



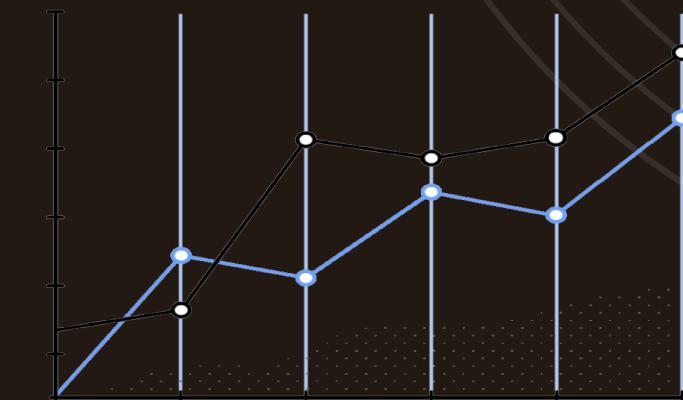
Univeristas Pembangunan Nasional Veteran Jakarta

Pre-processing Data Laptop

Presentation by **Kelompok 1**



DWDM | 2023



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Latar Belakang

Di era yang sangat memanfaatkan modernisasi teknologi, pertumbuhan pasar komputer yang semakin pesat dan meningkatkan permintaan akan laptop di seluruh dunia. Hal ini mendorong para produsen untuk mengeluarkan produk yang beragam dengan fitur dan spesifikasi yang berbeda, serta harga yang bervariasi. Dalam pasar yang semakin kompetitif ini, penting bagi konsumen untuk memilih laptop yang sesuai dengan kebutuhan mereka dan pas dengan budget yang dimiliki. Namun, dengan begitu banyaknya pilihan laptop yang tersedia, mencari dan membandingkan harga laptop dapat menjadi tugas yang memakan waktu.

Cluster data mining harga laptop dapat membantu konsumen dalam mencari dan membandingkan harga laptop dengan cara yang lebih efisien dan efektif. Dengan menggunakan teknik data mining clustering, harga laptop dapat dikelompokkan ke dalam beberapa kelompok berdasarkan karakteristik dan spesifikasi tertentu, seperti merek, ukuran layar, jenis prosesor, jumlah RAM, dan kapasitas penyimpanan. Dalam kelompok-kelompok ini, konsumen dapat membandingkan harga laptop dengan mudah dan memilih produk yang paling sesuai dengan kebutuhan dan anggaran mereka. Dengan demikian, cluster data mining harga laptop dapat membantu meningkatkan pengalaman belanja konsumen dan membantu produsen untuk memahami pasar dan kebutuhan konsumen mereka.

