

Sistemas Multidimensionales

## Práctica 3

# Diseño e Implementación del Componente ETL **Pentaho Data Integration**



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## Ejercicio 3.1

Define el flujo de datos para obtener una tabla plana con todos los datos de la provincia enriquecidos con los datos adicionales disponibles, usando los criterios de nomenclatura indicados en los apartados anteriores (captura una pantalla donde se muestre el resultado de ejecución de los pasos y la hoja Preview data del último paso).

**Execution Results**

Logging Execution History Step Metrics Performance Graph Metrics Preview data

First rows Last rows Off

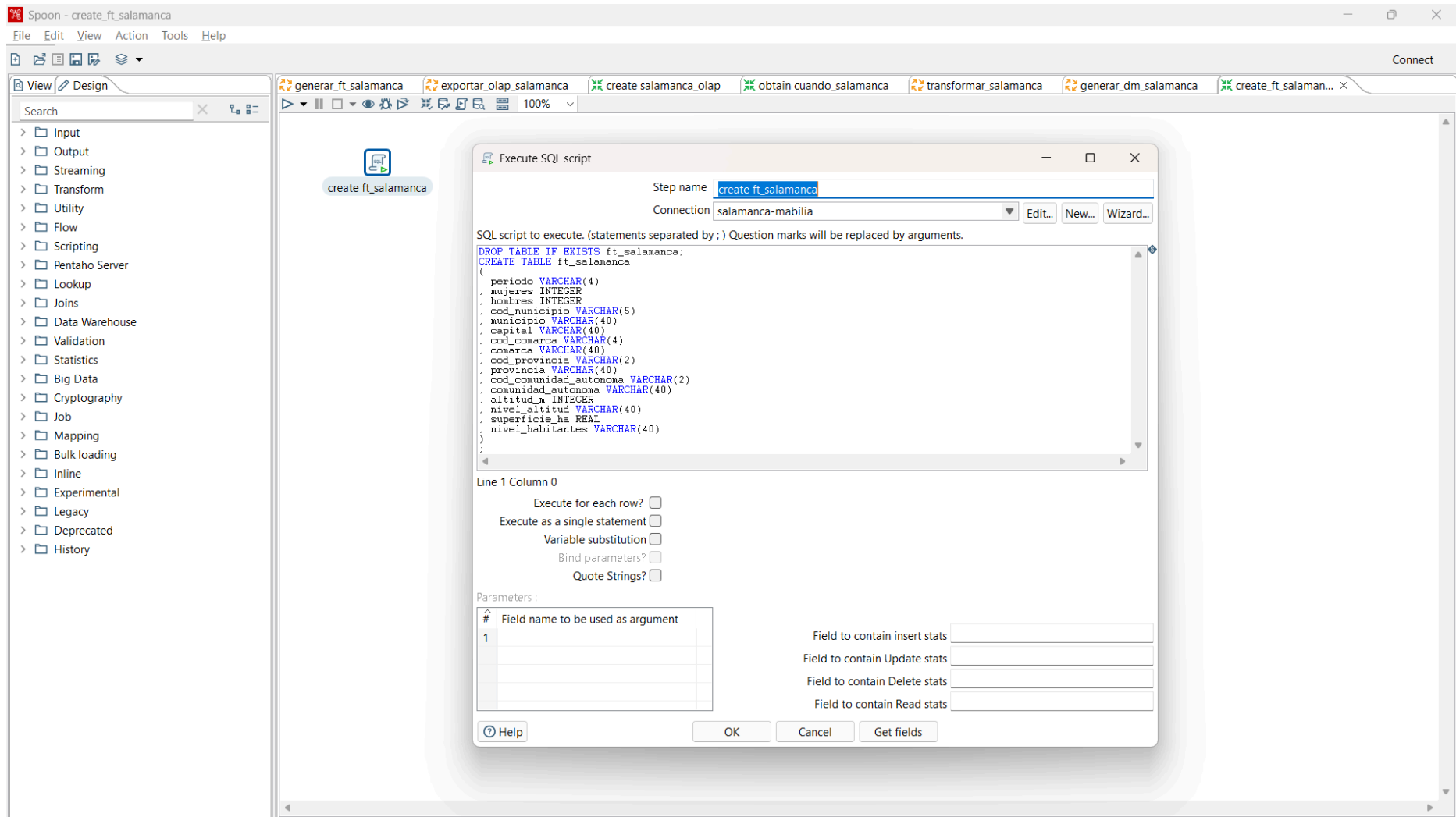
#	periodo	mujeres	hombres	cod_municipio	municipio	capital	cod_comarca	comarca	cod_provincia	provincia	cod_comunidad_aut...	comunidad_aut...	altitud_m	nivel_altitud
1	1996	141	139	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07	Castilla y León	839	4 - alto: 803 a menos de 1
2	1998	139	131	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07	Castilla y León	839	4 - alto: 803 a menos de 1
3	1999	138	131	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07	Castilla y León	839	4 - alto: 803 a menos de 1
4	2000	130	126	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07	Castilla y León	839	4 - alto: 803 a menos de 1
5	2001	127	126	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07	Castilla y León	839	4 - alto: 803 a menos de 1
6	2002	126	124	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07	Castilla y León	839	4 - alto: 803 a menos de 1
7	2003	124	126	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07	Castilla y León	839	4 - alto: 803 a menos de 1
8	2004	123	126	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07	Castilla y León	839	4 - alto: 803 a menos de 1
9	2005	125	131	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07	Castilla y León	839	4 - alto: 803 a menos de 1
1	2006	120	122	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07	Castilla y León	839	4 - alto: 803 a menos de 1

## Ejercicio 3.2

Completa el trabajo para obtener una tabla plana de manera que la tabla resultado sea borrada y creada en cada ejecución, usando los criterios de nomenclatura indicados en este apartado (captura una pantalla donde se muestre el resultado de ejecución del trabajo, otra para cada una de las tareas y otra que muestre el contenido de la tabla en la BD).

The screenshot shows the Pentaho Data Integration (Spoon) interface. The left pane displays the job structure for 'generar\_ft\_salamanca', including 'Run configurations', 'Database connections', 'Job entries', and 'VFS Connections'. The main pane shows the job design with three steps: 'Start', 'create ft\_salamanca', and 'tabla\_plana'. The 'Execution Results' tab is active, showing a table of job execution logs.

Job / Job Entry	Comment	Result	Reason	Filename	Nr	Log date
Job: generar_ft_salamanca	Start of job execution		start			2025/05/10 10:...
Start	Start of job execution		start			2025/05/10 10:...
Start	Job execution finished	Success			0	2025/05/10 10:...
create ft_salamanca	Start of job execution		Followed unconditional link	file:///C:/Users/Mabilia%20...		2025/05/10 10:...
create ft_salamanca	Job execution finished	Success		file:///C:/Users/Mabilia%20...	1	2025/05/10 10:...
tabla_plana	Start of job execution		Followed link after success	file:///C:/Users/Mabilia%20...		2025/05/10 10:...
tabla_plana	Job execution finished	Success		file:///C:/Users/Mabilia%20...	2	2025/05/10 10:...
Job: generar_ft_salamanca	Job execution finished	Success	finished		2	2025/05/10 10:...



The screenshot displays the Pentaho Spoon interface for configuring and monitoring a job named 'generar\_ft\_salamanca'. The job is composed of several steps: 'Start', 'create ft\_salamanca', and 'tabla\_plana'. A 'Transformation' dialog box is open, showing the configuration for the 'create ft\_salamanca' step. The dialog includes fields for 'Entry Name' (set to 'create\_ft\_salamanca') and 'Transformation' (set to '\$(Internal.Entry.Current.Directory)/create\_ft\_salam'). The 'Options' tab is selected, showing 'Run configuration' set to 'Pentaho local' and several execution options, with 'Wait for remote transformation to complete' checked. The 'Execution Results' panel at the bottom shows the job's progress, including the start and completion of each step, with a final 'finished' status.

**Execution Results**

Job / Job Entry	Comment
Job: generar_ft_salamanca	Start of job execution
Start	Start of job execution
Start	Job execution finished
create_ft_salamanca	Start of job execution
create_ft_salamanca	Job execution finished
tabla_plana	Start of job execution
tabla_plana	Job execution finished
Job: generar_ft_salamanca	Job execution finished

The screenshot displays the Pentaho Spoon interface for configuring and monitoring a job named 'generar\_ft\_salamanca'. The job is composed of several steps: 'Start', 'create\_ft\_salamanca', and 'tabla\_plana'. A 'Transformation' dialog box is open, showing the configuration for the 'tabla\_plana' transformation. The dialog includes fields for 'Entry Name' (tabla\_plana) and 'Transformation' (a file path). Below these, there are tabs for 'Options', 'Logging', 'Arguments', and 'Parameters'. The 'Options' tab is active, showing 'Run configuration' set to 'Pentaho local' and several checkboxes for execution options, with 'Wait for remote transformation to complete' checked. At the bottom of the main window, the 'Execution Results' panel shows a log of the job's execution, including timestamps and status messages.

**Execution Results**

Job / Job Entry	Comment
Job: generar_ft_salamanca	Start of job execution
Start	Start of job execution
Start	Job execution finished
create_ft_salamanca	Start of job execution
create_ft_salamanca	Job execution finished
tabla_plana	Start of job execution
tabla_plana	Job execution finished
Job: generar_ft_salamanca	Job execution finished

## Diseño e Implementación del Cte. ETL - Pentaho Data Integration

pgAdmin 4

File Object Tools Edit View Window Help

Welcome public.ft\_salamanca/salamanca-mabilia/postgres@PostgreSQL 17 X

public.ft\_salamanca/salamanca-mabilia/postgres@PostgreSQL...

No limit

Query Query History

1 SELECT \* FROM public.ft\_salamanca

Data Output Messages Notifications

Showing rows: 1 to 1000 Page No: 1 of 11

	periodo character varying (4)	mujeres integer	hombres integer	cod_municipio character varying (5)	municipio character varying (40)	capital character varying (40)	cod_comarca character varying (4)	comarca character varying (40)	cod_provincia character varying (2)	provincia character varying (40)	cod_com
1	1996	141	139	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07
2	1998	139	131	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07
3	1999	138	131	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07
4	2000	130	126	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07
5	2001	127	126	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07
6	2002	126	124	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07
7	2003	124	126	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07
8	2004	123	126	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07
9	2005	125	131	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07
10	2006	120	133	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07
11	2007	121	128	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07
12	2008	119	125	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07
13	2009	113	123	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07
14	2010	120	134	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07
15	2011	113	123	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07
16	2012	111	122	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07
17	2013	106	119	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07
18	2014	103	117	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07
19	2015	101	112	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07
20	2016	96	106	37001	Abusejo	Abusejo	3705	Fuente de San Esteban	37	Salamanca	07

Servers > PostgreSQL 17 > Databases > salamanca-mabilia > Schemas > public > Tables > ft\_salamanca

CRLF Ln 1, Col 1



## Ejercicio 3.3

Para las dimensiones *Dónde* y *Cuándo*:

- Define las transformaciones, para crear las tablas y obtener los datos de las dimensiones con sus atributos correspondientes y una llave generada autonumérica, usando criterios de nomenclatura como los mostrados en este apartado para la dimensión *Dónde* (para cada una muestra el resultado de su ejecución).

