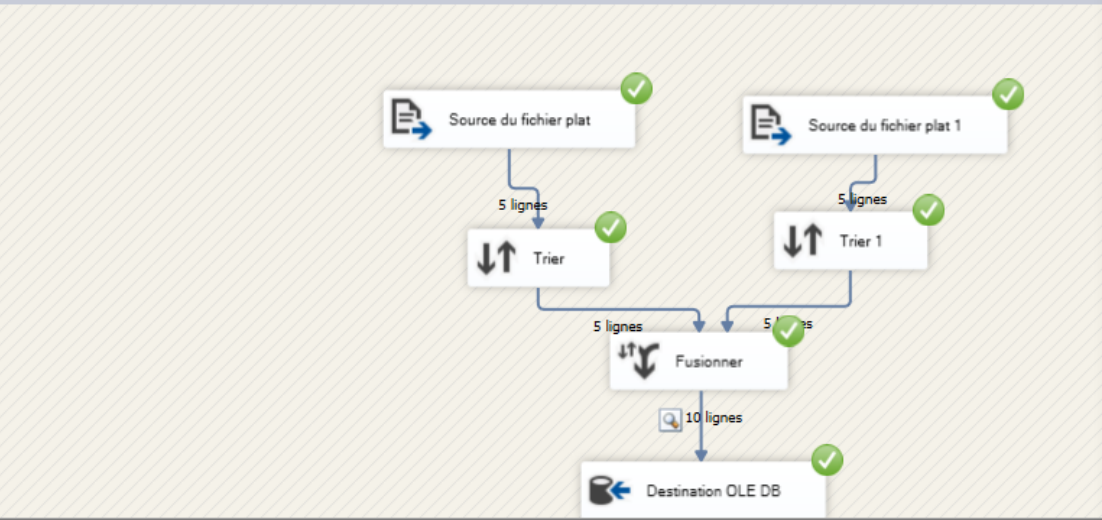
I.3 - SQL Server Integration Services – SSIS Main Transformations

- Merge and Union

V6 Transform... [Conception] Package.dtsx [Conception]

Flux de contrôle Flux de données Paramètres Gestionnaires d'événements Explorateur de packa... Progression

Tâche de flux de données : Tâche de flux de données 1



The diagram shows a Data Flow Task with two flat file sources, two sort tasks, a merge task, and an OLE DB destination. Data flows from 'Source du fichier plat' and 'Source du fichier plat 1' through 'Trier' and 'Trier 1' respectively, then into 'Fusionner', and finally to 'Destination OLE DB'. Line counts are shown on the paths: 5 lignes from each source to its sort task, 5 lignes from each sort task to the merge task, and 10 lignes from the merge task to the destination.

id name pseudo

1	Makan	MK
1	Makan	MK
10	Anabelle	Anna
100	Anabelle0	Anna
11	Marc	Mc
110	Marc0	Mc
2	Jimmy	Jim
20	Jimmy0	Jim
7	Yousra	Youss
70	Yousra0	Youss

