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Transformasi Terstruktur

1. Teori Singkat

Data warehouse adalah jenis sistem manajemen data yang dirancang untuk memungkinkan dan mendukung kegiatan business intelligence (BI), terutama analitik. Gudang data semata-mata dimaksudkan untuk melakukan kueri dan analisis dan sering berisi sejumlah besar data historis. Data dalam gudang data biasanya berasal dari berbagai sumber seperti file log aplikasi dan aplikasi transaksi. Gudang data memusatkan dan mengkonsolidasikan sejumlah besar data dari berbagai sumber. Kemampuan analitisnya memungkinkan organisasi untuk memperoleh wawasan bisnis yang berharga dari data mereka untuk meningkatkan pengambilan keputusan. Seiring waktu, ia membangun catatan sejarah yang dapat sangat berharga bagi para ilmuwan data dan analis bisnis. Karena kemampuan ini, gudang data dapat dianggap sebagai "sumber kebenaran tunggal" organisasi.

2. Alat dan Bahan

Hardware : Laptop/PC

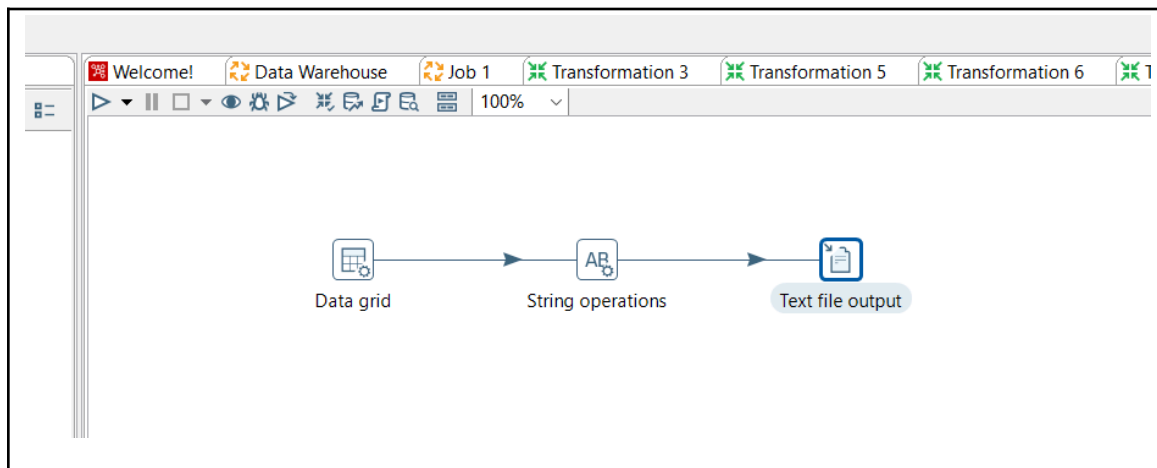
Software : Spoon Pentaho from Hitachi Vantara



3. Elemen Kompetensi

a. Latihan pertama – Membuat Transformasi Terstruktur

1. Buat transformation sheet baru, lalu save dan beri nama Header. Buatlah struktur transformasi seperti pada gambar.



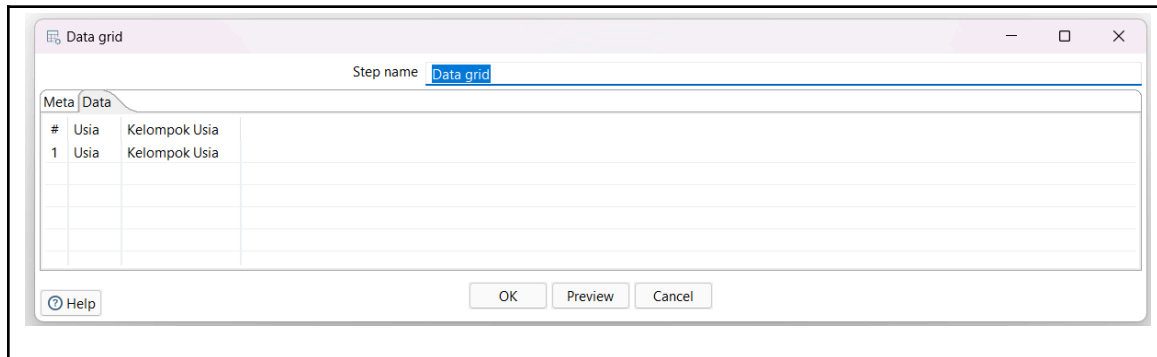
2. Header Transformation – Data Grid.