The screenshot displays the Apache Pentaho Data Integration (Spoon) application window. The title bar reads "Spoon - create\_dim\_donde\_salamanca". The menu bar includes File, Edit, View, Action, Tools, and Help. The toolbar contains icons for file operations and a "Connect" button. The left sidebar shows a tree view of the "View/Design" palette with categories like Input, Output, Streaming, Transform, Utility, Flow, Scripting, Pentaho Server, Lookup, Joins, Data Warehouse, Validation, Statistics, Big Data, Cryptography, Job, Mapping, Bulk loading, Inline, Experimental, Legacy, Deprecated, and History. The main workspace shows a single transformation named "create\_dim\_donde" with a green checkmark icon. The bottom panel, titled "Execution Results", contains tabs for Logging, Execution History, Step Metrics, Performance Graph, Metrics, and Preview data. The "Execution History" tab is active, showing a log of events:

- 2025-05-16 16:48:27.042 - Spoon - Transformation opened.
- 2025-05-16 16:48:27.043 - Spoon - Launching transformation [create\_dim\_donde\_salamanca]...
- 2025-05-16 16:48:27.043 - Spoon - Started the transformation execution.
- 2025-05-16 16:48:27.080 - create\_dim\_donde\_salamanca - Dispatching started for transformation [create\_dim\_donde\_salamanca]
- 2025-05-16 16:48:27.279 - create\_dim\_donde.0 - Finished reading query, closing connection.
- 2025-05-16 16:48:27.280 - create\_dim\_donde.0 - Finished processing (I=0, O=0, R=0, W=1, U=0, E=0)
- 2025-05-16 16:48:27.280 - Spoon - The transformation has finished!!

The screenshot displays the Pentaho Data Integration (Spoon) application window titled "Spoon - create\_dim\_cuando\_salamanca". The interface includes a menu bar (File, Edit, View, Action, Tools, Help), a toolbar, and a "Connect" button. On the left, a "View" pane shows a tree structure of categories: Input, Output, Streaming, Transform, Utility, Flow, Scripting, Pentaho Server, Lookup, Joins, Data Warehouse, Validation, Statistics, Big Data, Cryptography, Job, Mapping, Bulk loading, Inline, Experimental, Legacy, Deprecated, and History. The main workspace shows a single transformation named "create\_dim\_cuando" with a green status icon. The bottom pane, titled "Execution Results", contains tabs for Logging, Execution History, Step Metrics, Performance Graph, Metrics, and Preview data. The "Logging" tab is active, showing a series of log messages:

- 2025-05-16 16:49:20.250 - Spoon - Transformation opened.
- 2025-05-16 16:49:20.250 - Spoon - Launching transformation [create\_dim\_cuando\_salamanca]...
- 2025-05-16 16:49:20.250 - Spoon - Started the transformation execution.
- 2025-05-16 16:49:20.280 - create\_dim\_cuando\_salamanca - Dispatching started for transformation [create\_dim\_cuando\_salamanca]
- 2025-05-16 16:49:20.347 - create\_dim\_cuando.0 - Finished reading query, closing connection.
- 2025-05-16 16:49:20.348 - create\_dim\_cuando.0 - Finished processing (I=0, O=0, R=0, W=1, U=0, E=0)
- 2025-05-16 16:49:20.349 - Spoon - The transformation has finished!!

Spoon - obtain\_dim\_donde\_salamanca

File Edit View Action Tools Help

View Design

Search

- > Input
- > Output
- > Streaming
- > Transform
- > Utility
- > Flow
- > Scripting
- > Pentaho Server
- > Lookup
- > Joins
- > Data Warehouse
- > Validation
- > Statistics
- > Big Data
- > Cryptography
- > Job
- > Mapping
- > Bulk loading
- > Inline
- > Experimental
- > Legacy
- > Deprecated
- > History

create\_ft\_salamanca create\_dim\_donde\_salamanca create\_dim\_cuando\_salamanca tabla\_plana obtain\_dim\_donde\_salamanca obtain\_dim\_cuando\_salamanca generar\_ft\_salamanca

datos donde → Table output

**Execution Results**

Logging Execution History Step Metrics Performance Graph Metrics Preview data

2025-05-16 16:49:47.828 - Spoon - Transformation opened.  
2025-05-16 16:49:47.828 - Spoon - Launching transformation [obtain\_dim\_donde\_salamanca]...  
2025-05-16 16:49:47.828 - Spoon - Started the transformation execution.  
2025-05-16 16:49:47.859 - obtain\_dim\_donde\_salamanca - Dispatching started for transformation [obtain\_dim\_donde\_salamanca]  
2025-05-16 16:49:47.861 - Table output.0 - Connected to database [salamanca-mabiliia] (commit=1000)  
2025-05-16 16:49:48.017 - datos donde.0 - Finished reading query, closing connection  
2025-05-16 16:49:48.018 - datos donde.0 - Finished processing (I=512, O=0, R=0, W=512, U=0, E=0)  
2025-05-16 16:49:48.034 - Table output.0 - Finished processing (I=0, O=512, R=512, W=512, U=0, E=0)  
2025-05-16 16:49:48.035 - Spoon - The transformation has finished!!

Spoon - obtain\_dim\_donde\_salamanca

File Edit View Action Tools Help

Connect

create\_ft\_salamanca create\_dim\_donde\_salamanca create\_dim\_cuando\_salamanca tabla\_plana obtain\_dim\_donde\_salamanca x obtain\_dim\_cuando\_salamanca generar\_ft\_salamanca

View Design

Search

Input Output Streaming Transform Utility Flow Scripting Pentaho Server Lookup Joins Data Warehouse Validation Statistics Big Data Cryptography Job Mapping Bulk loading Inline Experimental Legacy Deprecated History

datos donde Table output

Execution Results

Logging Execution History Step Metrics Performance Graph Metrics Preview data

First rows Last rows Off

#	cod_municipio	municipio	capital	comarca	provincia	comunidad_autonoma	nivel_altitud	nivel_habitantes
1	37001	Abusejo	Abusejo	Fuente de San Esteban	Salamanca	Castilla y Le	4 - alto: 803 a menos de 1045 m.	2 -de 101 a 500 h
2	37002	Agallas	Agallas	Ciudad Rodrigo	Salamanca	Castilla y Le	4 - alto: 803 a menos de 1045 m.	2 -de 101 a 500 h
3	37003	Ahigal de los Aceiteros	Ahigal de los Aceiteros	Vitigudino	Salamanca	Castilla y Le	3 - medio: 556 a menos de 803 m.	1 -hasta 100 habi
4	37003	Ahigal de los Aceiteros	Ahigal de los Aceiteros	Vitigudino	Salamanca	Castilla y Le	3 - medio: 556 a menos de 803 m.	2 -de 101 a 500 h
5	37004	Ahigal de Villarino	Ahigal de Villarino	Vitigudino	Salamanca	Castilla y Le	3 - medio: 556 a menos de 803 m.	1 -hasta 100 habi
6	37005	Alameda de Gardón, La	La Alameda de Gardón	Ciudad Rodrigo	Salamanca	Castilla y Le	3 - medio: 556 a menos de 803 m.	2 -de 101 a 500 h
7	37005	Alameda de Gardón, La	La Alameda de Gardón	Ciudad Rodrigo	Salamanca	Castilla y Le	3 - medio: 556 a menos de 803 m.	1 -hasta 100 habi
8	37006	Alamedilla, La	La Alamedilla	Ciudad Rodrigo	Salamanca	Castilla y Le	3 - medio: 556 a menos de 803 m.	2 -de 101 a 500 h
9	37007	Alaraz	Alaraz	Peñaranda de Bracamonte	Salamanca	Castilla y Le	4 - alto: 803 a menos de 1045 m.	3 -de 501 a 1.000
10	37007	Alaraz	Alaraz	Peñaranda de Bracamonte	Salamanca	Castilla y Le	4 - alto: 803 a menos de 1045 m.	2 -de 101 a 500 h
11	37008	Alba de Tormes	Alba de Tormes	Alba de Tormes	Salamanca	Castilla y Le	4 - alto: 803 a menos de 1045 m.	4 -de 1.001 a 5.000
12	37008	Alba de Tormes	Alba de Tormes	Alba de Tormes	Salamanca	Castilla y Le	4 - alto: 803 a menos de 1045 m.	5 -de 5.001 a 10.000
13	37009	Alba de Veltes	Alba de Veltes	Ciudad Rodrigo	Salamanca	Castilla y Le	3 - medio: 556 a menos de 803 m.	2 -de 101 a 500 h
14	37010	Alberca, La	La Alberca	La Sierra	Salamanca	Castilla y Le	4 - alto: 803 a menos de 1045 m.	4 -de 1.001 a 5.000
15	37011	Alberguería de Argañán, La	La Alberguería de Argañán	Ciudad Rodrigo	Salamanca	Castilla y Le	3 - medio: 556 a menos de 803 m.	1 -hasta 100 habi
16	37011	Alberguería de Argañán, La	La Alberguería de Argañán	Ciudad Rodrigo	Salamanca	Castilla y Le	3 - medio: 556 a menos de 803 m.	2 -de 101 a 500 h
17	37012	Alconada	Alconada	Peñaranda de Bracamonte	Salamanca	Castilla y Le	4 - alto: 803 a menos de 1045 m.	2 -de 101 a 500 h
18	37013	Aldeacipreste	Aldeacipreste	La Sierra	Salamanca	Castilla y Le	4 - alto: 803 a menos de 1045 m.	1 -hasta 100 habi
19	37013	Aldeacipreste	Aldeacipreste	La Sierra	Salamanca	Castilla y Le	4 - alto: 803 a menos de 1045 m.	2 -de 101 a 500 h
20	37014	Aldeadávila de la Ribera	Aldeadávila de la Ribera	Vitigudino	Salamanca	Castilla y Le	3 - medio: 556 a menos de 803 m.	4 -de 1.001 a 5.000
21	37015	Aldea del Obispo	Aldea del Obispo	Ciudad Rodrigo	Salamanca	Castilla y Le	3 - medio: 556 a menos de 803 m.	2 -de 101 a 500 h
22	37016	Aldealegua	Aldealegua	Salamanca	Salamanca	Castilla y Le	3 - medio: 556 a menos de 803 m.	3 -de 501 a 1.000