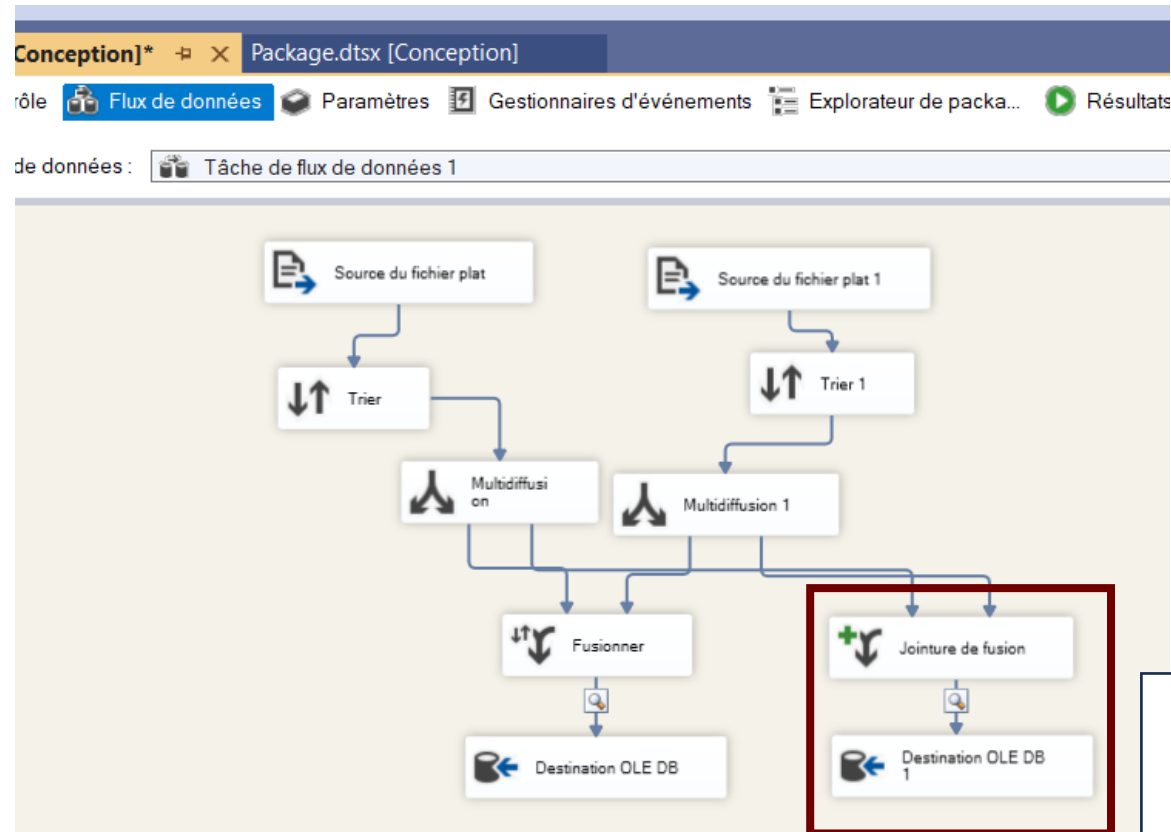
Attaché Total lignes : 0, tampons : 0 Lignes affichées = 10

Gestionnaires de connexions

(localdb)\AdvWork_Server.SSISDemo (localdb)\AdvWork_Server.SSISDemo2 file1 file2

I.3 - SQL Server Integration Services – SSIS Main Transformations

- Merge and Union



Visionneuse de données Sortie de jointure de fusion à Tâche de flux de données 1

Détacher Copier les données

id	name	pseudo
1	Makan	MK
100	Anabelle0	Anna
110	Marc0	Mc
20	Jimmmy0	Jim
70	Yousra0	Youss

Lignes affichées = 5

Here a merge join has been made using the "id" column (left join)