Overview

❖ **Latar Belakang**

❖ **Atribut Data**

❖ **Sumber Data**

❖ **Tahap Pre-Processing**

❖ **Demonstrasi**

Sumber Data

<https://www.kaggle.com/datasets/arnabchaki/laptop-price-prediction>

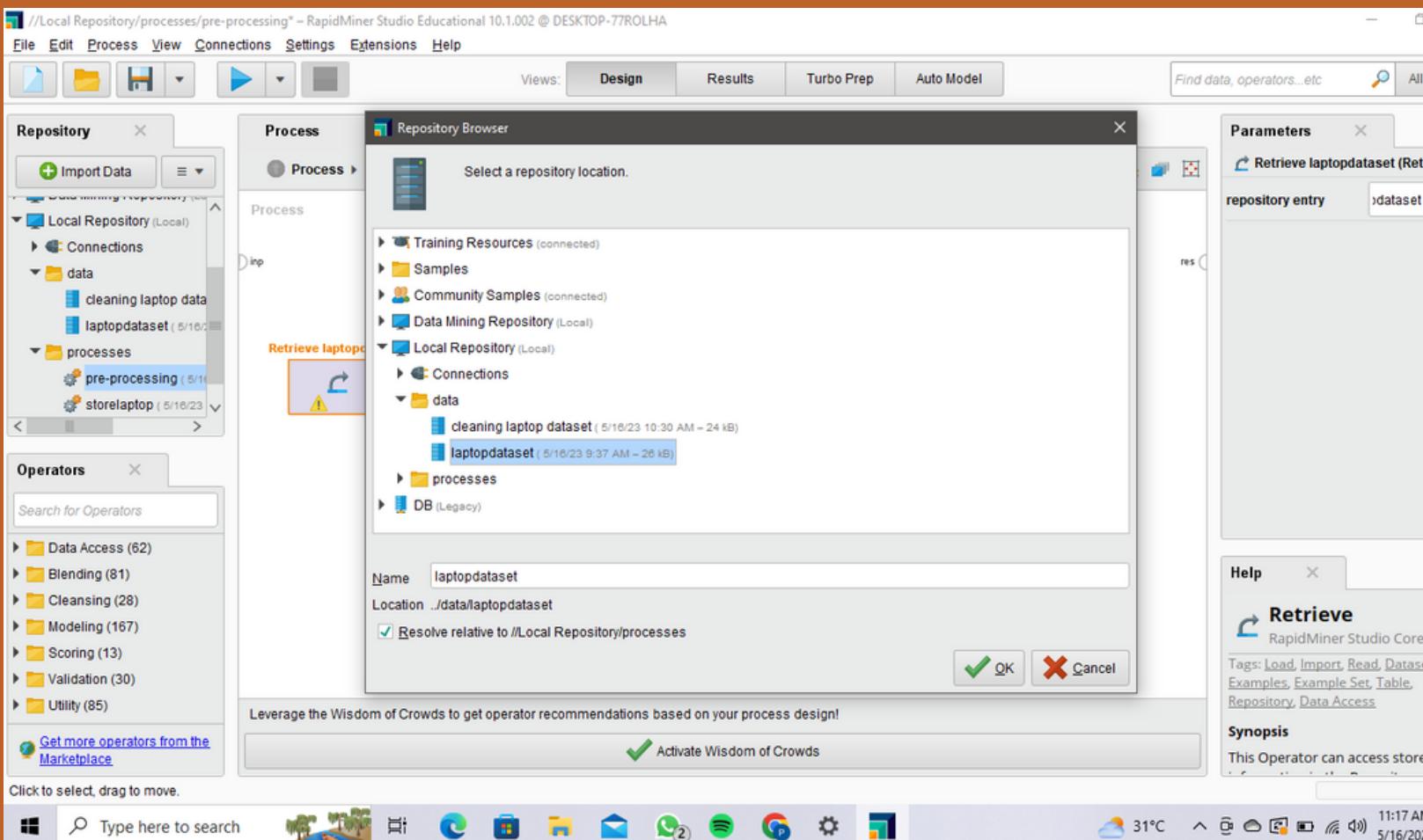
Laptop Price Prediction using specifications

Atribut Data

- Manufacturer
- Model Name
- Category
- Screen Size
- Screen
- CPU
- RAM
- Storage
- GPU
- Operating System
- Operating System Version
- Weight
- Price

Import Dataset

Hal pertama yang dilakukan adalah import dataset yang sudah disimpan di repository ke Rapidminer.