Spoon - obtain\_dim\_cuando\_salamanca

File Edit View Action Tools Help

View Design

Search

Input  
Output  
Streaming  
Transform  
Utility  
Flow  
Scripting  
Pentaho Server  
Lookup  
Joins  
Data Warehouse  
Validation  
Statistics  
Big Data  
Cryptography  
Job  
Mapping  
Bulk loading  
Inline  
Experimental  
Legacy  
Deprecated  
History

create\_ft\_salamanca create\_dim\_donde\_salamanca create\_dim\_cuando\_salamanca tabla\_plana obtain\_dim\_donde\_salamanca obtain\_dim\_cuando\_salamanca generar\_ft\_salamanca

datos cuando Table output

Execution Results

Logging Execution History Step Metrics Performance Graph Metrics Preview data

2025-05-16 16:49:47.828 - Spoon - Transformation opened.  
2025-05-16 16:49:47.828 - Spoon - Launching transformation [obtain\_dim\_donde\_salamanca]...  
2025-05-16 16:49:47.828 - Spoon - Started the transformation execution.  
2025-05-16 16:49:48.035 - Spoon - The transformation has finished!!  
2025-05-16 16:50:47.214 - Spoon - Transformation opened.  
2025-05-16 16:50:47.214 - Spoon - Launching transformation [obtain\_dim\_cuando\_salamanca]...  
2025-05-16 16:50:47.214 - Spoon - Started the transformation execution.  
2025-05-16 16:50:47.790 - obtain\_dim\_cuando\_salamanca - Dispatching started for transformation [obtain\_dim\_cuando\_salamanca]  
2025-05-16 16:50:47.791 - Table output.0 - Connected to database [salamanca-mabilia] (commit=1000)  
2025-05-16 16:50:47.939 - datos cuando.0 - Finished reading query, closing connection  
2025-05-16 16:50:47.940 - datos cuando.0 - Finished processing (I=28, O=0, R=0, W=28, U=0, E=0)  
2025-05-16 16:50:47.949 - Table output.0 - Finished processing (I=0, O=28, R=28, W=28, U=0, E=0)  
2025-05-16 16:50:47.951 - Spoon - The transformation has finished!!

Spoon - obtain\_dim\_cuando\_salamanca

File Edit View Action Tools Help

Connect

create\_ft\_salamanca create\_dim\_donde\_salamanca create\_dim\_cuando\_salamanca tabla\_plana obtain\_dim\_donde\_salamanca obtain\_dim\_cuando\_salamanca generar\_ft\_salamanca

View Design

Search

- > Input
- > Output
- > Streaming
- > Transform
- > Utility
- > Flow
- > Scripting
- > Pentaho Server
- > Lookup
- > Joins
- > Data Warehouse
- > Validation
- > Statistics
- > Big Data
- > Cryptography
- > Job
- > Mapping
- > Bulk loading
- > Inline
- > Experimental
- > Legacy
- > Deprecated
- > History

datos cuando

Table output

**Execution Results**

Logging Execution History Step Metrics Performance Graph Metrics Preview data

☒ First rows ☐ Last rows ☐ Off

#	periodo
1	1996
2	1998
3	1999
4	2000
5	2001
6	2002
7	2003
8	2004
9	2005
1..	2006
1..	2007
1..	2008
1..	2009
1..	2010
1..	2011

- Modifica el trabajo de manera que se puedan ejecutar repetidas veces las transformaciones sin que se tengan en cuenta los resultados de las ejecuciones anterior

The screenshot displays the Pentaho Spoon interface for an ETL job named 'generar\_ft\_salamanca'. The job design view shows a sequence of transformations: Start, create ft\_salamanca, create dim\_donde, create dim\_cuando, tabla\_plana, obtain dim\_donde, and obtain dim\_cuando. The execution results pane shows a log of the job's execution, including timestamps and status messages for each transformation.

**Execution Results**

Logging | History | Job metrics | Metrics

2025-05-16 17:00:29.006 - Merge join.0 - Finished processing (I=0, O=0, R=10145, W=10136, U=0, E=0)  
2025-05-16 17:00:29.031 - Sort rows 3.0 - Finished processing (I=0, O=0, R=10136, W=10136, U=0, E=0)  
2025-05-16 17:00:29.354 - Merge join 2.0 - Finished processing (I=0, O=0, R=18267, W=10136, U=0, E=0)  
2025-05-16 17:00:29.357 - nivel\_habitantes.0 - Finished processing (I=0, O=0, R=10136, W=10136, U=0, E=0)  
2025-05-16 17:00:29.370 - Select values.0 - Finished processing (I=0, O=0, R=10136, W=10136, U=0, E=0)  
2025-05-16 17:00:29.388 - Table output.0 - Finished processing (I=0, O=10136, R=10136, W=10136, U=0, E=0)  
2025-05-16 17:00:29.391 - generar\_ft\_salamanca - Starting entry [obtain dim\_donde]  
2025-05-16 17:00:29.401 - obtain dim\_donde - Using run configuration [Pentaho local]  
2025-05-16 17:00:29.401 - obtain\_dim\_donde\_salamanca - Dispatching started for transformation [obtain\_dim\_donde\_salamanca]  
2025-05-16 17:00:29.403 - Table output.0 - Connected to database [salamanca-mabilia] (commit=1000)  
2025-05-16 17:00:29.487 - datos donde.0 - Finished reading query, closing connection  
2025-05-16 17:00:29.488 - datos donde.0 - Finished processing (I=512, O=0, R=0, W=512, U=0, E=0)  
2025-05-16 17:00:29.505 - Table output.0 - Finished processing (I=0, O=512, R=512, W=512, U=0, E=0)  
2025-05-16 17:00:29.508 - generar\_ft\_salamanca - Starting entry [obtain dim\_cuando]  
2025-05-16 17:00:29.516 - obtain dim\_cuando - Using run configuration [Pentaho local]  
2025-05-16 17:00:29.516 - obtain\_dim\_cuando\_salamanca - Dispatching started for transformation [obtain\_dim\_cuando\_salamanca]  
2025-05-16 17:00:29.518 - Table output.0 - Connected to database [salamanca-mabilia] (commit=1000)  
2025-05-16 17:00:29.591 - datos cuando.0 - Finished reading query, closing connection  
2025-05-16 17:00:29.593 - datos cuando.0 - Finished processing (I=28, O=0, R=0, W=28, U=0, E=0)  
2025-05-16 17:00:29.608 - Table output.0 - Finished processing (I=0, O=28, R=28, W=28, U=0, E=0)  
2025-05-16 17:00:29.609 - generar\_ft\_salamanca - Finished job entry [obtain dim\_cuando] (result=[true])  
2025-05-16 17:00:29.609 - generar\_ft\_salamanca - Finished job entry [obtain dim\_donde] (result=[true])  
2025-05-16 17:00:29.609 - generar\_ft\_salamanca - Finished job entry [tabla\_plana] (result=[true])  
2025-05-16 17:00:29.609 - generar\_ft\_salamanca - Finished job entry [create dim\_cuando] (result=[true])  
2025-05-16 17:00:29.609 - generar\_ft\_salamanca - Finished job entry [create dim\_donde] (result=[true])  
2025-05-16 17:00:29.610 - generar\_ft\_salamanca - Finished job entry [create ft\_salamanca] (result=[true])  
2025-05-16 17:00:29.610 - generar\_ft\_salamanca - Job execution finished  
2025-05-16 17:00:29.610 - Spoon - Job has ended.

## Ejercicio 3.4

Para los hechos:

- Define la transformación para crear la tabla de hechos con sus las llaves externas y las mediciones, usando criterios de nomenclatura como los mostrados en este apartado (muestra el resultado de su ejecución).

The screenshot displays the Pentaho Spoon interface for a transformation named 'fact\_padron\_salamanca'. The left sidebar shows a tree view of transformation components, including Input, Output, Streaming, Transform, Utility, Flow, Scripting, Pentaho Server, Lookup, Joins, Data Warehouse, Validation, Statistics, Big Data, Cryptography, Job, Mapping, Bulk loading, Inline, Experimental, Legacy, Deprecated, and History. The main workspace shows the transformation design with the following steps: 'Table input' (green checkmark), 'lookup donde' (green checkmark), 'lookup cuando' (green checkmark), 'Select values' (green checkmark), and 'Table output' (green checkmark). The 'Execution Results' pane at the bottom shows the following log entries:

```
2025-05-17 07:26:37.713 - Spoon - Transformation opened.
2025-05-17 07:26:37.713 - Spoon - Launching transformation [fact_padron_salamanca]...
2025-05-17 07:26:37.714 - Spoon - Started the transformation execution.
2025-05-17 07:26:38.235 - fact_padron_salamanca - Dispatching started for transformation [fact_padron_salamanca]
2025-05-17 07:26:38.245 - Table output.0 - Connected to database [salamanca-mabilia] (commit=1000)
2025-05-17 07:26:39.555 - Table input.0 - Finished reading query, closing connection
2025-05-17 07:26:39.557 - Table input.0 - Finished processing (I=10136, O=0, R=0, W=10136, U=0, E=0)
2025-05-17 07:26:41.381 - lookup donde.0 - Finished processing (I=10136, O=0, R=10136, W=10136, U=0, E=0)
2025-05-17 07:26:41.398 - lookup cuando.0 - Finished processing (I=10136, O=0, R=10136, W=10136, U=0, E=0)
2025-05-17 07:26:41.411 - Select values.0 - Finished processing (I=0, O=0, R=10136, W=10136, U=0, E=0)
2025-05-17 07:26:41.487 - Table output.0 - Finished processing (I=0, O=10136, R=10136, W=10136, U=0, E=0)
2025-05-17 07:26:41.489 - Spoon - The transformation has finished!!
```



Spoon - fact\_padron\_salamanca

File Edit View Action Tools Help

Connect

View Design

Search

- > Input
- > Output
- > Streaming
- > Transform
- > Utility
- > Flow
- > Scripting
- > Pentaho Server
- > Lookup
- > Joins
- > Data Warehouse
- > Validation
- > Statistics
- > Big Data
- > Cryptography
- > Job
- > Mapping
- > Bulk loading
- > Inline
- > Experimental
- > Legacy
- > Deprecated
- > History

Table input → lookup donde → lookup cuando → Table output

Select values

**Execution Results**

Logging Execution History Step Metrics Performance Graph Metrics Preview data

First rows Last rows Off

#	mujeres	hombres	superficie_ha	donde_key	cuando_key
1	141	139	2310,0	1	1
2	139	131	2310,0	1	2
3	138	131	2310,0	1	3
4	130	126	2310,0	1	4
5	127	126	2310,0	1	5
6	126	124	2310,0	1	6
7	124	126	2310,0	1	7
8	123	126	2310,0	1	8
9	125	131	2310,0	1	9
1..	120	133	2310,0	1	10
1..	121	128	2310,0	1	11
1..	119	125	2310,0	1	12
1..	113	123	2310,0	1	13
1..	120	134	2310,0	1	14
1..	113	123	2310,0	1	15
1..	111	122	2310,0	1	16

The screenshot displays the Pentaho Spoon IDE interface. The title bar reads "Spoon - create fact\_padron". The menu bar includes "File", "Edit", "View", "Action", "Tools", and "Help". The left sidebar shows a "View" tab with a "Design" sub-tab, and a search bar. Below the search bar is a tree view of categories: Input, Output, Streaming, Transform, Utility, Flow, Scripting, Pentaho Server, Lookup, Joins, Data Warehouse, Validation, Statistics, Big Data, Cryptography, Job, Mapping, Bulk loading, Inline, Experimental, Legacy, Deprecated, and History. The main workspace shows a single transformation named "create fact\_padron" with a green checkmark icon. The "Execution Results" tab is active, showing a log of events. The log entries are as follows:

- 2025-05-18 16:39:31.522 - Spoon - Transformation opened.
- 2025-05-18 16:39:31.522 - Spoon - Launching transformation [obtain donde\_salamanca]...
- 2025-05-18 16:39:31.522 - Spoon - Started the transformation execution.
- 2025-05-18 16:39:31.826 - Spoon - The transformation has finished!!
- 2025-05-18 16:47:58.578 - Spoon - Transformation opened.
- 2025-05-18 16:47:58.579 - Spoon - Launching transformation [create fact\_padron]...
- 2025-05-18 16:47:58.579 - Spoon - Started the transformation execution.
- 2025-05-18 16:47:59.436 - create fact\_padron - Dispatching started for transformation [create fact\_padron]
- 2025-05-18 16:47:59.540 - create fact\_padron.0 - Finished reading query, closing connection.
- 2025-05-18 16:47:59.540 - create fact\_padron.0 - Finished processing (I=0, O=0, R=0, W=1, U=0, E=0)
- 2025-05-18 16:47:59.541 - Spoon - The transformation has finished!!