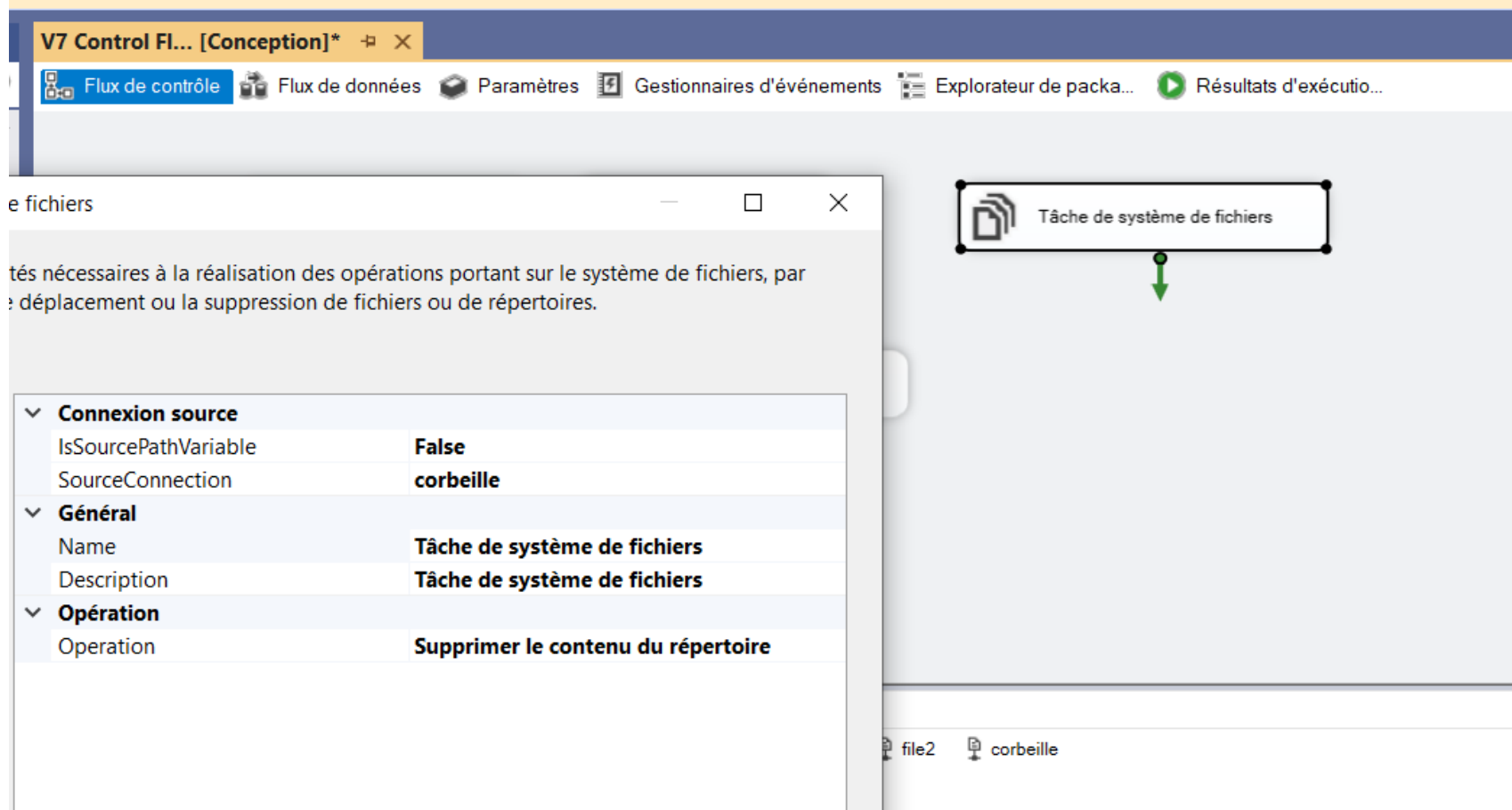
SQL Server Integration Services

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1.4) Control Flow Task

I.4) SQL Server Integration Services - Control Flow Task

- **File System Task** and Execute Process Task