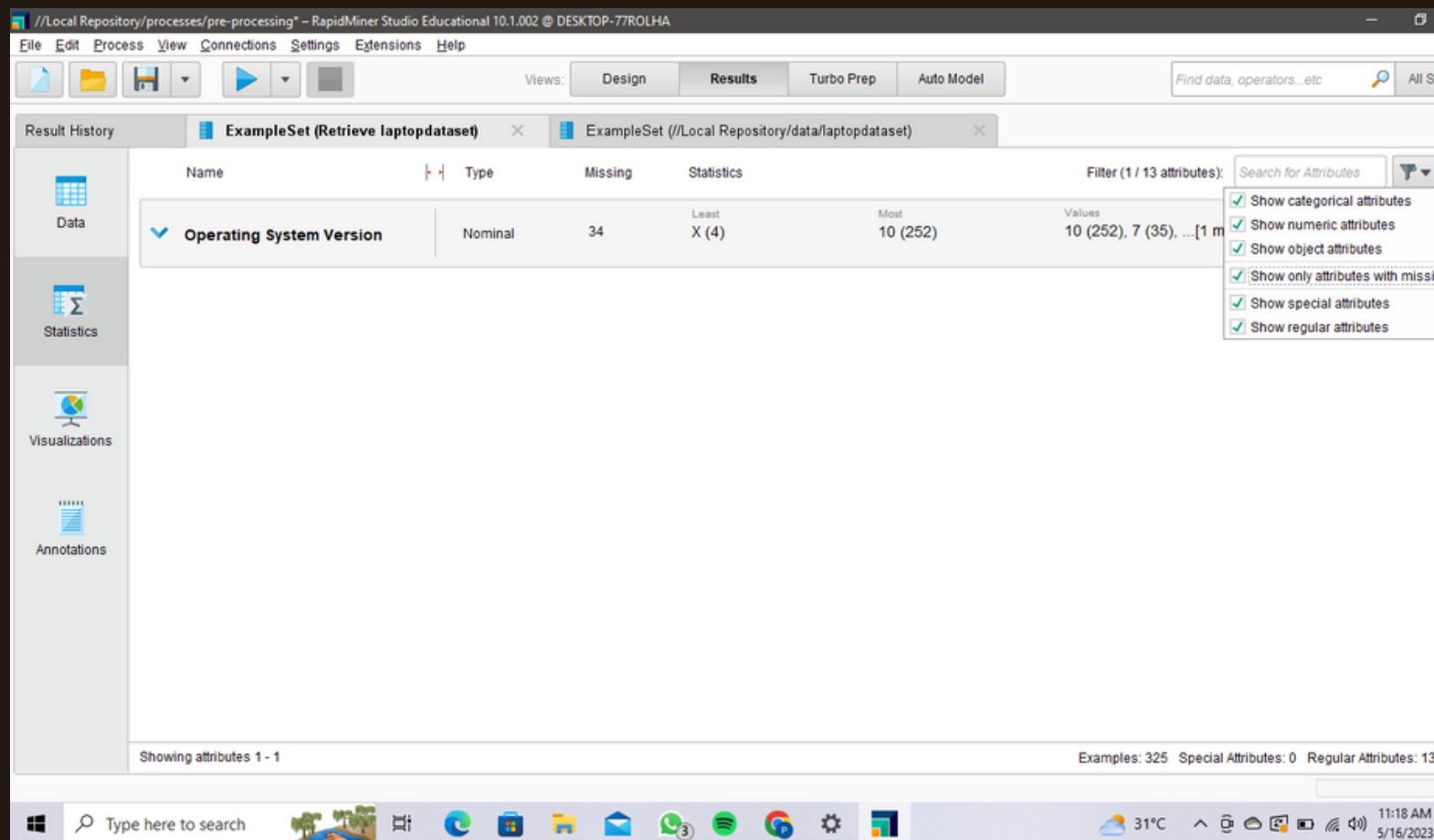


The screenshot shows the RapidMiner Studio interface. In the 'Result History' pane, an 'ExampleSet' is selected. The table shows the same laptop data as the previous screenshot. The table has 21 rows and columns: Row No., Manufacturer, Model Name, Category, Screen Size, Screen, CPU, RAM, Storage, GPU, Operating S..., and Operating S... .