- Modifica el trabajo de manera que se puedan ejecutar repetidas veces las transformaciones sin que se tengan en cuenta los resultados de las ejecuciones anteriores.

The screenshot displays the Spoon - generar\_ft\_salamanca window. The top menu bar includes File, Edit, View, Action, Tools, and Help. Below the menu is a toolbar with icons for file operations and a 'Connect' button. The left sidebar shows a tree view of the job structure under 'Jobs' > 'generar\_ft\_salamanca', including Run configurations, Database connections, Job entries, Slave server, and VFS Connections.

The main design area shows a job flow starting with a 'Start' node, followed by a sequence of transformation nodes: 'create\_ft\_salamanca', 'create fact\_padron', 'create dim\_donde', 'create dim\_cuando', 'tabla\_plana', 'obtain dim\_donde', 'obtain dim\_cuando', 'obtain fact\_padron', and finally 'create dim\_cuando' again. Each node is marked with a green checkmark, indicating successful execution.

The bottom section, titled 'Execution Results', contains a log of the job's execution. The log entries are as follows:

```
2025-05-18 11:47:36.045 - Table output.0 - Connected to database [salamanca-mabilia] (commit=1000)
2025-05-18 11:47:36.256 - datos cuando.0 - Finished reading query, closing connection
2025-05-18 11:47:36.258 - datos cuando.0 - Finished processing (I=28, O=0, R=0, W=28, U=0, E=0)
2025-05-18 11:47:36.264 - Table output.0 - Finished processing (I=0, O=28, R=28, W=28, U=0, E=0)
2025-05-18 11:47:36.266 - generar_ft_salamanca - Starting entry [obtain fact_padron]
2025-05-18 11:47:36.293 - obtain fact_padron - Using run configuration [Pentaho local]
2025-05-18 11:47:36.295 - fact_padron_salamanca - Dispatching started for transformation [fact_padron_salamanca]
2025-05-18 11:47:36.299 - Table output.0 - Connected to database [salamanca-mabilia] (commit=1000)
2025-05-18 11:47:36.501 - Table input.0 - Finished reading query, closing connection
2025-05-18 11:47:36.502 - Table input.0 - Finished processing (I=10136, O=0, R=0, W=10136, U=0, E=0)
2025-05-18 11:47:37.662 - lookup donde.0 - Finished processing (I=10136, O=0, R=10136, W=10136, U=0, E=0)
2025-05-18 11:47:37.672 - lookup cuando.0 - Finished processing (I=10136, O=0, R=10136, W=10136, U=0, E=0)
2025-05-18 11:47:37.678 - Select values.0 - Finished processing (I=0, O=0, R=10136, W=10136, U=0, E=0)
2025-05-18 11:47:37.691 - Table output.0 - Finished processing (I=0, O=10136, R=10136, W=10136, U=0, E=0)
2025-05-18 11:47:37.693 - generar_ft_salamanca - Finished job entry [obtain fact_padron] (result=[true])
2025-05-18 11:47:37.693 - generar_ft_salamanca - Finished job entry [obtain dim_cuando] (result=[true])
2025-05-18 11:47:37.693 - generar_ft_salamanca - Finished job entry [obtain dim_donde] (result=[true])
2025-05-18 11:47:37.693 - generar_ft_salamanca - Finished job entry [tabla_plana] (result=[true])
2025-05-18 11:47:37.694 - generar_ft_salamanca - Finished job entry [create dim_cuando] (result=[true])
2025-05-18 11:47:37.694 - generar_ft_salamanca - Finished job entry [create dim_donde] (result=[true])
2025-05-18 11:47:37.694 - generar_ft_salamanca - Finished job entry [create fact_padron] (result=[true])
2025-05-18 11:47:37.694 - generar_ft_salamanca - Finished job entry [create ft_salamanca] (result=[true])
2025-05-18 11:47:37.694 - generar_ft_salamanca - Job execution finished
2025-05-18 11:47:37.695 - Spoon - Job has ended.
```

## Ejercicio 3.5

Obtener una BD OLAP:

- Crea una nueva BD *PostgreSQL* cuyo nombre sea el nombre de la provincia asignada y el sufijo “\_olap” (p.e., en mi caso se llamará *granada\_olap*).
- Define las transformaciones necesarias para incluir en la nueva BD solo las tablas de hechos y de dimensiones, renombrándolas para que su nombre sea “padron\_”, “cuando\_” y “donde\_”, y el sufijo del nombre de la provincia de manera que estas transformaciones se ejecuten siempre junto a las transformaciones definidas anteriormente.

The screenshot displays the Pentaho Spoon interface for a job named "create salamanca\_olap". The job is composed of three transformations connected in a sequence: "create padron\_salamanca", "create dim\_donde", and "create dim\_cuando". Each transformation icon has a green checkmark, indicating successful execution. The "Execution Results" pane at the bottom provides a detailed log of the job's execution, including timestamps and status messages for each step.

**Execution Results Log:**

- 2025-05-18 15:45:02.815 - Spoon - Transformation opened.
- 2025-05-18 15:45:02.815 - Spoon - Launching transformation [create salamanca\_olap]...
- 2025-05-18 15:45:02.815 - Spoon - Started the transformation execution.
- 2025-05-18 15:45:03.553 - create salamanca\_olap - Dispatching started for transformation [create salamanca\_olap]
- 2025-05-18 15:45:03.686 - create padron\_salamanca.0 - Finished reading query, closing connection.
- 2025-05-18 15:45:03.686 - create dim\_donde.0 - Finished reading query, closing connection.
- 2025-05-18 15:45:03.686 - create dim\_cuando.0 - Finished reading query, closing connection.
- 2025-05-18 15:45:03.687 - create padron\_salamanca.0 - Finished processing (I=0, O=0, R=0, W=1, U=0, E=0)
- 2025-05-18 15:45:03.687 - create dim\_donde.0 - Finished processing (I=0, O=0, R=0, W=1, U=0, E=0)
- 2025-05-18 15:45:03.687 - create dim\_cuando.0 - Finished processing (I=0, O=0, R=0, W=1, U=0, E=0)
- 2025-05-18 15:45:03.688 - Spoon - The transformation has finished!!

Spoon - obtain cuando\_salamanca

File Edit View Action Tools Help

View Design

Search

- > Input
- > Output
- > Streaming
- > Transform
- > Utility
- > Flow
- > Scripting
- > Pentaho Server
- > Lookup
- > Joins
- > Data Warehouse
- > Validation
- > Statistics
- > Big Data
- > Cryptography
- > Job
- > Mapping
- > Bulk loading
- > Inline
- > Experimental
- > Legacy
- > Deprecated
- > History

generar\_ft\_salamanca generar\_salamanca\_olap obtain padron\_salamanca create salamanca\_... obtain cuando\_sal...

datos cuando → Table output

**Execution Results**

Logging Execution History Step Metrics Performance Graph Metrics Preview data

2025-05-18 15:45:02.815 - Spoon - Transformation opened.  
2025-05-18 15:45:02.815 - Spoon - Launching transformation [create salamanca\_olap]...  
2025-05-18 15:45:02.815 - Spoon - Started the transformation execution.  
2025-05-18 15:45:03.688 - Spoon - The transformation has finished!!  
2025-05-18 15:46:49.484 - Spoon - Transformation opened.  
2025-05-18 15:46:49.484 - Spoon - Launching transformation [obtain cuando\_salamanca]...  
2025-05-18 15:46:49.485 - Spoon - Started the transformation execution.  
2025-05-18 15:46:50.237 - obtain cuando\_salamanca - Dispatching started for transformation [obtain cuando\_salamanca]  
2025-05-18 15:46:50.239 - Table output.0 - Connected to database [salamanca\_olap] (commit=1000)  
2025-05-18 15:46:50.426 - datos cuando.0 - Finished reading query, closing connection  
2025-05-18 15:46:50.427 - datos cuando.0 - Finished processing (I=28, O=0, R=0, W=28, U=0, E=0)  
2025-05-18 15:46:50.433 - Table output.0 - Finished processing (I=0, O=28, R=28, W=28, U=0, E=0)  
2025-05-18 15:46:50.435 - Spoon - The transformation has finished!!

The screenshot displays the Pentaho Data Integration (Spoon) application window titled "Spoon - obtain donde\_salamanca". The interface includes a menu bar (File, Edit, View, Action, Tools, Help), a toolbar, and a "Connect" button. On the left is a "View" pane with a "Design" tab and a search bar. Below the search bar is a tree view of transformation components: Input, Output, Streaming, Transform, Utility, Flow, Scripting, Pentaho Server, Lookup, Joins, Data Warehouse, Validation, Statistics, Big Data, Cryptography, Job, Mapping, Bulk loading, Inline, Experimental, Legacy, Deprecated, and History.

The main workspace shows a transformation design with two components: "datos donde" (an input component) and "Table output" (an output component), connected by a data flow arrow. Both components have a green checkmark icon above them. The workspace also features a toolbar with various icons and a "100%" zoom level.