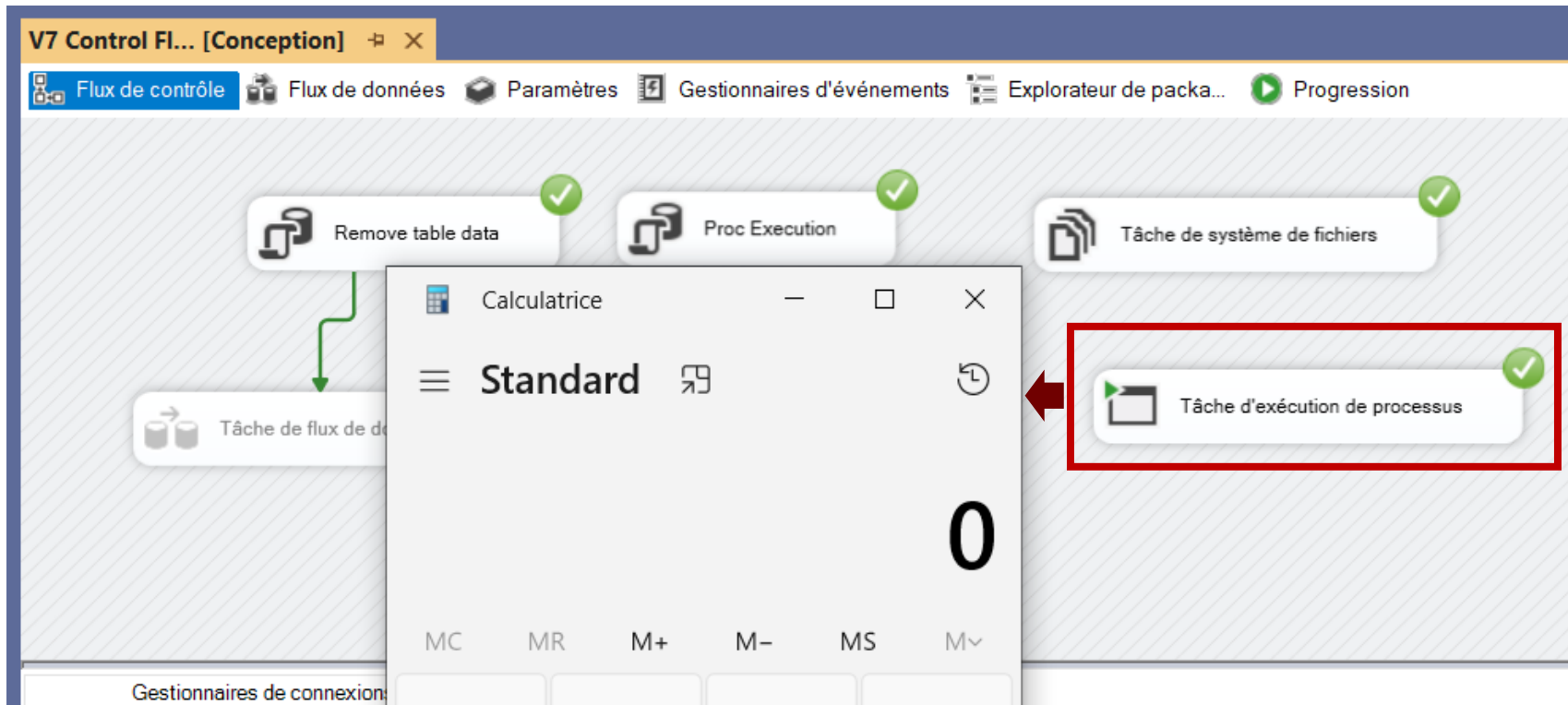


File System Task

The SSIS File System Task simplifies file management in ETL workflows, allowing for operations like copying, moving, deleting, and creating files and directories.