The screenshot shows the 'Data grid' configuration window. The 'Step name' is 'Data grid'. The 'Meta' tab is selected, showing a table with the following data:

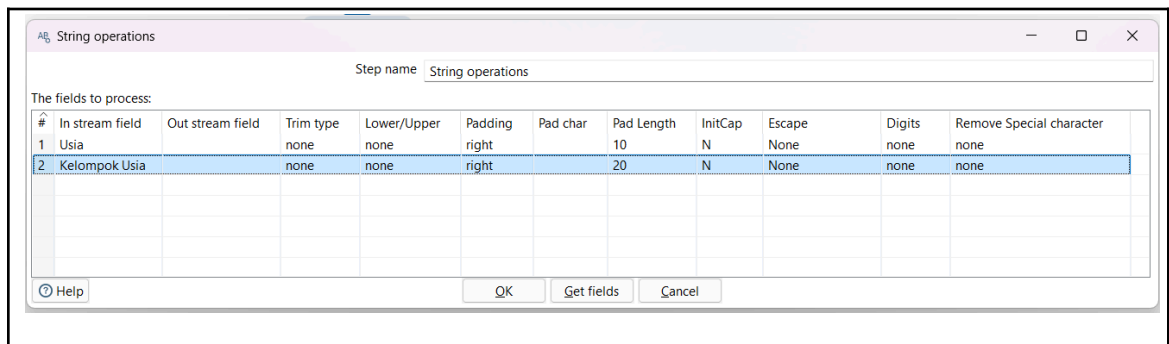
#	Name	Type	Format	Length	Precision	Currency	Decimal	Group	Null if	Set empty stri
1	Usia	String								
2	Kelompok Usia	String								

At the bottom of the window, there are buttons for 'Help', 'OK', 'Preview', and 'Cancel'.

