Course:-MCAL13 Advanced Database Management System Lab

Practical – 04

Title: - Implementation of ETL transformation with Pentaho

Aim: - ETL Transformation with Pentaho.

Lab Objectives: -

Students will understand following concepts:

I. Copy data from Source (Table/Excel/ Oracle) and store it to Target (Table/Excel/ Oracle)

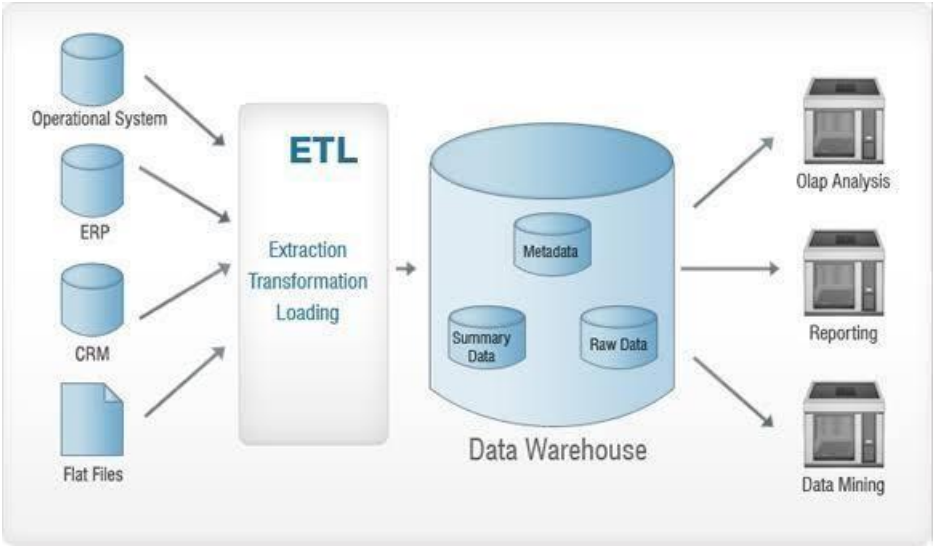
II. Adding sequence, Adding Calculator, Concatenation of two fields, Splitting of two fields

III. String Operations, Sorting data, Implement the merge join transformation on tables.

Description: -

Pentaho Data Integration(PDI)

It is a business Intelligence system (BI) Also
known as KETTLE.
Pentaho, a subsidiary of Hitachi Vantara, is free and open- source platform for data integration and analytics. The software comes in a free community edition and a subscription-based enterprise edition.
Pentaho Data Integration (PDI) is one of the most powerful tool for building ETL processes.
Founded in 2004 and Stable released on 9.1.0.0-324 / September 7, 2020.
Available for Windows, Linux, MAC OSX.
PDI is a java-based tool (Uses the Apache Java application server)



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PDI Architecture

Components of PDI (KETTLE)

Tool	Windows command	Linux/ MacOS command
Spoon is the graphical interface used to create transformations and jobs.	spoon.bat	spoon.sh
Pan is a batch-style command line tool used to run transformations	pan.bat	pan.sh
Kitchen is a batch-style command line tool used to run jobs.	Kitchen.bat	Kitchen.sh
Carte is a web server that can be used to run jobs on remote servers.	Carte.bat	Carte.sh