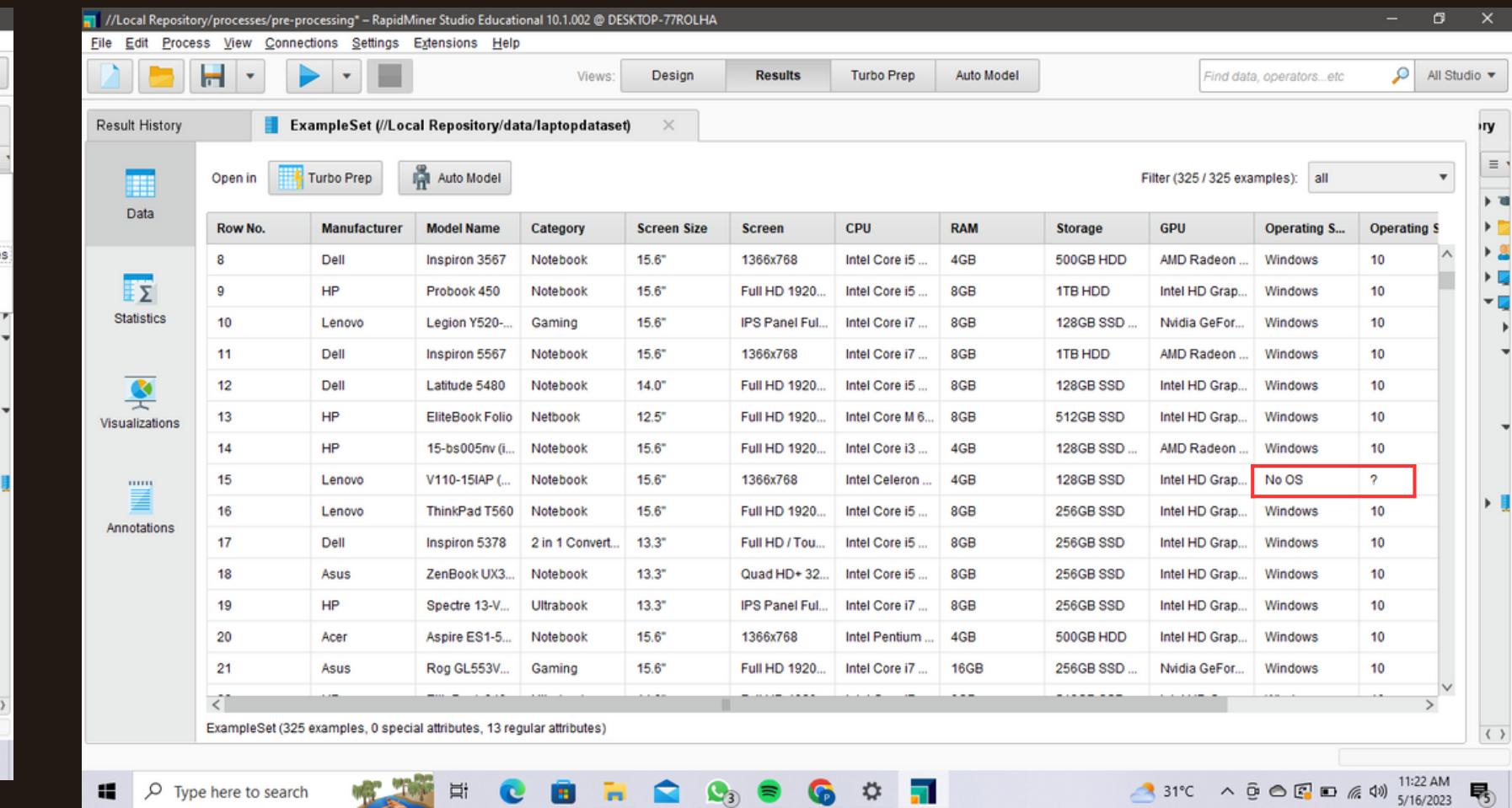
Row No.	Manufacturer	Model Name	Category	Screen Size	Screen	CPU	RAM	Storage	GPU	Operating S...	Operating S...
8	Dell	Inspiron 3567	Notebook	15.6"	1366x768	Intel Core i5 ...	4GB	500GB HDD	AMD Radeon ...	Windows	10
9	HP	Probook 450	Notebook	15.6"	Full HD 1920...	Intel Core i5 ...	8GB	1TB HDD	Intel HD Grap...	Windows	10
10	Lenovo	Legion Y520-...	Gaming	15.6"	IPS Panel Ful...	Intel Core i7 ...	8GB	128GB SSD ...	Nvidia GeFor...	Windows	10
11	Dell	Inspiron 5567	Notebook	15.6"	1366x768	Intel Core i7 ...	8GB	1TB HDD	AMD Radeon ...	Windows	10
12	Dell	Latitude 5480	Notebook	14.0"	Full HD 1920...	Intel Core i5 ...	8GB	128GB SSD	Intel HD Grap...	Windows	10
13	HP	EliteBook Folio	Netbook	12.5"	Full HD 1920...	Intel Core M 6...	8GB	512GB SSD	Intel HD Grap...	Windows	10
14	HP	15-bs005nv (i...	Notebook	15.6"	Full HD 1920...	Intel Core i3 ...	4GB	128GB SSD ...	AMD Radeon ...	Windows	10
15	Lenovo	V110-15IAP (...	Notebook	15.6"	1366x768	Intel Celeron ...	4GB	128GB SSD	Intel HD Grap...	No OS	?
16	Lenovo	ThinkPad T560	Notebook	15.6"	Full HD 1920...	Intel Core i5 ...	8GB	256GB SSD	Intel HD Grap...	Windows	10
17	Dell	Inspiron 5378	2 in 1 Convert...	13.3"	Full HD / Tou...	Intel Core i5 ...	8GB	256GB SSD	Intel HD Grap...	Windows	10
18	Asus	ZenBook UX3...	Notebook	13.3"	Quad HD+ 32...	Intel Core i5 ...	8GB	256GB SSD	Intel HD Grap...	Windows	10
19	HP	Spectre 13-V...	Ultrabook	13.3"	IPS Panel Ful...	Intel Core i7 ...	8GB	256GB SSD	Intel HD Grap...	Windows	10
20	Acer	Aspire ES1-5...	Notebook	15.6"	1366x768	Intel Pentium ...	4GB	500GB HDD	Intel HD Grap...	Windows	10
21	Asus	Rog GL553V...	Gaming	15.6"	Full HD 1920...	Intel Core i7 ...	16GB	256GB SSD ...	Nvidia GeFor...	Windows	10

Identifikasi Missing Value

Gunakan filter untuk mengidentifikasi missing values yang ada. Pada data laptop ini terdapat 34 missing values di atribut Operating System Version.