I.4) SQL Server Integration Services - *Control Flow Task*

- File System Task and **Execute Process Task**

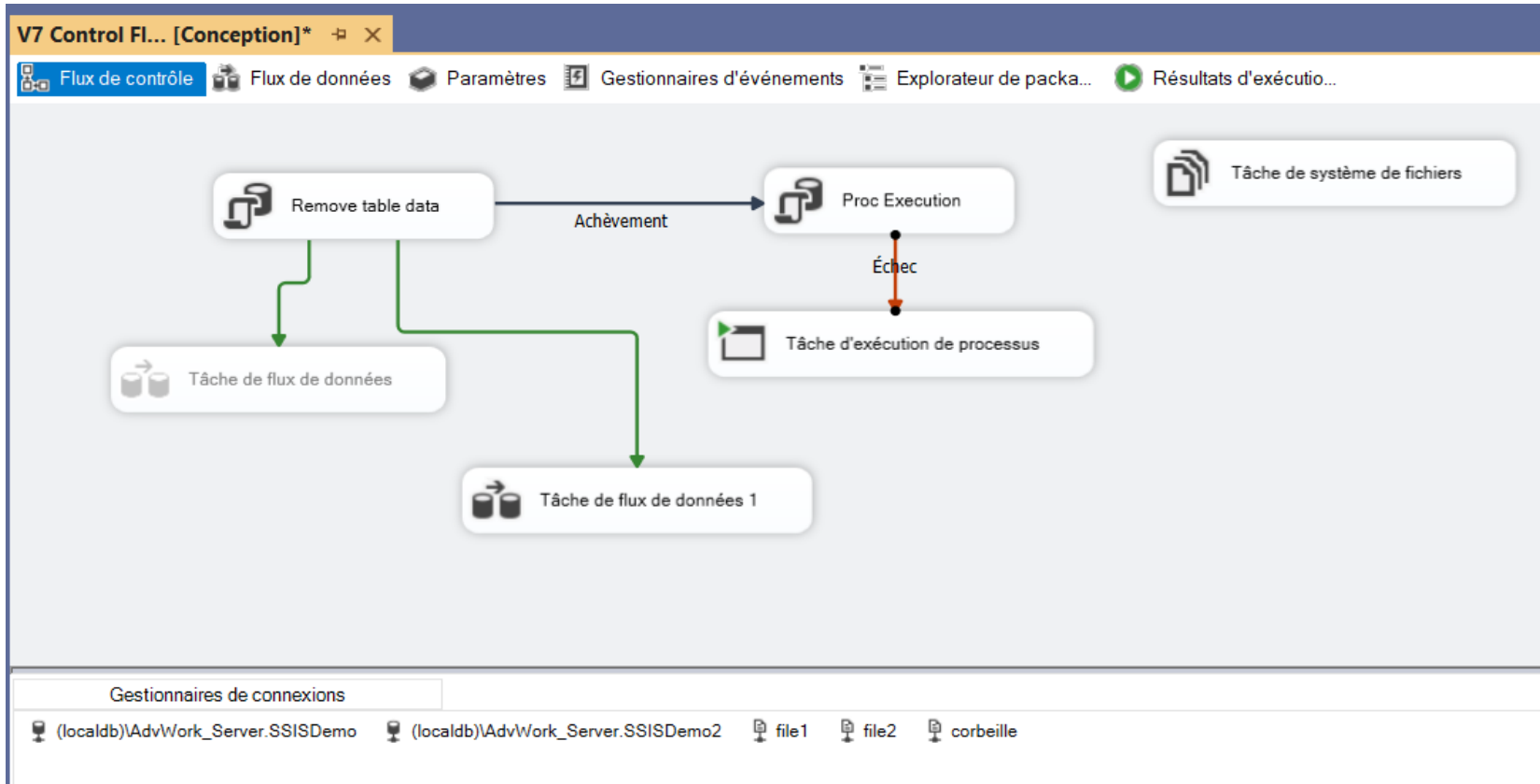


Execute Process Task

The Execute Process Task in SSIS allows you to run external processes or programs as part of your ETL workflow, providing flexibility in integrating third-party applications and custom scripts.