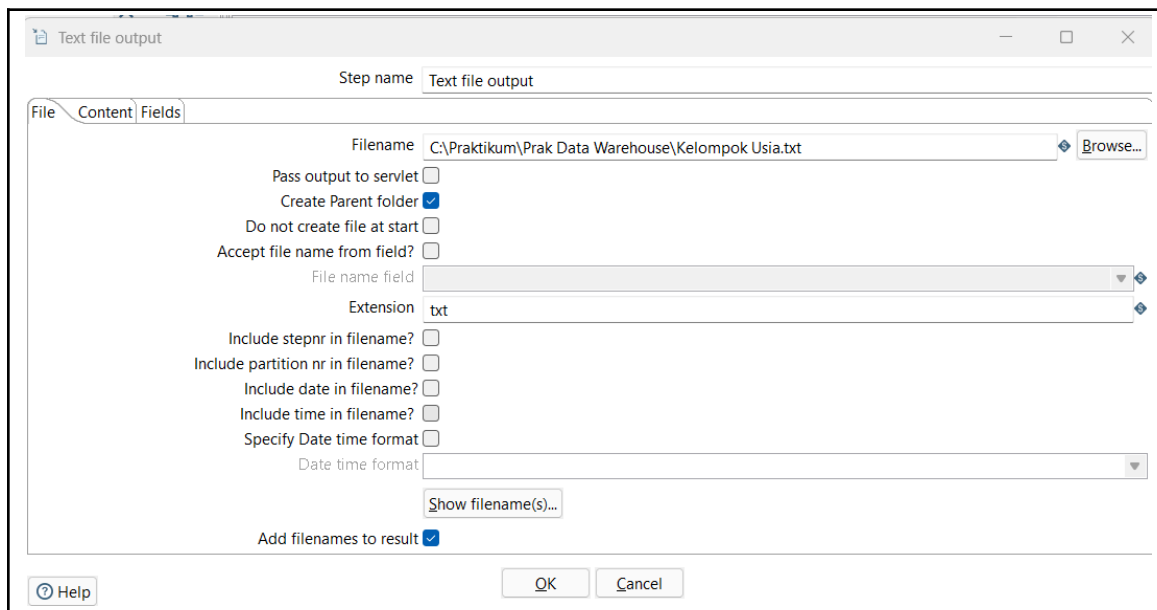


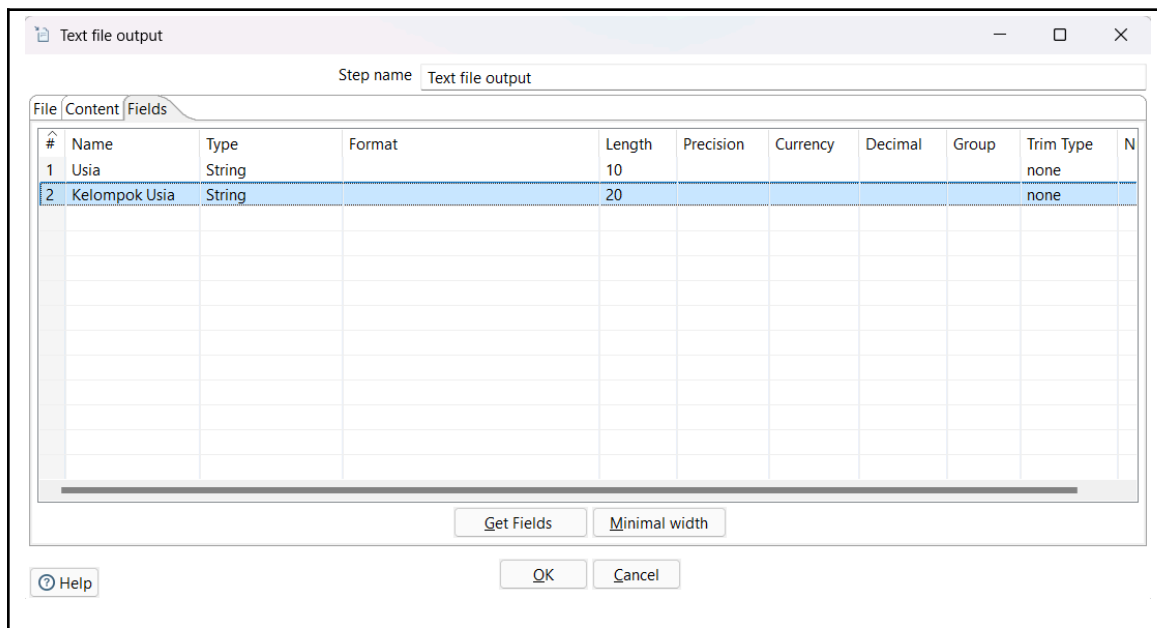


3. Header Transformation – String operations (Get fields & custom).

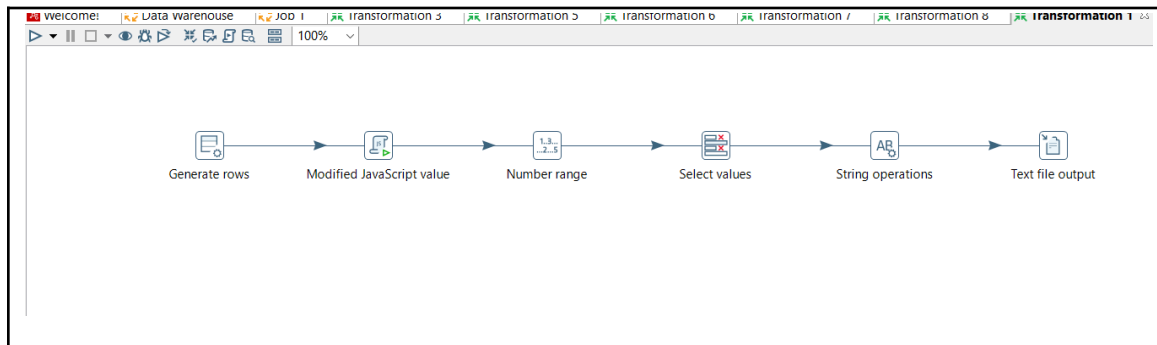


4. Header Transformation – Text file output (Get fields & custom).





5. Buat transformation sheet baru, lalu save dan beri nama Data lalu buatlah struktur transformasi seperti pada gambar dibawah ini.



6. Data Transformation – Generate rows.



Generate rows

Step name: Generate rows

Limit: 100

Never stop generating rows: ☐

Interval in ms (delay): 5000

Current row time field name: now

Previous row time field name: FiveSecondsAgo

Fields:

#	Name	Type	Format	Length	Precision	Currency	Decimal	Group	Value	Set empty string?
1										

Help OK Preview Cancel

7. Data Transformation – Modified Java Script Value.

Modified JavaScript value

Step name: Modified JavaScript value

Java script functions:

- Transform Scripts
- Transform Constants
- Transform Functions
- Input fields
- Output fields
 - Please use the 'Rep

Java script:

```
Script 1
VAR usia;
usia= Math.floor(Math.random() * 80) +1);
```

Position: 2, 42

Compatibility mode? ☐ Optimization level: 9

Fields

#	Fieldname	Rename to	Type	Length	Precision	Replace value 'Fieldname' or 'Rename to'
1	usia		Integer			N

Help OK Cancel Get variables Test script

8. Data Transformation – Number Range.



Number range

Step name: Number range

Input field: usia

Output field: kelompok

Default value(if no range) unknown

Ranges (min <= x < max):

#	Lower Bound	Upper Bound	Value
1		6.0	Balita
2	6.0	12.0	Kanak-kanak
3	12.0	17.0	Remaja
4	17.0	24.0	Pemuda
5	24.0	55.0	Dewasa
6	55.0		Tua

Help OK Cancel

9. Data Transformation – Select values (Get fields to change & custom).

Select values

Step name: Select values

Select & Alter Remove Meta-data

Fields to alter the meta-data for :

#	Fieldname	Rename to	Type	Length	Precision	Binary to Normal?	Format
1	usia		String	10		N	
2	kelompok		String	20		N	

Get fields to change

Help OK Cancel

10. Data Transformation – String operations (Get fields to change & custom).



String operations

Step name: String operations

The fields to process:

#	In stream field	Out stream field	Trim type	Lower/Upper	Padding	Pad char	Pad Length	InitCap	Escape	Digits	Remove Special character
1	usia		none	none	right		10	N	None	none	none
2	kelompok		none	none	right		20	N	None	none	none