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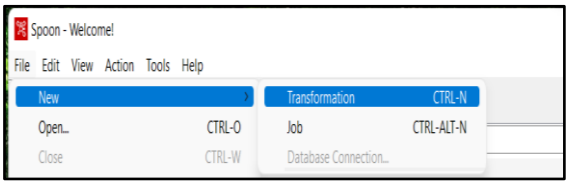
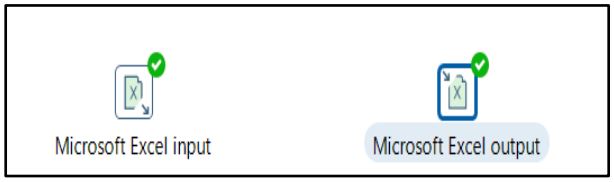
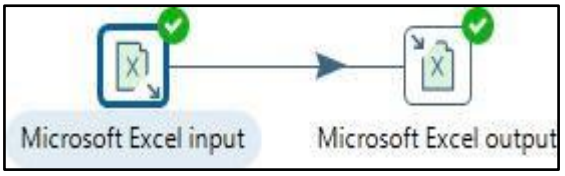
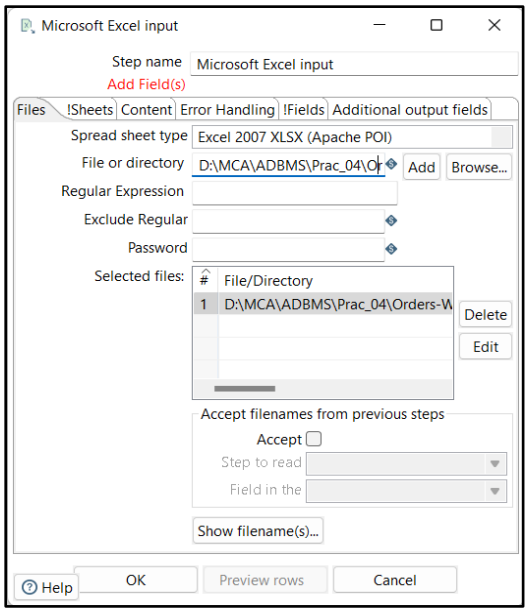
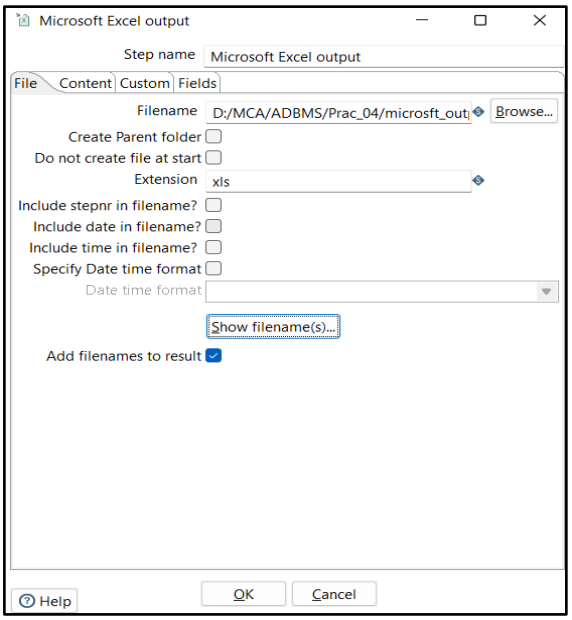
1) Copy data from Source (Table/Excel/ Oracle) and store it to Target











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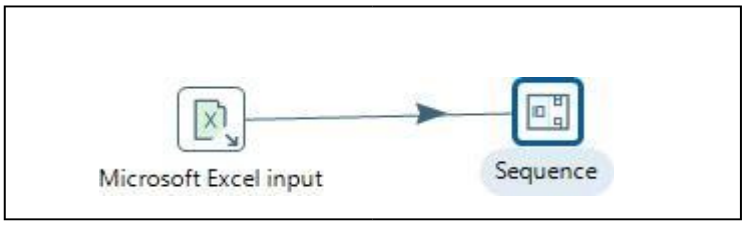
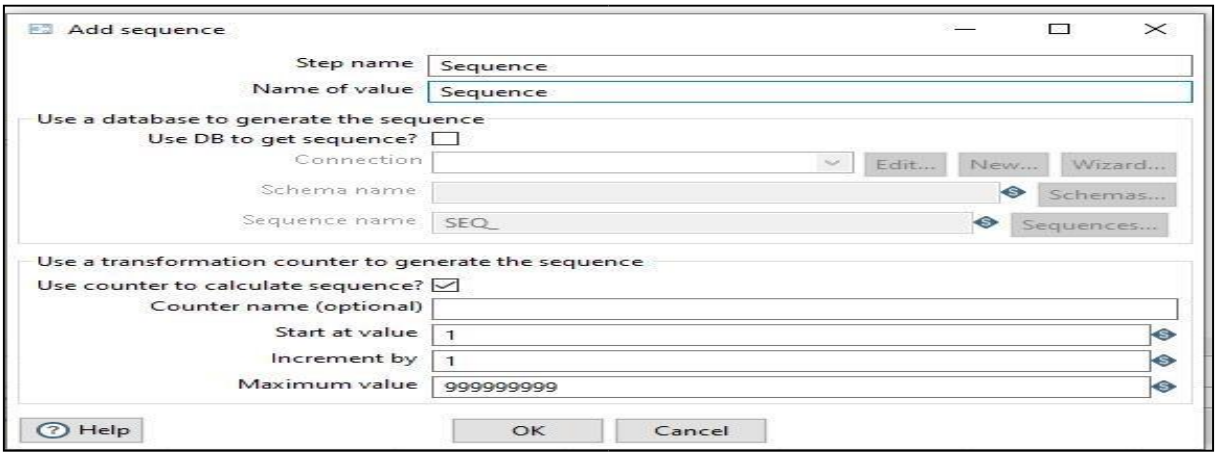
Sequence