I.4) SQL Server Integration Services - Control Flow Task

- Precedence constraint



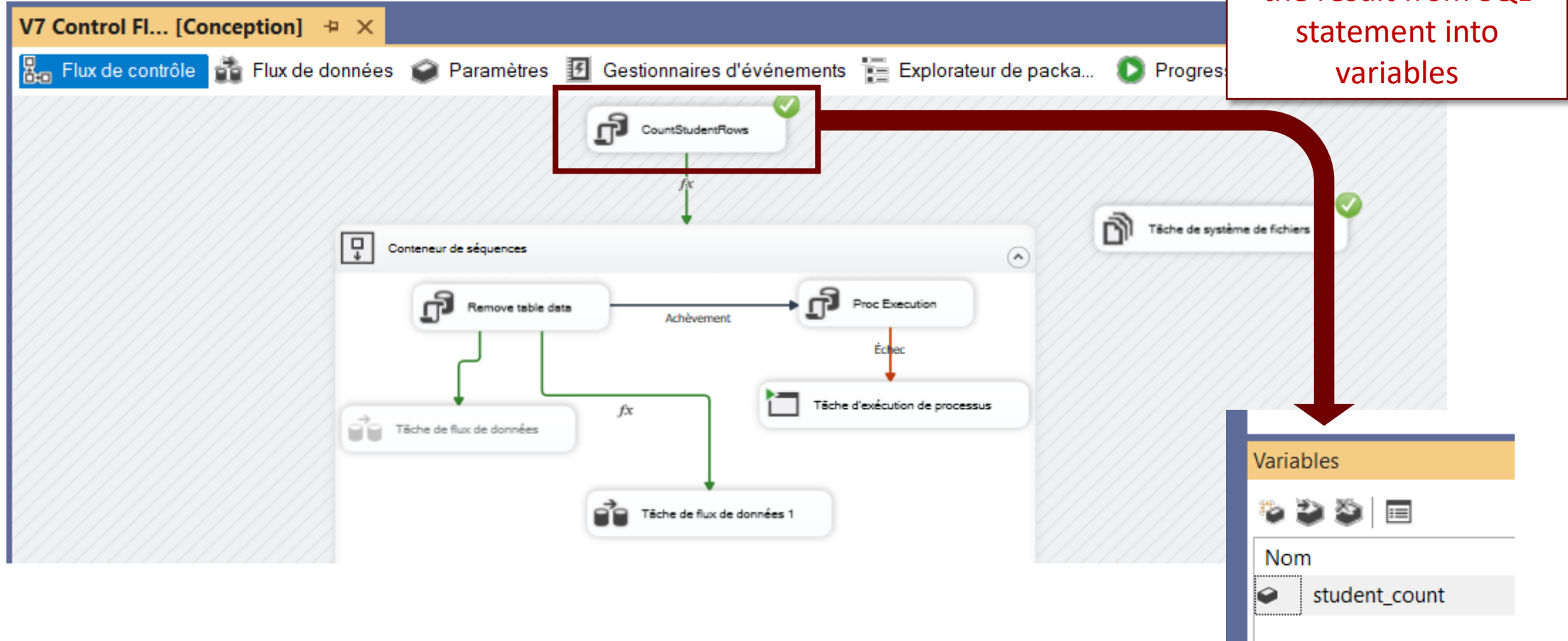
Precedence constraint

Precedence constraints in SSIS define the order of execution between tasks, ensuring that certain tasks are executed only when specific conditions are met.

Ex : Proc Execution is waiting for the Remove table data to end before making any changes