Help OK Get fields Cancel

11. Data Transformation – Text file output (Browse & Get fields)

Text file output

Step name: Text file output

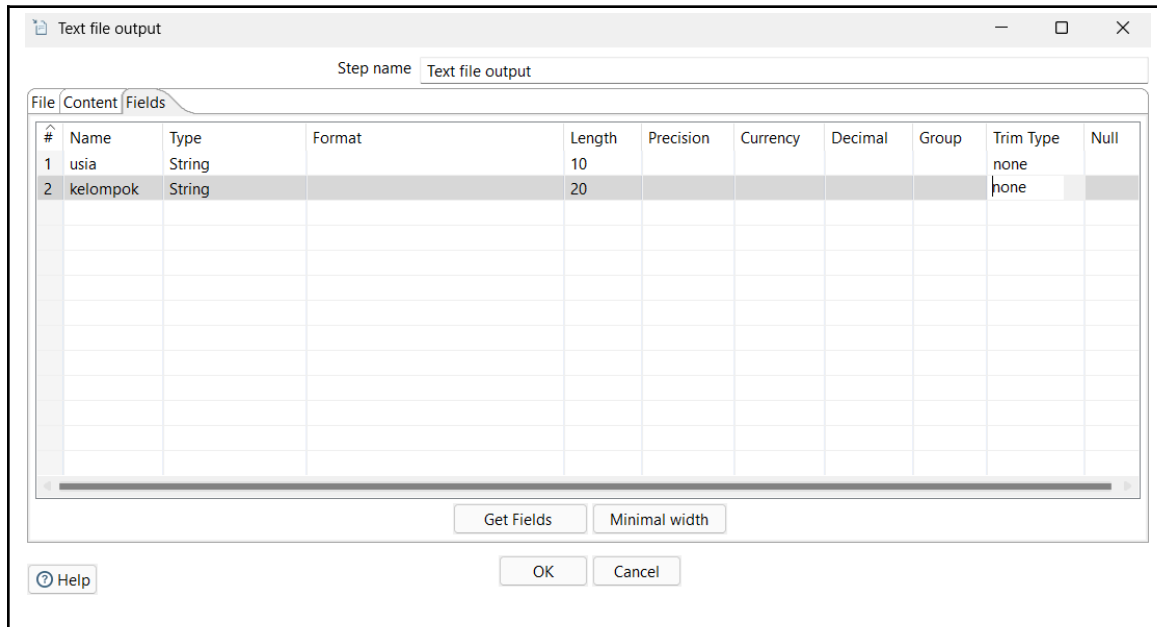
File Content Fields

Filename: C:\Praktikum\Prak Data Warehouse\Kelompok Usia.txt [Browse...](#)

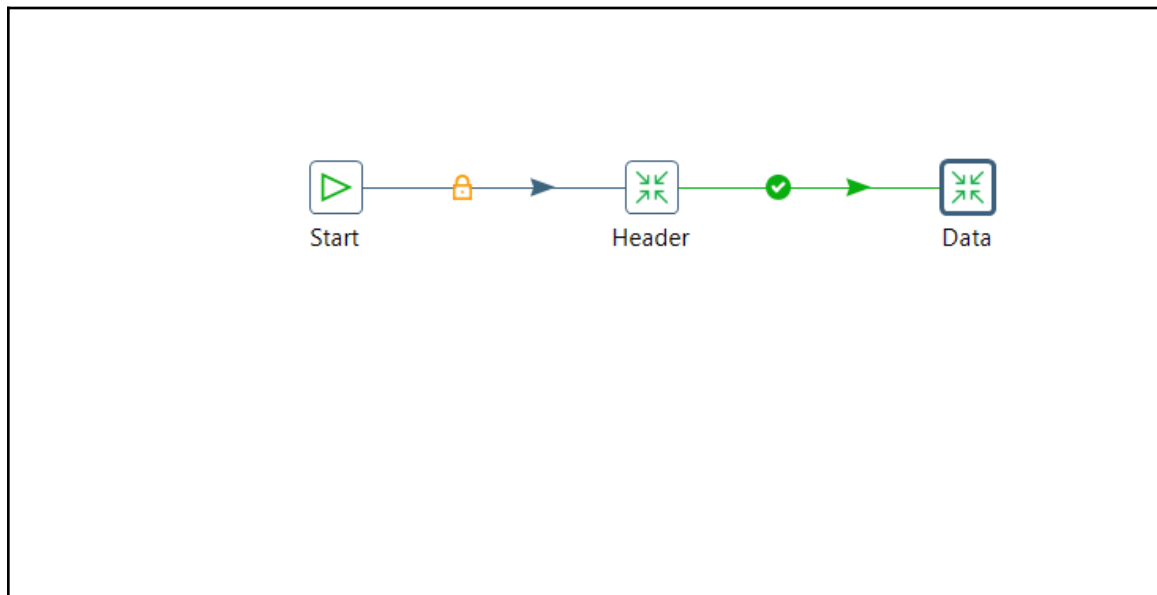
☐ Pass output to servlet
☒ Create Parent folder
☐ Do not create file at start
☐ Accept file name from field
 File name field:
 Extension: txt
☐ Include stepnr in filename?
☐ Include partition nr in filename?
☐ Include date in filename?
☐ Include time in filename?
☐ Specify Date time format
 Date time format:
[Show filename\(s\)...](#)
☒ Add filenames to result

Help OK Cancel





12. Buat Job sheet baru lalu simpan dengan nama Job, dan buat struktur seperti gambar dibawah (Gunakan 2 Transformation yang diberi nama Header dan Data).