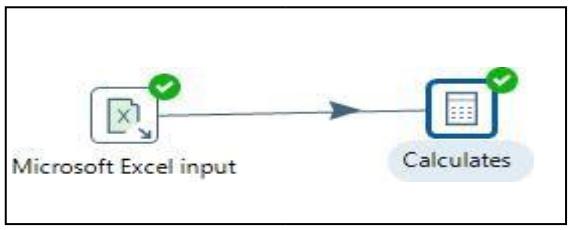


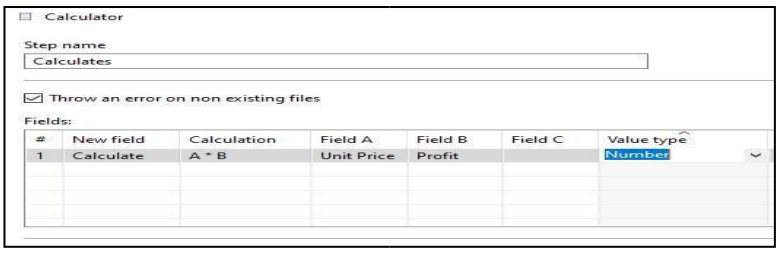


First rows | Last rows | Off

Order Date	Order Quantity	Sales	Ship Mode	Profit	Unit Price	Customer Name	Customer Segment	Product Category	Sequence
2010/10/13 00:00:00.000	6.0	261.54	Regular Air	-213.25	38.94	Muhammed MacIntyre	Small Business	Office Supplies	1
2012/02/20 00:00:00.000	2.0	6.93	Regular Air	-4.64	2.08	Ruben Dartt	Corporate	Office Supplies	2
2011/07/15 00:00:00.000	26.0	2808.08	Regular Air	1054.82	107.53	Liz Pelletier	Corporate	Furniture	3
2011/07/15 00:00:00.000	24.0	1761.4	Delivery Truck	-1748.56	70.89	Liz Pelletier	Corporate	Furniture	4
2011/07/15 00:00:00.000	23.0	160.2335	Regular Air	-85.129	7.99	Liz Pelletier	Corporate	Technology	5
2011/07/15 00:00:00.000	15.0	140.56	Regular Air	-128.38	8.46	Liz Pelletier	Corporate	Technology	6
2011/10/22 00:00:00.000	30.0	288.56	Regular Air	60.72	9.11	Julie Creighton	Corporate	Office Supplies	7
2011/10/22 00:00:00.000	14.0	1892.848	Regular Air	48.987	155.99	Julie Creighton	Corporate	Technology	8
2011/11/02 00:00:00.000	46.0	2484.7455	Regular Air	657.477	65.99	Sample Company A	Home Office	Technology	9