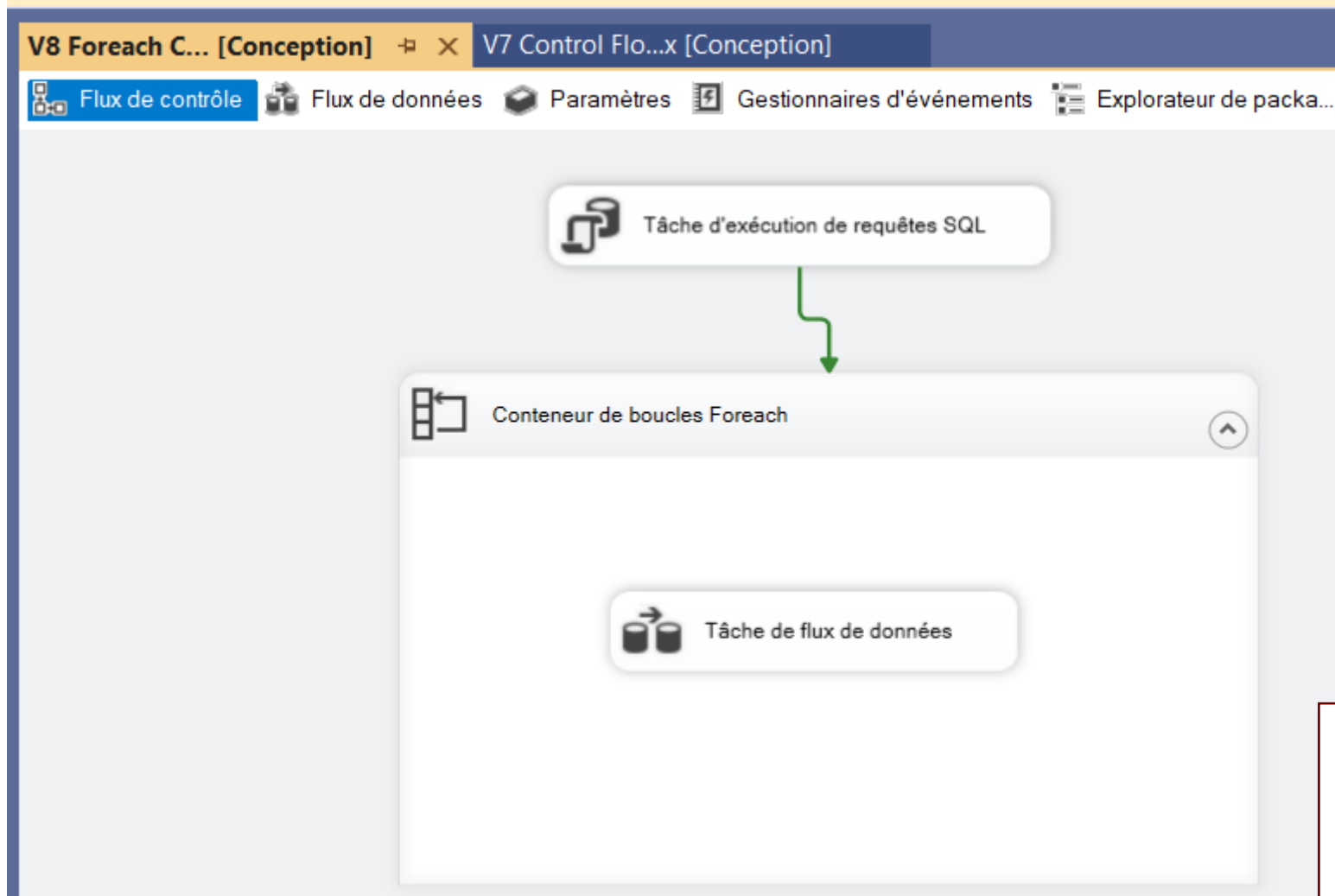
I.4) SQL Server Integration Services - Control Flow Task

- Variables



I.4) SQL Server Integration Services - Control Flow Task

- Variables, Expression and Precedence constraint



100 %

Results				
	id	name	pseudo	fromfile
1	1	Makan	MK	students_20231030.txt
2	2	Jimmmy	Jim	students_20231030.txt
3	7	Yousra	Youss	students_20231030.txt
4	10	Anabelle	Anna	students_20231030.txt
5	11	Marc	Mc	students_20231030.txt
6	1	Makan	MK	students_20231031.txt
7	2	Jimmmy	Jim	students_20231031.txt
8	7	Yousra	Youss	students_20231031.txt
9	10	Anabelle	Anna	students_20231031.txt
10	11	Marc	Mc	students_20231031.txt