13. Job – Header (browse file dan cari tempat kamu menyimpan file transformation Header.ktr lalu klik OK)



Transformation

Entry Name:
Header

Transformation:
Browse...

Options Logging Arguments Parameters

Run configuration:
Pentaho local

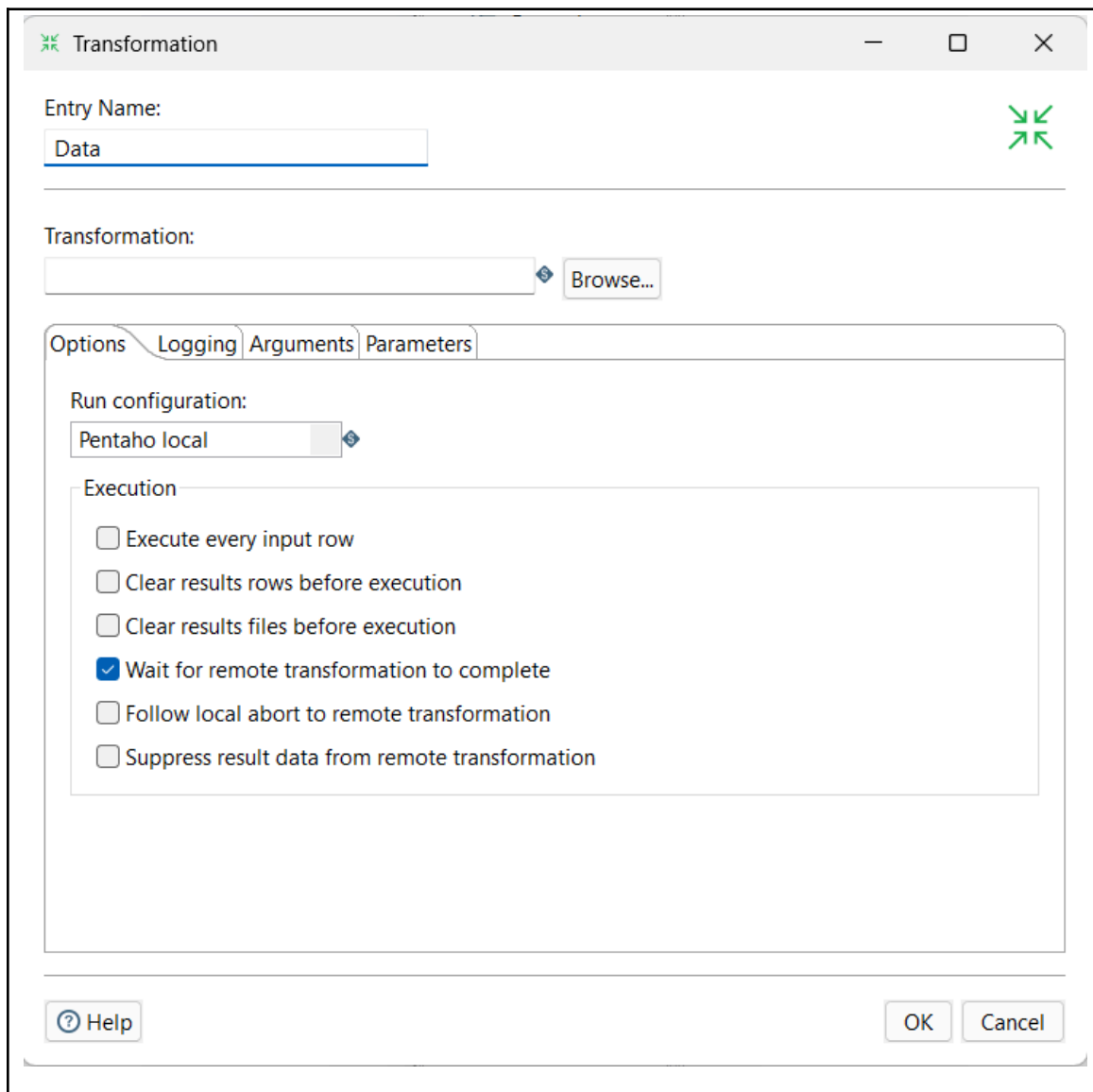
Execution

- ☐ Execute every input row
- ☐ Clear results rows before execution
- ☐ Clear results files before execution
- ☒ Wait for remote transformation to complete
- ☐ Follow local abort to remote transformation
- ☐ Suppress result data from remote transformation

Help OK Cancel

14. Job – Data (browse file dan cari tempat kamu menyimpan file transformation Data.ktr lalu klik OK)





The image shows a 'Transformation' dialog box with a title bar containing a green icon and standard window controls. The 'Entry Name' field is labeled 'Data' and has a green icon to its right. Below it is a 'Transformation' field with a 'Browse...' button. The dialog has four tabs: 'Options' (selected), 'Logging', 'Arguments', and 'Parameters'. Under the 'Options' tab, the 'Run configuration' dropdown is set to 'Pentaho local'. The 'Execution' section contains six checkboxes: 'Execute every input row', 'Clear results rows before execution', 'Clear results files before execution', 'Wait for remote transformation to complete' (checked), 'Follow local abort to remote transformation', and 'Suppress result data from remote transformation'. At the bottom are 'Help', 'OK', and 'Cancel' buttons.