Adding Calculator





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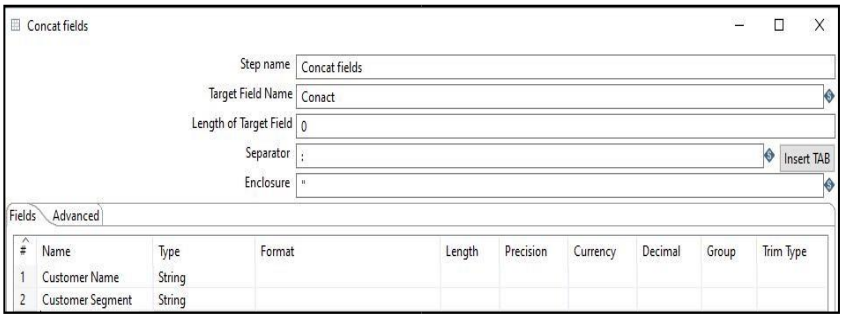
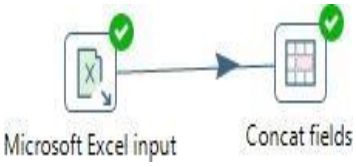
te	Order Quantity	Sales	Ship Mode	Profit	Unit Price	Customer Name	Customer Segment	Product Category	Calculate
13 00:00:00.000	6.0	261.54	Regular Air	-213.25	38.94	Muhammed MacIntyre	Small Business	Office Supplies	-8303.955
20 00:00:00.000	2.0	6.93	Regular Air	-4.64	2.08	Ruben Dartt	Corporate	Office Supplies	-9.6512
15 00:00:00.000	26.0	2808.08	Regular Air	1054.82	107.53	Liz Pelletier	Corporate	Furniture	113424.7946
15 00:00:00.000	24.0	1761.4	Delivery Truck	-1748.56	70.89	Liz Pelletier	Corporate	Furniture	-123955.4184
15 00:00:00.000	23.0	160.2335	Regular Air	-85.129	7.99	Liz Pelletier	Corporate	Technology	-680.18071
15 00:00:00.000	15.0	140.56	Regular Air	-128.38	8.46	Liz Pelletier	Corporate	Technology	-1086.0948
22 00:00:00.000	30.0	288.56	Regular Air	60.72	9.11	Julie Creighton	Corporate	Office Supplies	553.1592
22 00:00:00.000	14.0	1892.848	Regular Air	48.987	155.99	Julie Creighton	Corporate	Technology	7641.48213
02 00:00:00.000	46.0	2484.7455	Regular Air	657.477	65.99	Sample Company A	Home Office	Technology	43386.90723

Concatenation Two field





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Order Quantity	Sales	Ship Mode	Profit	Unit Price	Customer Name	Customer Segment	Product Category	Conact
6.0	261.54	Regular Air	-213.25	38.94	Muhammed MacIntyre	Small Business	Office Supplies	Muhammed MacIntyre:Small Business
2.0	6.93	Regular Air	-4.64	2.08	Ruben Dartt	Corporate	Office Supplies	Ruben Dartt:Corporate
26.0	2808.08	Regular Air	1054.82	107.53	Liz Pelletier	Corporate	Furniture	Liz Pelletier:Corporate
24.0	1761.4	Delivery Truck	-1748.56	70.89	Liz Pelletier	Corporate	Furniture	Liz Pelletier:Corporate
23.0	160.2335	Regular Air	-85.129	7.99	Liz Pelletier	Corporate	Technology	Liz Pelletier:Corporate
15.0	140.56	Regular Air	-128.38	8.46	Liz Pelletier	Corporate	Technology	Liz Pelletier:Corporate
30.0	288.56	Regular Air	60.72	9.11	Julie Creighton	Corporate	Office Supplies	Julie Creighton:Corporate
14.0	1892.848	Regular Air	48.987	155.99	Julie Creighton	Corporate	Technology	Julie Creighton:Corporate
46.0	2484.7455	Regular Air	657.477	65.99	Sample Company A	Home Office	Technology	Sample Company A:Home Office