Below the workspace is the "Execution Results" pane, which contains tabs for "Logging", "Execution History", "Step Metrics", "Performance Graph", "Metrics", and "Preview data". The "Logging" tab is selected, showing a list of log messages:

- 2025-05-18 15:45:02.815 - Spoon - Transformation opened.
- 2025-05-18 15:45:02.815 - Spoon - Launching transformation [create salamanca\_olap]...
- 2025-05-18 15:45:02.815 - Spoon - Started the transformation execution.
- 2025-05-18 15:45:03.688 - Spoon - The transformation has finished!!
- 2025-05-18 15:46:49.484 - Spoon - Transformation opened.
- 2025-05-18 15:46:49.484 - Spoon - Launching transformation [obtain cuando\_salamanca]...
- 2025-05-18 15:46:49.485 - Spoon - Started the transformation execution.
- 2025-05-18 15:46:50.435 - Spoon - The transformation has finished!!
- 2025-05-18 15:47:16.264 - Spoon - Transformation opened.
- 2025-05-18 15:47:16.264 - Spoon - Launching transformation [obtain donde\_salamanca]...
- 2025-05-18 15:47:16.264 - Spoon - Started the transformation execution.
- 2025-05-18 15:47:17.040 - obtain donde\_salamanca - Dispatching started for transformation [obtain donde\_salamanca]
- 2025-05-18 15:47:17.041 - Table output.0 - Connected to database [salamanca\_olap] (commit=1000)
- 2025-05-18 15:47:17.327 - datos donde.0 - Finished reading query, closing connection
- 2025-05-18 15:47:17.329 - datos donde.0 - Finished processing (I=512, O=0, R=0, W=512, U=0, E=0)
- 2025-05-18 15:47:17.370 - Table output.0 - Finished processing (I=0, O=512, R=512, W=512, U=0, E=0)
- 2025-05-18 15:47:17.371 - Spoon - The transformation has finished!!

Spoon - obtain padron\_salamanca

File Edit View Action Tools Help

View Design

Search

- > Input
- > Output
- > Streaming
- > Transform
- > Utility
- > Flow
- > Scripting
- > Pentaho Server
- > Lookup
- > Joins
- > Data Warehouse
- > Validation
- > Statistics
- > Big Data
- > Cryptography
- > Job
- > Mapping
- > Bulk loading
- > Inline
- > Experimental
- > Legacy
- > Deprecated
- > History

generar\_ft\_salamanca | generar\_salamanca\_olap | **obtain padron\_salamanca** | create salamanca\_... | obtain cuando\_sal... | obtain donde\_sala...

100%

```
graph LR; TI[Table input] --> LD[lookup donde]; LD --> LC[lookup cuando]; LC --> SV[Select values]; SV --> TO[Table output];
```

**Execution Results**

Logging | Execution History | Step Metrics | Performance Graph | Metrics | Preview data

2025-05-18 15:48:02.269 - Spoon - Transformation opened.

2025-05-18 15:48:02.269 - Spoon - Launching transformation [obtain padron\_salamanca]...

2025-05-18 15:48:02.269 - Spoon - Started the transformation execution.

2025-05-18 15:48:02.334 - obtain padron\_salamanca - Dispatching started for transformation [obtain padron\_salamanca]

2025-05-18 15:48:02.336 - Table output.0 - Connected to database [salamanca\_olap] (commit=1000)

2025-05-18 15:48:04.039 - Table input.0 - Finished reading query, closing connection

2025-05-18 15:48:04.039 - Table input.0 - Finished processing (I=10136, O=0, R=0, W=10136, U=0, E=0)

2025-05-18 15:48:05.371 - lookup donde.0 - Finished processing (I=10136, O=0, R=10136, W=10136, U=0, E=0)

2025-05-18 15:48:05.388 - lookup cuando.0 - Finished processing (I=10136, O=0, R=10136, W=10136, U=0, E=0)

2025-05-18 15:48:05.391 - Select values.0 - Finished processing (I=0, O=0, R=10136, W=10136, U=0, E=0)

2025-05-18 15:48:05.443 - Table output.0 - Finished processing (I=0, O=10136, R=10136, W=10136, U=0, E=0)

2025-05-18 15:48:05.445 - Spoon - The transformation has finished!!

pgAdmin 4

File Object Tools Edit View Window Help

Welcome public.cuando\_salamanca/salamanca\_olap/postgres@PostgreSQL 17 x public.donde\_sala... x public.padron\_sala... x

public.cuando\_salamanca/salamanca\_olap/postgres@Postgre...

100 rows

Query Query History

```
1 SELECT * FROM public.cuando_salamanca
2 ORDER BY cuando_key ASC LIMIT 100
```

Data Output Messages Notifications

Showing rows: 1 to 28 Page No: 1 of 1

	quando_key [PK] integer	periodo character varying (4)
1	1	1996
2	2	1998
3	3	1999
4	4	2000
5	5	2001
6	6	2002
7	7	2003
8	8	2004
9	9	2005
10	10	2006
11	11	2007
12	12	2008
13	13	2009
14	14	2010
15	15	2011
16	16	2012
17	17	2013
18	18	2014
19	19	2015
20	20	2016

Total rows: 28 Query complete 00:00:00.449 CRLF Ln 1, Col 1



## Diseño e Implementación del Cte. ETL - Pentaho Data Integration

pgAdmin 4

File Object Tools Edit View Window Help

Welcome public.cuando\_sal... x public.donde\_salamanca/salamanca\_olap/postgres@PostgreSQL 17 x public.padron\_sala...

public.donde\_salamanca/salamanca\_olap/postgres@PostgreSQL 17

100 rows

Query Query History

```

1 SELECT * FROM public.donde_salamanca
2 ORDER BY donde_key ASC LIMIT 100

```

Data Output Messages Notifications

Showing rows: 1 to 100 Page No: 1 of 1

	donde_key [PK] integer	cod_municipio character varying (5)	municipio character varying (40)	capital character varying (40)	comarca character varying (40)	provincia character varying (40)	comunidad_autonoma character varying (40)	nivel_altitud character varying (40)	nivel_habitantes character varying (40)
1	1	37001	Abusejo	Abusejo	Fuente de San Esteban	Salamanca	Castilla y Le...	4 - alto: 803 a menos de 1045 m.	2 -de 101 a 500 habitantes
2	2	37002	Agallas	Agallas	Ciudad Rodrigo	Salamanca	Castilla y Le...	4 - alto: 803 a menos de 1045 m.	2 -de 101 a 500 habitantes
3	3	37003	Ahigal de los Aceiteros	Ahigal de los Aceiteros	Vitigudino	Salamanca	Castilla y Le...	3 - medio: 556 a menos de 803 m.	2 -de 101 a 500 habitantes
4	4	37003	Ahigal de los Aceiteros	Ahigal de los Aceiteros	Vitigudino	Salamanca	Castilla y Le...	3 - medio: 556 a menos de 803 m.	1 -hasta 100 habitantes
5	5	37004	Ahigal de Villarino	Ahigal de Villarino	Vitigudino	Salamanca	Castilla y Le...	3 - medio: 556 a menos de 803 m.	1 -hasta 100 habitantes
6	6	37005	Alameda de Gardón, La	La Alameda de Gard...	Ciudad Rodrigo	Salamanca	Castilla y Le...	3 - medio: 556 a menos de 803 m.	1 -hasta 100 habitantes
7	7	37005	Alameda de Gardón, La	La Alameda de Gard...	Ciudad Rodrigo	Salamanca	Castilla y Le...	3 - medio: 556 a menos de 803 m.	2 -de 101 a 500 habitantes
8	8	37006	Alamedilla, La	La Alamedilla	Ciudad Rodrigo	Salamanca	Castilla y Le...	3 - medio: 556 a menos de 803 m.	2 -de 101 a 500 habitantes
9	9	37007	Alaraz	Alaraz	Pe...aranda de Bracamonte	Salamanca	Castilla y Le...	4 - alto: 803 a menos de 1045 m.	2 -de 101 a 500 habitantes
10	10	37007	Alaraz	Alaraz	Pe...aranda de Bracamonte	Salamanca	Castilla y Le...	4 - alto: 803 a menos de 1045 m.	3 -de 501 a 1.000 habitantes
11	11	37008	Alba de Tormes	Alba de Tormes	Alba de Tormes	Salamanca	Castilla y Le...	4 - alto: 803 a menos de 1045 m.	5 -de 5.001 a 10.000 habitantes
12	12	37008	Alba de Tormes	Alba de Tormes	Alba de Tormes	Salamanca	Castilla y Le...	4 - alto: 803 a menos de 1045 m.	4 -de 1.001 a 5.000 habitantes
13	13	37009	Alba de Yeltes	Alba de Yeltes	Ciudad Rodrigo	Salamanca	Castilla y Le...	3 - medio: 556 a menos de 803 m.	2 -de 101 a 500 habitantes
14	14	37010	Alberca, La	La Alberca	La Sierra	Salamanca	Castilla y Le...	4 - alto: 803 a menos de 1045 m.	4 -de 1.001 a 5.000 habitantes
15	15	37011	Alberguería de Argañán, La	La Alberguer...a de Arga...	Ciudad Rodrigo	Salamanca	Castilla y Le...	3 - medio: 556 a menos de 803 m.	1 -hasta 100 habitantes
16	16	37011	Alberguería de Argañán, La	La Alberguer...a de Arga...	Ciudad Rodrigo	Salamanca	Castilla y Le...	3 - medio: 556 a menos de 803 m.	2 -de 101 a 500 habitantes
17	17	37012	Alconada	Alconada	Pe...aranda de Bracamonte	Salamanca	Castilla y Le...	4 - alto: 803 a menos de 1045 m.	2 -de 101 a 500 habitantes
18	18	37013	Aldeacipreste	Aldeacipreste	La Sierra	Salamanca	Castilla y Le...	4 - alto: 803 a menos de 1045 m.	1 -hasta 100 habitantes
19	19	37013	Aldeacipreste	Aldeacipreste	La Sierra	Salamanca	Castilla y Le...	4 - alto: 803 a menos de 1045 m.	2 -de 101 a 500 habitantes

Total rows: 100 Query complete 00:00:00.392 CRLF Ln 1, Col 1

pgAdmin 4

File Object Tools Edit View Window Help

Welcome public.cuando\_sal... x public.donde\_sala... x public.padron\_salamanca/salamanca\_olap/postgres@PostgreSQL 17 x

public.padron\_salamanca/salamanca\_olap/postgres@Postgre...

100 rows

Query Query History

```

1 SELECT * FROM public.padron_salamanca
2 ORDER BY cuando_key ASC, donde_key ASC LIMIT 100
3

```

Data Output Messages Notifications

Showing rows: 1 to 100 Page No: 1 of 1

	mujeres integer	hombres integer	superficie_ha real	cuando_key [PK] integer	donde_key [PK] integer
1	141	139	2310	1	1
2	89	98	4461	1	2
3	107	109	2793	1	3
4	23	26	2411	1	5
5	97	87	3227	1	7
6	123	116	1934	1	8
7	338	360	4917	1	10
8	2355	2292	4651	1	12
9	157	151	2236	1	13
10	530	576	6073	1	14
11	101	107	3006	1	16
12	120	118	2126	1	17
13	125	151	3717	1	19
14	855	886	4618	1	20
15	211	223	4192	1	21
16	254	259	548	1	22
17	184	178	5564	1	24
18	53	50	1451	1	25
19	110	117	841	1	27
20	242	284	3284	1	28

Total rows: 100 Query complete 00:00:00.289 CRLF Ln 1, Col 1

- Al crear las tablas en la nueva BD, define las relaciones entre las tablas mediante las consultas siguientes (o por el medio que estimes oportuno pero que se ejecuten cada vez que se ejecute el trabajo).