Transformation

Entry Name:
Data

Transformation:
Browse...

Options Logging Arguments Parameters

Run configuration:
Pentaho local

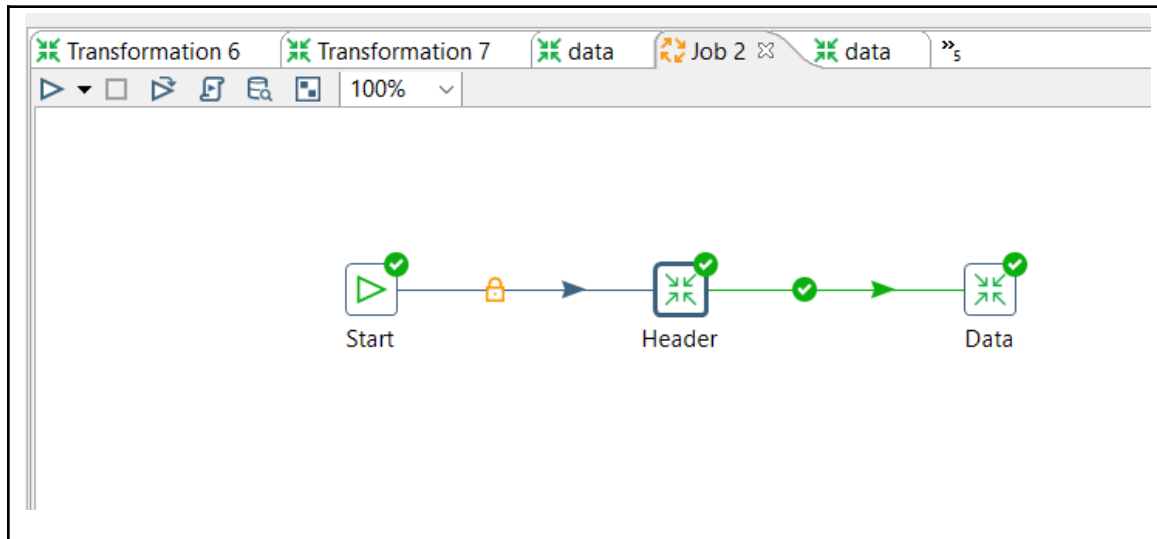
Execution

- ☐ Execute every input row
- ☐ Clear results rows before execution
- ☐ Clear results files before execution
- ☒ Wait for remote transformation to complete
- ☐ Follow local abort to remote transformation
- ☐ Suppress result data from remote transformation

Help OK Cancel

15. Lalu jalankan/running Job.





16. Berikut Outputnya

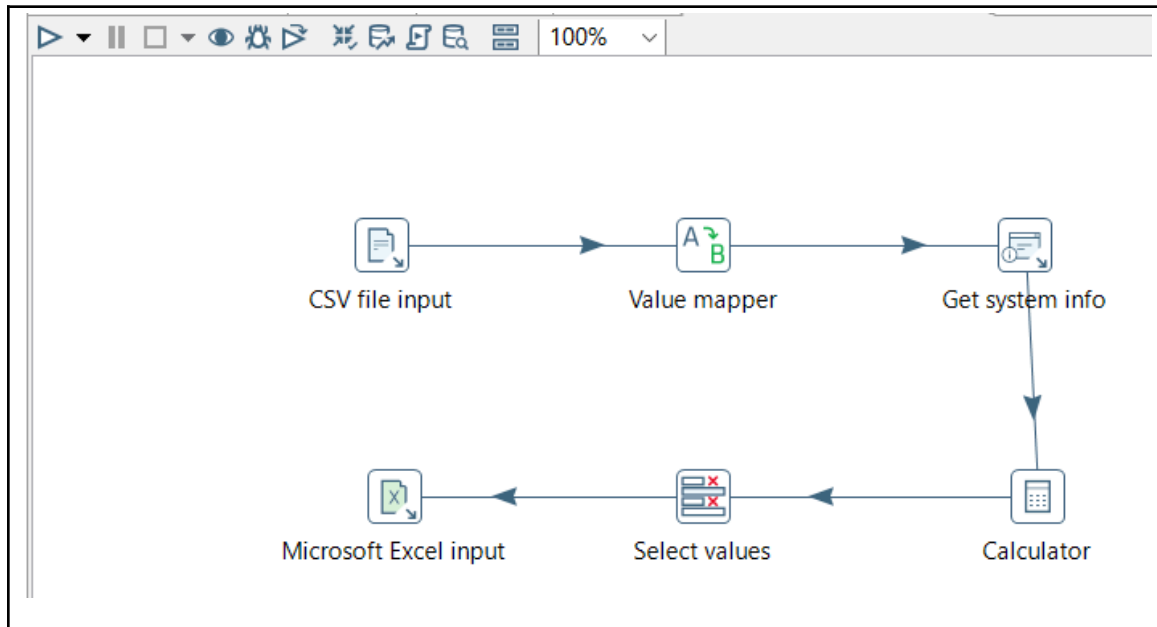
The screenshot shows a text editor window with a dark background. The text is as follows:

```
usia      kelompok
11        Kanak-kanak
79        Tua
14        Remaja
8         Kanak-kanak
11        Kanak-kanak
32        Dewasa
63        Tua
32        Dewasa
49        Dewasa
39        Dewasa
80        Tua
```