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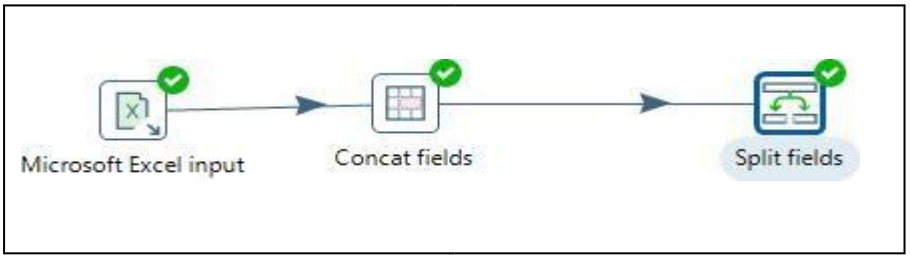
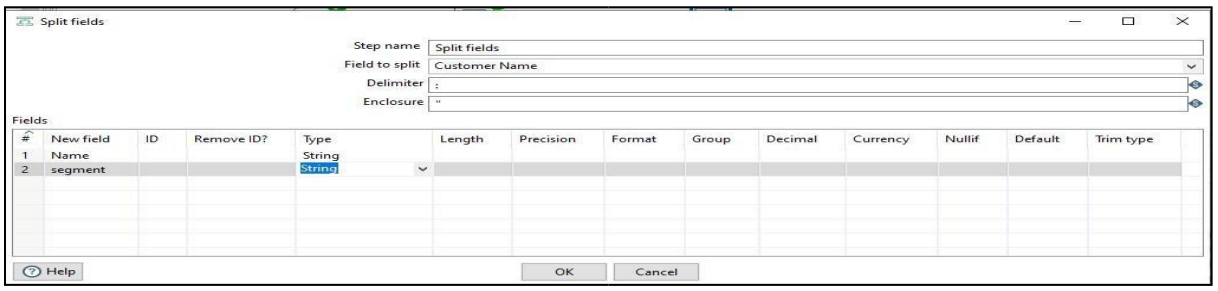
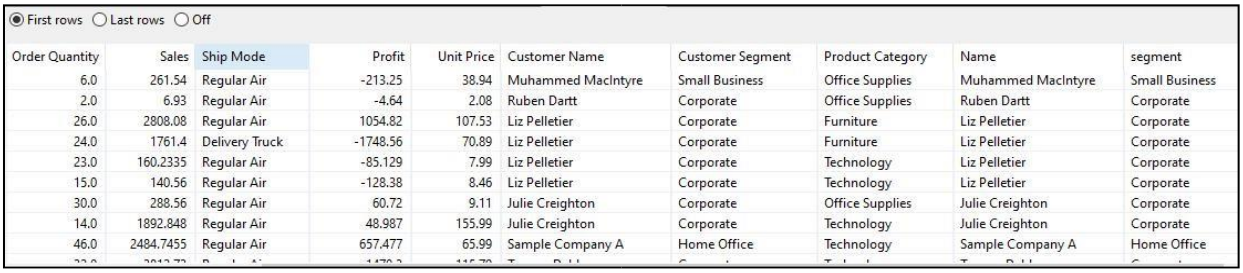
Splitting Two Fields