Spoon - relaciones entre tablas

File Edit View Action Tools Help

View Design

Search

Input

Output

Streaming

Transform

Utility

Flow

Scripting

Pentaho Server

Lookup

Joins

Data Warehouse

Validation

Statistics

Big Data

Cryptography

Job

Mapping

Bulk loading

Inline

Experimental

Legacy

Deprecated

History

generar\_ft\_salamanca

generar\_salamanca\_olap

obtain padron\_salamanca

create salamanca\_olap

obtain cuando\_salamanca

obtain donde\_salamanca

relaciones entre tablas

Execute SQL script

Execution Results

Logging Execution History Step Metrics Performance Graph Metrics Preview data

2025-05-18 15:58:01.146 - Spoon - Transformation opened.

2025-05-18 15:58:01.146 - Spoon - Launching transformation [relaciones entre tablas]...

2025-05-18 15:58:01.146 - Spoon - Started the transformation execution.

2025-05-18 15:58:01.202 - relaciones entre tablas - Dispatching started for transformation [relaciones entre tablas]

2025-05-18 15:58:01.324 - Execute SQL script.0 - Finished reading query, closing connection.

2025-05-18 15:58:01.325 - Execute SQL script.0 - Finished processing (I=0, O=0, R=0, W=1, U=0, E=0)

2025-05-18 15:58:01.325 - Spoon - The transformation has finished!!

Execute SQL script

Step name Execute SQL script

Connection salamanca\_olap

SQL script to execute. (statements separated by ;) Question marks will be replaced by arguments.

```
ALTER TABLE padron_salamanca
ADD CONSTRAINT FK_cuando
FOREIGN KEY (cuando_key)
REFERENCES cuando_salamanca(cuando_key);

ALTER TABLE padron_salamanca
ADD CONSTRAINT FK_donde
FOREIGN KEY (donde_key)
REFERENCES donde_salamanca(donde_key);
```

Line 1 Column 0

Execute for each row? ☐

Execute as a single statement ☐

Variable substitution ☐

Bind parameters? ☐

Quote Strings? ☐

Parameters :

#	Field name to be used as argume
1	

Field to contain insert stats

Field to contain Update stats

Field to contain Delete stats

Field to contain Read stats

Help OK Cancel Get fields

Spoon - generar\_salamanca\_olap

File Edit View Action Tools Help

View Design

Search

- > General
- > Mail
- > File management
- > Conditions
- > Scripting
- > Bulk loading
- > XML
- > Utility
- > Repository
- > File transfer
- > File encryption

generar\_ft\_salamanca generar\_salamanca\_olap

100%

The diagram shows an ETL job flow starting with a 'Start' node, followed by 'create tables', 'obtain cuando\_salamanca', 'obtain donde\_salamanca', and 'obtain padron\_salamanca'. A branch from 'obtain padron\_salamanca' leads to 'relaciones entre tablas'.

Execution Results

Logging History Job metrics Metrics

2025-05-18 16:05:31.592 - obtain padron\_salamanca - Using run configuration [Pentaho local]  
2025-05-18 16:05:31.593 - obtain padron\_salamanca - Dispatching started for transformation [obtain padron\_salamanca]  
2025-05-18 16:05:31.598 - Table output.0 - Connected to database [salamanca\_olap] (commit=1000)  
2025-05-18 16:05:31.982 - Table input.0 - Finished reading query, closing connection  
2025-05-18 16:05:31.983 - Table input.0 - Finished processing (I=10136, O=0, R=0, W=10136, U=0, E=0)  
2025-05-18 16:05:33.301 - lookup donde.0 - Finished processing (I=10136, O=0, R=10136, W=10136, U=0, E=0)  
2025-05-18 16:05:33.314 - lookup cuando.0 - Finished processing (I=10136, O=0, R=10136, W=10136, U=0, E=0)  
2025-05-18 16:05:33.318 - Select values.0 - Finished processing (I=0, O=0, R=10136, W=10136, U=0, E=0)  
2025-05-18 16:05:33.335 - Table output.0 - Finished processing (I=0, O=10136, R=10136, W=10136, U=0, E=0)  
2025-05-18 16:05:33.337 - generar\_salamanca\_olap - Starting entry [relaciones entre tablas]  
2025-05-18 16:05:33.348 - relaciones entre tablas - Using run configuration [Pentaho local]  
2025-05-18 16:05:33.348 - relaciones entre tablas - Dispatching started for transformation [relaciones entre tablas]  
2025-05-18 16:05:33.603 - Execute SQL script.0 - Finished reading query, closing connection.  
2025-05-18 16:05:33.603 - Execute SQL script.0 - Finished processing (I=0, O=0, R=0, W=1, U=0, E=0)  
2025-05-18 16:05:33.606 - generar\_salamanca\_olap - Finished job entry [relaciones entre tablas] (result=[true])  
2025-05-18 16:05:33.606 - generar\_salamanca\_olap - Finished job entry [obtain padron\_salamanca] (result=[true])  
2025-05-18 16:05:33.606 - generar\_salamanca\_olap - Finished job entry [obtain donde\_salamanca] (result=[true])  
2025-05-18 16:05:33.607 - generar\_salamanca\_olap - Finished job entry [obtain cuando\_salamanca] (result=[true])  
2025-05-18 16:05:33.607 - generar\_salamanca\_olap - Finished job entry [create tables] (result=[true])  
2025-05-18 16:05:33.607 - generar\_salamanca\_olap - Job execution finished  
2025-05-18 16:05:33.608 - Spoon - Job has ended.

## Ejercicio 3.6

Una vez definido el proceso de transformación, realiza las siguientes modificaciones, para cada una, indica qué elementos se han visto afectados y qué modificaciones ha habido que hacer en ellos:

- Define en la dimensión *Dónde* un campo llamado `nivel_superficie` en función del campo `superficie_ha` (que debería ser de tipo real), con 3 niveles, con los límites que consideres oportunos según tu criterio (captura una pantalla de la definición y otra del resultado en la dimensión en la BD OLAP).

Para este apartado se ha modificado la transformación “*create salamanca\_olap*”, concretamente el paso de “*create donde\_salamanca*”. En él, he añadido una línea en la sentencia de creación de la tabla, CREATE TABLE, para definir el nuevo campo “*nivel\_superficie*”.

También he modificado la transformación “*obtain donde salamanca*”. En el paso de obtención de datos, he añadido el campo “*superficie\_ha*” al SELECT. A continuación, he añadido un paso de tipo “*formula*” que usa la siguiente formula:

```
IF([superficie_ha] < 1700 ; "Baja" ; IF([superficie_ha] < 4400 ; "Media" ; "Alta"))
```

Y después de este paso, he puesto uno de “*select values*” para eliminar el campo `superficie_ha`. Por último, conecto este último con el paso “*table output*”.

**Execution Results**

capital	comarca	provincia	comunidad_autonoma	nivel_altitud	nivel_habitantes	superficie_ha	nivel_superficie
Abusejo	Fuente de San Esteban	Salamanca	Castilla y León	4 - alto: 803 a menos de 1045 m.	2 - de 101 a 500 habitantes	2310,0	Media
Agallas	Ciudad Rodrigo	Salamanca	Castilla y León	4 - alto: 803 a menos de 1045 m.	2 - de 101 a 500 habitantes	4461,0	Alta

pgAdmin 4

File Object Tools Edit View Window Help

Welcome public.donde\_salamanca/salamanca\_olap/postgres@PostgreSQL 17 X

public.donde\_salamanca/salamanca\_olap/postgres@PostgreSQL 17 X

100 rows

Query Query History

```

1 SELECT * FROM public.donde_salamanca
2 ORDER BY donde_key ASC LIMIT 100

```

Data Output Messages Notifications

Showing rows: 1 to 100 Page No: 1 of 1

	provincia	municipio	capital	comarca	provincia	comunidad_autonoma	nivel_altitud	nivel_habitantes	nivel_superficie
	character varying (40)	character varying (40)	character varying (40)	character varying (40)	character varying (40)	character varying (40)	character varying (40)	character varying (40)	character varying (20)
1		Abusejo	Abusejo	Fuente de San Esteban	Salamanca	Castilla y Le	4 - alto: 803 a menos de 1045 m.	2 -de 101 a 500 habitantes	Media
2		Agallas	Agallas	Ciudad Rodrigo	Salamanca	Castilla y Le	4 - alto: 803 a menos de 1045 m.	2 -de 101 a 500 habitantes	Alta
3		Ahigal de los Aceiteros	Ahigal de los Aceiteros	Vitigudino	Salamanca	Castilla y Le	3 - medio: 556 a menos de 803 m.	2 -de 101 a 500 habitantes	Media
4		Ahigal de los Aceiteros	Ahigal de los Aceiteros	Vitigudino	Salamanca	Castilla y Le	3 - medio: 556 a menos de 803 m.	1 -hasta 100 habitantes	Media
5		Ahigal de Villarino	Ahigal de Villarino	Vitigudino	Salamanca	Castilla y Le	3 - medio: 556 a menos de 803 m.	1 -hasta 100 habitantes	Media
6		Alameda de Gardón, La	La Alameda de Gardón	Ciudad Rodrigo	Salamanca	Castilla y Le	3 - medio: 556 a menos de 803 m.	2 -de 101 a 500 habitantes	Media
7		Alameda de Gardón, La	La Alameda de Gardón	Ciudad Rodrigo	Salamanca	Castilla y Le	3 - medio: 556 a menos de 803 m.	1 -hasta 100 habitantes	Media
8		Alamedilla, La	La Alamedilla	Ciudad Rodrigo	Salamanca	Castilla y Le	3 - medio: 556 a menos de 803 m.	2 -de 101 a 500 habitantes	Media
9		Alaraz	Alaraz	Peñaranda de Bracamonte	Salamanca	Castilla y Le	4 - alto: 803 a menos de 1045 m.	3 -de 501 a 1.000 habitantes	Alta
10		Alaraz	Alaraz	Peñaranda de Bracamonte	Salamanca	Castilla y Le	4 - alto: 803 a menos de 1045 m.	2 -de 101 a 500 habitantes	Alta
11		Alba de Tormes	Alba de Tormes	Alba de Tormes	Salamanca	Castilla y Le	4 - alto: 803 a menos de 1045 m.	5 -de 5.001 a 10.000 habitantes	Alta
12		Alba de Tormes	Alba de Tormes	Alba de Tormes	Salamanca	Castilla y Le	4 - alto: 803 a menos de 1045 m.	4 -de 1.001 a 5.000 habitantes	Alta
13		Alba de Yeltes	Alba de Yeltes	Ciudad Rodrigo	Salamanca	Castilla y Le	3 - medio: 556 a menos de 803 m.	2 -de 101 a 500 habitantes	Media
14		Alberca, La	La Alberca	La Sierra	Salamanca	Castilla y Le	4 - alto: 803 a menos de 1045 m.	4 -de 1.001 a 5.000 habitantes	Alta
15		Alberguería de Argañán, La	La Alberguería de Argañán	Ciudad Rodrigo	Salamanca	Castilla y Le	3 - medio: 556 a menos de 803 m.	1 -hasta 100 habitantes	Media
16		Alberguería de Argañán, La	La Alberguería de Argañán	Ciudad Rodrigo	Salamanca	Castilla y Le	3 - medio: 556 a menos de 803 m.	2 -de 101 a 500 habitantes	Media
17		Alconada	Alconada	Peñaranda de Bracamonte	Salamanca	Castilla y Le	4 - alto: 803 a menos de 1045 m.	2 -de 101 a 500 habitantes	Media
18		Aldeacipreste	Aldeacipreste	La Sierra	Salamanca	Castilla y Le	4 - alto: 803 a menos de 1045 m.	2 -de 101 a 500 habitantes	Media
19		Aldeacipreste	Aldeacipreste	La Sierra	Salamanca	Castilla y Le	4 - alto: 803 a menos de 1045 m.	1 -hasta 100 habitantes	Media