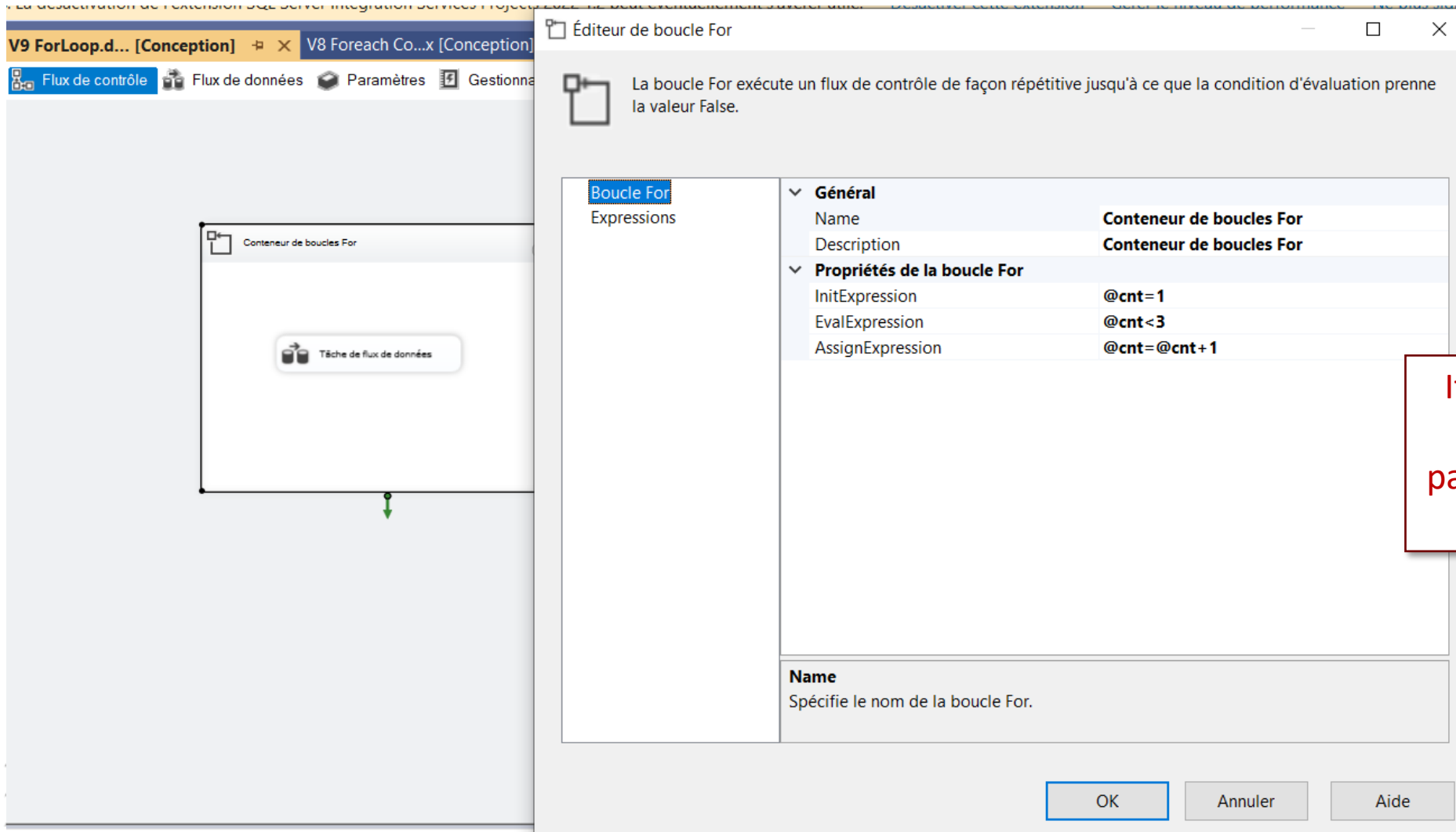
1st loop

2nd loop

It is possible to use loop in order to read files from a single folder in an easy way

I.4) SQL Server Integration Services - Control Flow Task

- Variables, Expression and Precedence constraint



It is also possible to use loop until a particular condition is met



I.5) Other functionalities

- Event handlers
- Blocking/non-blocking/Semi-Blocking
- Execute Package Task
- SQL Server Agent (Schedule Jobs)