The status bar at the bottom indicates 'Ln 1, Col 1' and '3,906 characters'.

- b. Latihan Kedua – Transformasi Data CSV to Excel
 - 1. Buat Transformasi baru dengan nama Daftar nama dan buat seperti pada gambar dibawah





2. Text file Input (Pada bagian fields klik Get Fields dan Custom sesuai pada gambar).

CSV file input

Step name: CSV file input

Filename: C:\Praktikum\Prak Data Warehouse\Daftar Nama - Daftar Nama.csv Browse...

Delimiter: , Insert IAB

Enclosure: "

NIO buffer size: 50000

Lazy conversion? ☒

Header row present? ☒

Add filename to result ☐

The row number field name (optional):

Running in parallel? ☐

New line possible in fields? ☐

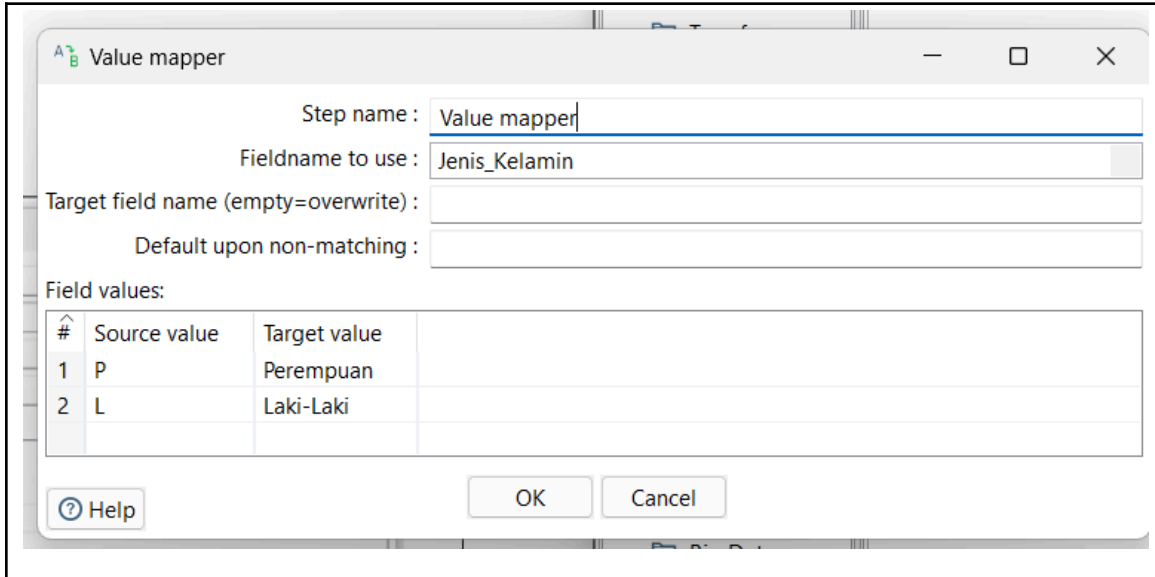
Format: mixed

File encoding:

#	Name	Type	Format	Length	Precision	Currency	Decimal	Group	Trim type
1	Nama	String		6		IDR	.	,	none
2	Jenis_Kelamin	String		1		IDR	.	,	none
3	Tanggal_Lahir	Date	dd-MM...			IDR	.	,	none



3. Value Mapper



Value mapper

Step name : Value mapper

Fieldname to use : Jenis_Kelamin

Target field name (empty=overwrite) :