Total rows: 100 Query complete 00:00:00.119 CRLF Ln 1, Col 1

- Define en la dimensión *Cuándo* un campo llamado *decenio* de manera que a cada año le correspondan las tres primeras cifras seguidas de un cero (captura una pantalla de la definición y otra del resultado en la dimensión en la BD OLAP).

Para este apartado se ha modificado la transformación “*create salamanca\_olap*”, concretamente el paso de “*create cuando\_salamanca*”. En él, he añadido una línea en la sentencia de creación de la tabla, CREATE TABLE, para definir el nuevo campo “*decenio*”.

También he modificado la transformación “*obtain cuando salamanca*”. En el paso de obtención de datos, he añadido un paso de tipo “*formula*” que usa la siguiente fórmula:

$$\text{INT}([\text{año}] / 10) * 10$$

Y conecto este último con el paso “*table output*”.

The screenshot displays the Pentaho Data Integration (Spoon) interface. The main window shows the 'obtain cuando\_salamanca' transformation with three steps: 'datos cuando', 'Formula', and 'Table output'. The 'Execution Results' pane at the bottom shows a table with two columns: 'periodo' and 'decenio'. The 'Formula' dialog box is open, showing the formula 'INT([periodo] / 10) \* 10' for a new field named 'decenio'.

#	periodo	decenio
1	1996	1990
2	1998	1990
3	1999	1990
4	2000	2000
5	2001	2000
6	2002	2000
7	2003	2000
8	2004	2000
9	2005	2000
1..	2006	2000
1..	2007	2000
1..	2008	2000
1..	2009	2000
1..	2010	2010

#	New field	Formula	Value type	Length	Precision	Replace value
1	decenio	INT([periodo] / 10) * 10	Integer	4		

pgAdmin 4

File Object Tools Edit View Window Help

Welcome public.cuando\_salamanca/salamanca\_olap/postgres@PostgreSQL 17 X

public.cuando\_salamanca/salamanca\_olap/postgres@Postgre...

100 rows

Query Query History

```
1 SELECT * FROM public.cuando_salamanca
2 ORDER BY cuando_key ASC LIMIT 100
```

Data Output Messages Notifications

Showing rows: 1 to 28 Page No: 1 of 1

	quando_key [PK] integer	periodo character varying (4)	decenio integer
1	1	1996	1990
2	2	1998	1990
3	3	1999	1990
4	4	2000	2000
5	5	2001	2000
6	6	2002	2000
7	7	2003	2000
8	8	2004	2000
9	9	2005	2000
10	10	2006	2000
11	11	2007	2000
12	12	2008	2000
13	13	2009	2000
14	14	2010	2010
15	15	2011	2010
16	16	2012	2010
17	17	2013	2010
18	18	2014	2010
19	19	2015	2010
20	20	2016	2010

✓ Successfully run. Total query runtime: 122 msec. 28 rows affected. ✕

✓ Pos

Total rows: 28 Query complete 00:00:00.122 CRLF Ln 1, Col 1



## Ejercicio 3.7

Re-estructura el contenido de los trabajos de manera que tengamos:

- Un trabajo principal llamado “transformar\_” y el nombre de la provincia (p.e., en mi caso transformar\_granada). Ese trabajo organice la ejecución del resto de trabajos.

The screenshot displays the Pentaho Spoon IDE interface. The top menu bar includes File, Edit, View, Action, Tools, and Help. The left sidebar shows a tree view of job components: General (Start, Dummy, Job, Set variables, Success, Transformation), Mail, File management, Conditions, Scripting, Bulk loading, XML, Utility, Repository, File transfer, and File encryption. The main workspace shows a job design with the following steps: Start, generar\_ft\_salamanca, generar\_dm\_salamanca, exportar\_olap\_salamanca, and Success. The bottom pane shows the 'Execution Results' tab, which contains a detailed log of the job's execution. The log includes timestamps and status messages for various steps, such as 'obtain padron\_salamanca', 'generar\_salamanca\_olap', and 'transformar\_salamanca'. The job is marked as 'Success'.

**Execution Results**

Logging History Job metrics Metrics

2025-05-19 07:59:40.834 - obtain padron\_salamanca - Dispatching started for transformation [obtain padron\_salamanca]  
2025-05-19 07:59:40.840 - Table output.0 - Connected to database [salamanca\_olap] (commit=1000)  
2025-05-19 07:59:41.425 - Table input.0 - Finished reading query, closing connection  
2025-05-19 07:59:41.427 - Table input.0 - Finished processing (I=10136, O=0, R=0, W=10136, U=0, E=0)  
2025-05-19 07:59:42.796 - lookup donde.0 - Finished processing (I=10136, O=0, R=10136, W=10136, U=0, E=0)  
2025-05-19 07:59:42.811 - lookup cuando.0 - Finished processing (I=10136, O=0, R=10136, W=10136, U=0, E=0)  
2025-05-19 07:59:42.816 - Select values.0 - Finished processing (I=0, O=0, R=10136, W=10136, U=0, E=0)  
2025-05-19 07:59:42.837 - Table output.0 - Finished processing (I=0, O=10136, R=10136, W=10136, U=0, E=0)  
2025-05-19 07:59:42.840 - generar\_salamanca\_olap - Starting entry [relaciones entre tablas]  
2025-05-19 07:59:42.856 - relaciones entre tablas - Using run configuration [Pentaho local]  
2025-05-19 07:59:42.857 - relaciones entre tablas - Dispatching started for transformation [relaciones entre tablas]  
2025-05-19 07:59:43.011 - Execute SQL script.0 - Finished reading query, closing connection.  
2025-05-19 07:59:43.013 - Execute SQL script.0 - Finished processing (I=0, O=0, R=0, W=1, U=0, E=0)  
2025-05-19 07:59:43.015 - generar\_salamanca\_olap - Finished job entry [relaciones entre tablas] (result=[true])  
2025-05-19 07:59:43.016 - generar\_salamanca\_olap - Finished job entry [obtain padron\_salamanca] (result=[true])  
2025-05-19 07:59:43.016 - generar\_salamanca\_olap - Finished job entry [obtain donde\_salamanca] (result=[true])  
2025-05-19 07:59:43.017 - generar\_salamanca\_olap - Finished job entry [obtain cuando\_salamanca] (result=[true])  
2025-05-19 07:59:43.017 - generar\_salamanca\_olap - Finished job entry [create tables] (result=[true])  
2025-05-19 07:59:43.020 - transformar\_salamanca - Starting entry [Success]  
2025-05-19 07:59:43.021 - transformar\_salamanca - Finished job entry [Success] (result=[true])  
2025-05-19 07:59:43.022 - transformar\_salamanca - Finished job entry [exportar\_olap\_salamanca] (result=[true])  
2025-05-19 07:59:43.022 - transformar\_salamanca - Finished job entry [generar\_dm\_salamanca] (result=[true])  
2025-05-19 07:59:43.023 - transformar\_salamanca - Finished job entry [generar\_ft\_salamanca] (result=[true])  
2025-05-19 07:59:43.023 - transformar\_salamanca - Job execution finished  
2025-05-19 07:59:43.024 - Spoon - Job has ended.

- El trabajo llamado “generar\_ft\_” y el nombre de la provincia (p.e., en mi caso generar\_ft\_granada) que genere la tabla plana a partir de todos los datos de inicio.

The screenshot displays the Pentaho Spoon interface for a job named "generar\_ft\_salamanca". The interface includes a menu bar (File, Edit, View, Action, Tools, Help), a toolbar, and a "Connect" button. On the left, a "View" pane shows a tree structure of job components: General (Start, Dummy, Job, Set variables, Success, Transformation), Mail, File management, Conditions, Scripting, Bulk loading, XML, Utility, Repository, File transfer, and File encryption. The main workspace shows a job design with three steps: "Start", "create ft\_salamanca", and "tabla\_plana", connected by arrows. Below the design, the "Execution Results" pane is active, showing a log of the job's execution. The log includes timestamps and details for each step, such as "Finished processing", "Header row skipped", and "Finished job entry".

**Execution Results**

Logging History Job metrics Metrics

2025-05-19 08:06:17.053 - create ft\_salamanca.0 - Finished reading query, closing connection.