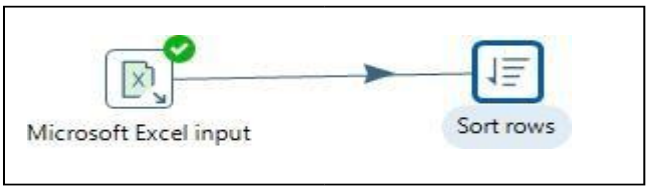


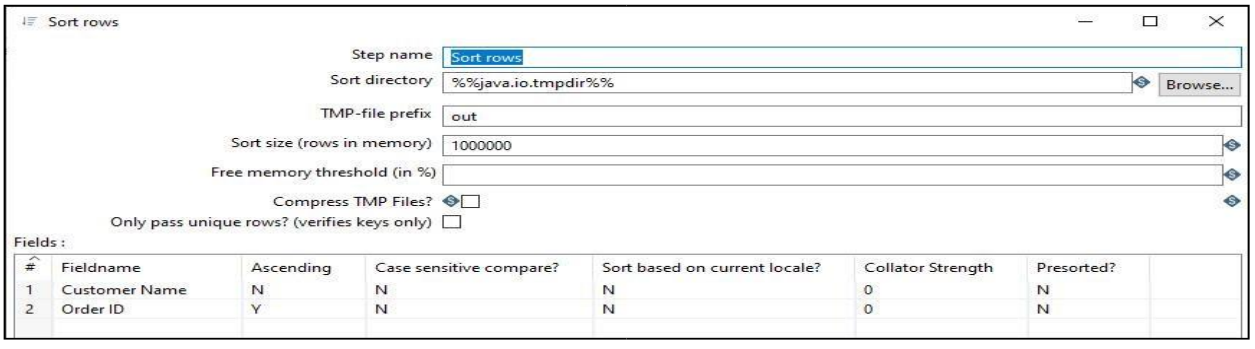


First rows | Last rows | Off

Order Quantity	Sales	Ship Mode	Profit	Unit Price	Customer Name	Customer Segment	Product Category	Name	segment
6.0	261.54	Regular Air	-213.25	38.94	Muhammed MacIntyre	Small Business	Office Supplies	Muhammed MacIntyre	Small Business
2.0	6.93	Regular Air	-4.64	2.08	Ruben Dartt	Corporate	Office Supplies	Ruben Dartt	Corporate
26.0	2808.08	Regular Air	1054.82	107.53	Liz Pelletier	Corporate	Furniture	Liz Pelletier	Corporate
24.0	1761.4	Delivery Truck	-1748.56	70.89	Liz Pelletier	Corporate	Furniture	Liz Pelletier	Corporate
23.0	160.2335	Regular Air	-85.129	7.99	Liz Pelletier	Corporate	Technology	Liz Pelletier	Corporate
15.0	140.56	Regular Air	-128.38	8.46	Liz Pelletier	Corporate	Technology	Liz Pelletier	Corporate
30.0	288.56	Regular Air	60.72	9.11	Julie Creighton	Corporate	Office Supplies	Julie Creighton	Corporate
14.0	1892.848	Regular Air	48.987	155.99	Julie Creighton	Corporate	Technology	Julie Creighton	Corporate
46.0	2484.7455	Regular Air	657.477	65.99	Sample Company A	Home Office	Technology	Sample Company A	Home Office

Sorting Data





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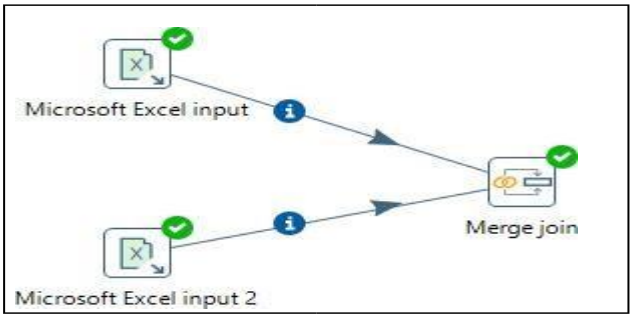
Execution Results

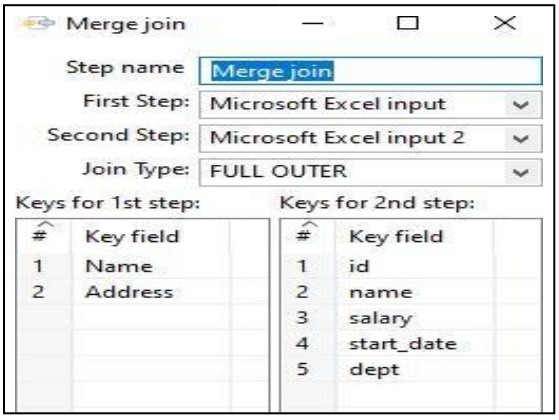
Logging | Execution History | Step Metrics | Performance Graph | Metrics | Preview data

First rows | Last rows | Off

#	Order ID	Order Date	Order Quantity	Sales	Ship Mode	Profit	Unit Price	Customer Name	Customer Segment	Product Category
1	2882.0	2011/08/21 00:00:00.000	23.0	3872.87	Delivery Truck	565.34	160.98	Yoseph Carroll	Consumer	Furniture
2	2882.0	2011/08/21 00:00:00.000	9.0	356.72	Regular Air	12.61	40.98	Yoseph Carroll	Consumer	Technology
3	4514.0	2009/04/29 00:00:00.000	28.0	2841.4395	Regular Air	374.625	125.99	Yoseph Carroll	Consumer	Technology
4	4935.0	2010/05/24 00:00:00.000	30.0	106.64	Regular Air	-31.95	3.68	Xylona Price	Corporate	Office Supplies
5	5254.0	2012/07/25 00:00:00.000	31.0	1735.3515	Regular Air	258.624	65.99	William Brown	Corporate	Technology

Implements the merge join transformation on tables





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2	<null>	<null>	2.0	Dan	515.2	2013-09-23	Operations
3	<null>	<null>	3.0	Michelle	611.0	2014-11-15	IT
4	<null>	<null>	4.0	Ryan	729.0	2014-05-11	HR
5	<null>	<null>	5.0	Gary	843.25	2015-03-27	Finance
6	<null>	<null>	6.0	Nina	578.0	2013-05-21	IT
7	<null>	<null>	7.0	Simon	632.8	2013-07-30	Operations
8	<null>	<null>	8.0	Guru	722.5	2014-06-17	Finance
9	Pritesh	Ratnagiri	<null>	<null>	<null>	<null>	<null>
10	Gaurav	Devrukh	<null>	<null>	<null>	<null>	<null>
11	Vivek	Mumbai	<null>	<null>	<null>	<null>	<null>