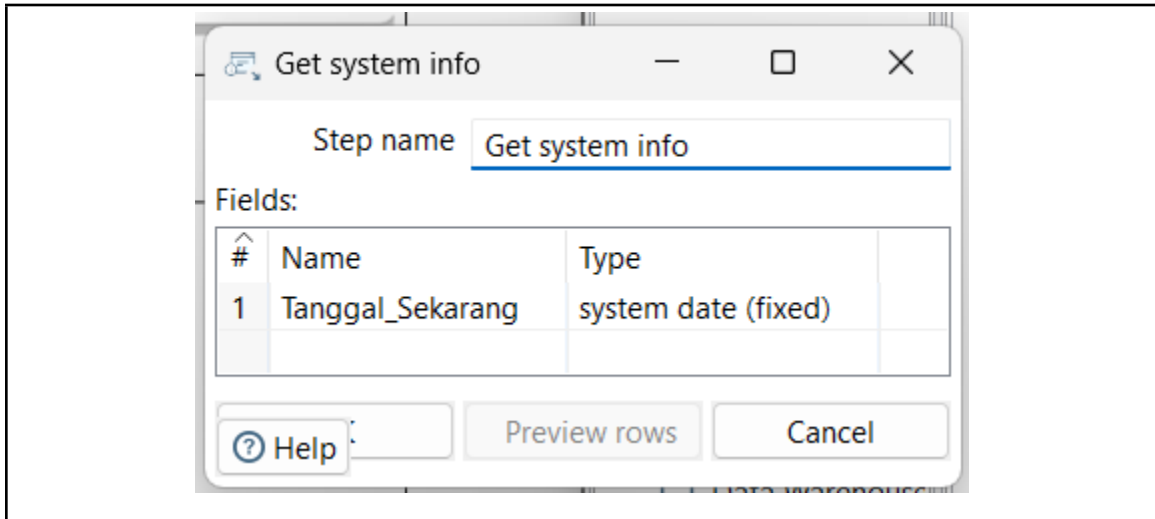
Default upon non-matching :

Field values:

#	Source value	Target value
1	P	Perempuan
2	L	Laki-Laki

Help OK Cancel

4. Get system info.



Get system info

Step name Get system info

Fields:

#	Name	Type
1	Tanggal_Sekarang	system date (fixed)

Help Preview rows Cancel

5. Calculator.



Step name: Calculator

☒ Throw an error on non existing files

#	New field	Calculation	Field A	Field B	Field C	Value type	Length	Precision	Remove	Conversion mask	Decimal symbol	Grouping symbol	Currency symbol
1	Tahun_Lahir	Year of date...	Tanggal...			Integer			Y				
2	Tahun_Sekarang	Year of date...	Tanggal...			Integer			Y				
3	Usia	A - B	Tahun_S...	Tanggal...		Integer			N	#			

Buttons: Help, OK, Cancel

6. Select values (Get fields & delete some fieldname).

Step name: Select values

Tab: Select & Alter | Remove | Meta-data

Fields:

#	Fieldname	Rename to	Length	Precision
1	Tanggal_Lahir			
2	Tanggal_Sekarang			
3	Usia			

☒ Include unspecified fields, ordered by name

Buttons: Help, OK, Cancel, Get fields to select, Edit Mapping

7. Microsoft Excel output.



Microsoft Excel output

Step name Microsoft Excel output 4

File Content Custom Fields

Filename C:\Praktikum\Prak Data Warehouse\data Browse...

Create Parent folder ☐

Do not create file at start ☐

Extension xls

Include stepnr in filename? ☐

Include date in filename? ☐

Include time in filename? ☐

Specify Date time format ☐

Date time format

Show filename(s)...

Add filenames to result ☒

Help OK Cancel



[illegible]

8. Output setelah di running

The screenshot displays a data integration tool interface. The top section shows a workflow diagram with the following steps: 'CSV file input' (green checkmark) → 'Value mapper' (green checkmark) → 'Get system info' (green checkmark) → 'Calculator' (green checkmark) → 'Select values' (green checkmark) → 'Microsoft Excel output 4' (green checkmark). The bottom section, titled 'Execution Results', shows a table of data with columns: '#', 'Nama', 'Jenis_Kelamin', and 'Tanggal_Lahir'. The table contains 8 rows of data.

#	Nama	Jenis_Kelamin	Tanggal_Lahir
1	Slamet	L	Thu May 15 00:00:00 WIB 1969
2	Indah	P	Fri Jun 20 00:00:00 WIB 1980
3	Guntur	L	Sun Dec 17 00:00:00 WIB 1978
4	Melati	P	Wed Nov 11 00:00:00 WIB 1987
5	Mawar	P	Mon Jul 25 00:00:00 WIB 1988
6	Bagus	L	Tue Sep 20 00:00:00 WIB 1977
7	Rahmat	L	Sun Mar 14 00:00:00 WIB 1982
8	Bunga	P	Tue Feb 26 00:00:00 WIB 1985

4. File Praktikum

Github Repository:

5. Soal Latihan



Soal:

1. Apa yang dimaksud dengan Transformasi Terstruktur?
2. Apa perbedaan penggunaan Job dan Transformation pada Spoon?

Jawaban:

- 1.
- 2.

6. Kesimpulan

- a. Dalam pengerjaan praktikum Data Warehouse, kita harus benar-benar teliti dalam menginputkan suatu fungsi untuk menampilkan suatu keluaran pada layar dengan sesuai.
- b. Kita dapat mengetahui...

7. Cek List (✓)

No	Elemen Kompetensi	Penyelesaian	
		Selesai	Tidak Selesai
1.	Latihan Pertama	...	
2.	Latihan Kedua	...	

8. Formulir Umpan Balik

No	Elemen Kompetensi	Waktu Pengerjaan	Kriteria
1.	Latihan Pertama	... Menit	...
2.	Latihan Kedua	... Menit	...

Keterangan:



1. Menarik
2. Baik
3. Cukup
4. Kurang