2025-05-19 08:06:17.054 - create ft\_salamanca.0 - Finished processing (I=0, O=0, R=0, W=1, U=0, E=0)

2025-05-19 08:06:17.055 - generar\_ft\_salamanca - Starting entry [tabla\_plana]

2025-05-19 08:06:17.089 - tabla\_plana - Using run configuration [Pentaho local]

2025-05-19 08:06:17.089 - tabla\_plana - Dispatching started for transformation [tabla\_plana]

2025-05-19 08:06:17.096 - Table output.0 - Connected to database [salamanca-mabilia] (commit=1000)

2025-05-19 08:06:17.102 - Salamanca.0 - Header row skipped in file 'file:///C:/Users/Mabilia%20Rinelli/Downloads/2891.csv'

2025-05-19 08:06:17.103 - cod-habitantes.0 - Header row skipped in file 'file:///C:/Users/Mabilia%20Rinelli/Downloads/datos-comunes/datos-comunes/cod-habitantes.csv'

2025-05-19 08:06:17.103 - municipios.0 - Header row skipped in file 'file:///C:/Users/Mabilia%20Rinelli/Downloads/datos-comunes/datos-comunes/municipios.csv'

2025-05-19 08:06:17.104 - cod-habitantes.0 - Finished processing (I=10, O=0, R=0, W=9, U=0, E=0)

2025-05-19 08:06:17.136 - municipios.0 - Finished processing (I=8132, O=0, R=0, W=8131, U=0, E=0)

2025-05-19 08:06:17.139 - cod\_municipio.0 - Finished processing (I=0, O=0, R=8131, W=8131, U=0, E=0)

2025-05-19 08:06:17.148 - Sort rows 4.0 - Finished processing (I=0, O=0, R=8131, W=8131, U=0, E=0)

2025-05-19 08:06:17.156 - Salamanca.0 - Finished processing (I=31582, O=0, R=0, W=31581, U=0, E=0)

2025-05-19 08:06:17.177 - Seleccionar no-agregados.0 - Finished processing (I=0, O=0, R=31581, W=20996, U=0, E=0)

2025-05-19 08:06:17.181 - Eliminar Separador Miles.0 - Finished processing (I=0, O=0, R=20996, W=20996, U=0, E=0)

2025-05-19 08:06:17.185 - Seleccionar no-NULL.0 - Finished processing (I=0, O=0, R=20996, W=20996, U=0, E=0)

2025-05-19 08:06:17.233 - Sort rows.0 - Finished processing (I=0, O=0, R=20272, W=20272, U=0, E=0)

2025-05-19 08:06:17.252 - Row denormaliser.0 - Finished processing (I=0, O=0, R=20272, W=10136, U=0, E=0)

2025-05-19 08:06:17.257 - Calcular habitantes.0 - Finished processing (I=0, O=0, R=10136, W=10136, U=0, E=0)

2025-05-19 08:06:17.263 - cod\_habitantes.0 - Finished processing (I=0, O=0, R=10136, W=10136, U=0, E=0)

2025-05-19 08:06:17.267 - cod+municipio.0 - Finished processing (I=0, O=0, R=10136, W=10136, U=0, E=0)

2025-05-19 08:06:17.283 - Sort rows 2.0 - Finished processing (I=0, O=0, R=10136, W=10136, U=0, E=0)

2025-05-19 08:06:17.606 - Merge join.0 - Finished processing (I=0, O=0, R=10145, W=10136, U=0, E=0)

2025-05-19 08:06:17.639 - Sort rows 3.0 - Finished processing (I=0, O=0, R=10136, W=10136, U=0, E=0)

2025-05-19 08:06:18.017 - Merge join 2.0 - Finished processing (I=0, O=0, R=18267, W=10136, U=0, E=0)

2025-05-19 08:06:18.020 - nivel\_habitantes.0 - Finished processing (I=0, O=0, R=10136, W=10136, U=0, E=0)

2025-05-19 08:06:18.033 - Select values.0 - Finished processing (I=0, O=0, R=10136, W=10136, U=0, E=0)

2025-05-19 08:06:18.044 - Table output.0 - Finished processing (I=0, O=0, R=10136, W=10136, U=0, E=0)

2025-05-19 08:06:18.047 - generar\_ft\_salamanca - Finished job entry [tabla\_plana] (result=[true])

2025-05-19 08:06:18.047 - generar\_ft\_salamanca - Finished job entry [create ft\_salamanca] (result=[true])

2025-05-19 08:06:18.047 - generar\_ft\_salamanca - Job execution finished

2025-05-19 08:06:18.049 - Spoon - Job has ended.

- El trabajo llamado “generar\_dm\_” y el nombre de la provincia (p.e., en mi caso generar\_dm\_granada) que genere el esquema multidimensional a partir de la tabla plana.

The screenshot displays the Pentaho Spoon interface for a job named 'generar\_dm\_salamanca'. The left sidebar shows the 'General' tab with a search bar and a list of components including Start, Dummy, Job, Set variables, Success, Transformation, Mail, File management, Conditions, Scripting, Bulk loading, XML, Utility, Repository, File transfer, and File encryption.

The main workspace shows the job design, which consists of the following steps in sequence:

- Start
- create fact\_padron
- create dim\_donde
- create dim\_cuando
- obtain fact\_padron
- obtain dim\_cuando
- obtain dim\_donde

The 'Execution Results' tab is active, showing a log of the job's execution. The log includes the following entries:

- 2025-05-19 08:06:42.085 - generar\_dm\_salamanca - Starting entry [obtain dim\_cuando]
- 2025-05-19 08:06:42.097 - obtain dim\_cuando - Using run configuration [Pentaho local]
- 2025-05-19 08:06:42.098 - obtain\_dim\_cuando\_salamanca - Dispatching started for transformation [obtain\_dim\_cuando\_salamanca]
- 2025-05-19 08:06:42.099 - Table output.0 - Connected to database [salamanca-mabilia] (commit=1000)
- 2025-05-19 08:06:42.217 - datos cuando.0 - Finished reading query, closing connection
- 2025-05-19 08:06:42.217 - datos cuando.0 - Finished processing (I=28, O=0, R=0, W=28, U=0, E=0)
- 2025-05-19 08:06:42.224 - Table output.0 - Finished processing (I=0, O=28, R=28, W=28, U=0, E=0)
- 2025-05-19 08:06:42.226 - generar\_dm\_salamanca - Starting entry [obtain fact\_padron]
- 2025-05-19 08:06:42.246 - obtain fact\_padron - Using run configuration [Pentaho local]
- 2025-05-19 08:06:42.247 - fact\_padron\_salamanca - Dispatching started for transformation [fact\_padron\_salamanca]
- 2025-05-19 08:06:42.249 - Table output.0 - Connected to database [salamanca-mabilia] (commit=1000)
- 2025-05-19 08:06:42.559 - Table input.0 - Finished reading query, closing connection
- 2025-05-19 08:06:42.560 - Table input.0 - Finished processing (I=10136, O=0, R=0, W=10136, U=0, E=0)
- 2025-05-19 08:06:44.035 - lookup donde.0 - Finished processing (I=10136, O=0, R=10136, W=10136, U=0, E=0)
- 2025-05-19 08:06:44.048 - lookup cuando.0 - Finished processing (I=10136, O=0, R=10136, W=10136, U=0, E=0)
- 2025-05-19 08:06:44.053 - Select values.0 - Finished processing (I=0, O=0, R=10136, W=10136, U=0, E=0)
- 2025-05-19 08:06:44.073 - Table output.0 - Finished processing (I=0, O=10136, R=10136, W=10136, U=0, E=0)
- 2025-05-19 08:06:44.075 - generar\_dm\_salamanca - Finished job entry [obtain fact\_padron] (result=[true])
- 2025-05-19 08:06:44.075 - generar\_dm\_salamanca - Finished job entry [obtain dim\_cuando] (result=[true])
- 2025-05-19 08:06:44.075 - generar\_dm\_salamanca - Finished job entry [obtain dim\_donde] (result=[true])
- 2025-05-19 08:06:44.076 - generar\_dm\_salamanca - Finished job entry [create dim\_cuando] (result=[true])
- 2025-05-19 08:06:44.076 - generar\_dm\_salamanca - Finished job entry [create dim\_donde] (result=[true])
- 2025-05-19 08:06:44.076 - generar\_dm\_salamanca - Finished job entry [create fact\_padron] (result=[true])
- 2025-05-19 08:06:44.076 - generar\_dm\_salamanca - Job execution finished
- 2025-05-19 08:06:44.077 - Spoon - Job has ended.

- El trabajo llamado “exportar\_olap\_” y el nombre de la provincia (p.e., en mi caso exportar\_olap\_granada) que exporte el esquema multidimensional desde la BD de trabajo a la BD destinada a OLAP.

The screenshot displays the Pentaho Spoon interface for a job named 'exportar\_olap\_salamanca'. The left sidebar shows the 'General' category expanded, listing various job components like Start, Dummy, Job, Set variables, Success, Transformation, Mail, File management, Conditions, Scripting, Bulk loading, XML, Utility, Repository, File transfer, and File encryption. The main workspace shows the job design with the following steps: Start, create tables, obtain cuando\_salamanca, obtain donde\_salamanca, obtain padron\_salamanca, and relaciones entre tablas. The 'Execution Results' panel at the bottom shows a detailed log of the job's execution, including timestamps and status messages for each step.

**Execution Results**

Logging History Job metrics Metrics

2025-05-19 07:57:54.690 - Table input.0 - Finished processing (I=10136, O=0, R=0, W=10136, U=0, E=0)  
2025-05-19 07:57:56.227 - lookup donde.0 - Finished processing (I=10136, O=0, R=10136, W=10136, U=0, E=0)  
2025-05-19 07:57:56.243 - lookup cuando.0 - Finished processing (I=10136, O=0, R=10136, W=10136, U=0, E=0)  
2025-05-19 07:57:56.247 - Select values.0 - Finished processing (I=0, O=0, R=10136, W=10136, U=0, E=0)  
2025-05-19 07:57:56.281 - Table output.0 - Finished processing (I=0, O=10136, R=10136, W=10136, U=0, E=0)  
2025-05-19 07:57:56.284 - generar\_salamanca\_olap - Starting entry [relaciones entre tablas]  
2025-05-19 07:57:56.309 - relaciones entre tablas - Using run configuration [Pentaho local]  
2025-05-19 07:57:56.310 - relaciones entre tablas - Dispatching started for transformation [relaciones entre tablas]  
2025-05-19 07:57:56.463 - Execute SQL script.0 - Finished reading query, closing connection.  
2025-05-19 07:57:56.464 - Execute SQL script.0 - Finished processing (I=0, O=0, R=0, W=1, U=0, E=0)  
2025-05-19 07:57:56.466 - generar\_salamanca\_olap - Finished job entry [relaciones entre tablas] (result=[true])  
2025-05-19 07:57:56.466 - generar\_salamanca\_olap - Finished job entry [obtain padron\_salamanca] (result=[true])  
2025-05-19 07:57:56.467 - generar\_salamanca\_olap - Finished job entry [obtain donde\_salamanca] (result=[true])  
2025-05-19 07:57:56.467 - generar\_salamanca\_olap - Finished job entry [obtain cuando\_salamanca] (result=[true])  
2025-05-19 07:57:56.467 - generar\_salamanca\_olap - Finished job entry [create tables] (result=[true])  
2025-05-19 07:57:56.467 - generar\_salamanca\_olap - Job execution finished  
2025-05-19 07:57:56.468 - Spoon - Job has ended.  
2025-05-19 07:58:08.334 - Spoon - Starting job...  
2025-05-19 07:58:16.928 - Spoon - Job has ended.  
2025-05-19 07:58:55.812 - Spoon - Spoon  
2025-05-19 07:59:35.730 - Spoon - Starting job...  
2025-05-19 07:59:43.024 - Spoon - Job has ended.  
2025-05-19 08:06:16.941 - Spoon - Starting job...  
2025-05-19 08:06:18.049 - Spoon - Job has ended.  
2025-05-19 08:06:41.539 - Spoon - Starting job...  
2025-05-19 08:06:44.077 - Spoon - Job has ended.  
2025-05-19 08:07:26.385 - Spoon - Save file as...