Screenshot of RapidMiner Studio showing the 'Statistics' view for the 'Operating System Version' attribute. The 'Missing' column shows a value of 34, indicating 34 missing values. A context menu is open over this row, showing various filter options, with 'Show only attributes with missing values' selected.

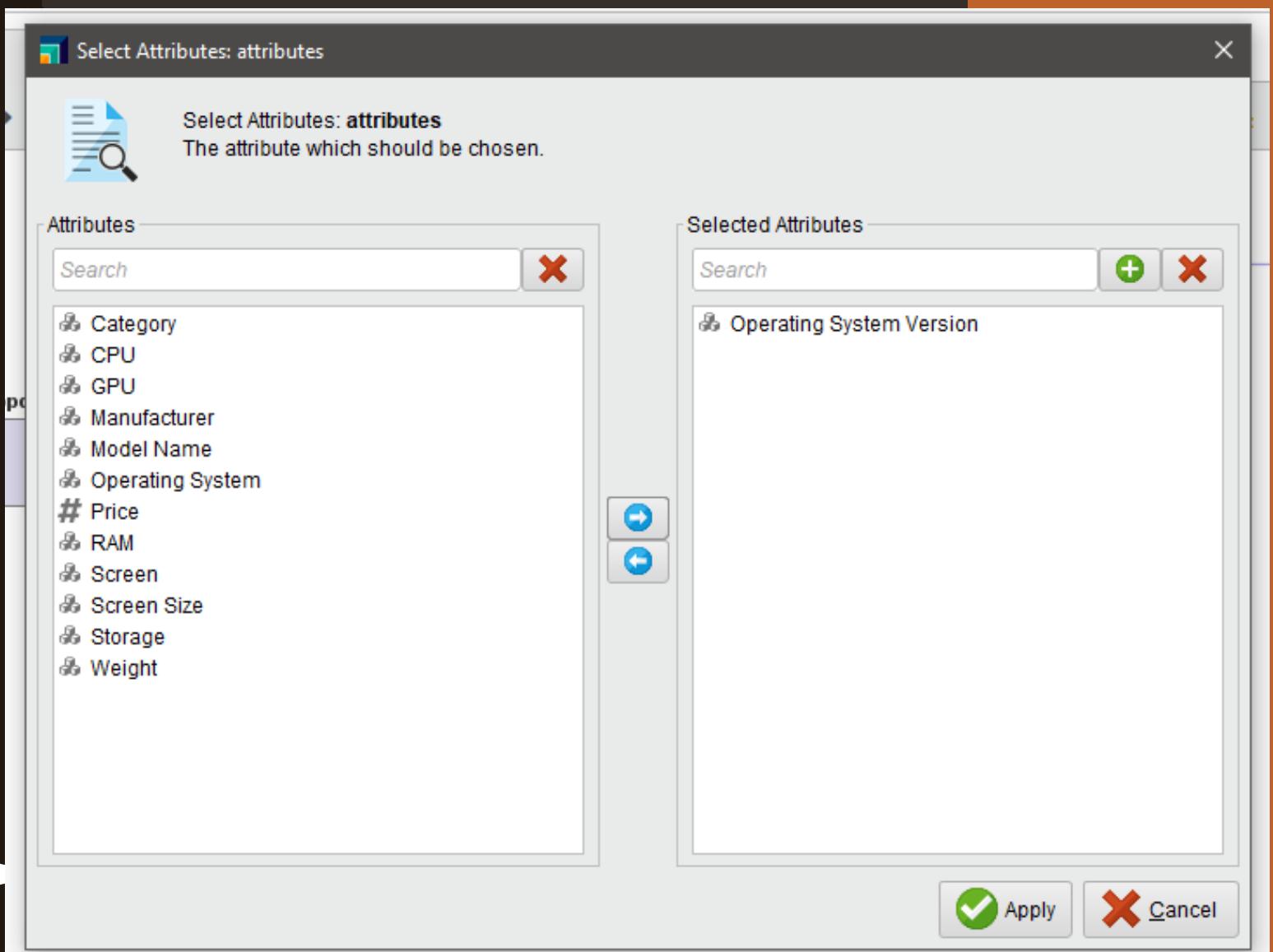
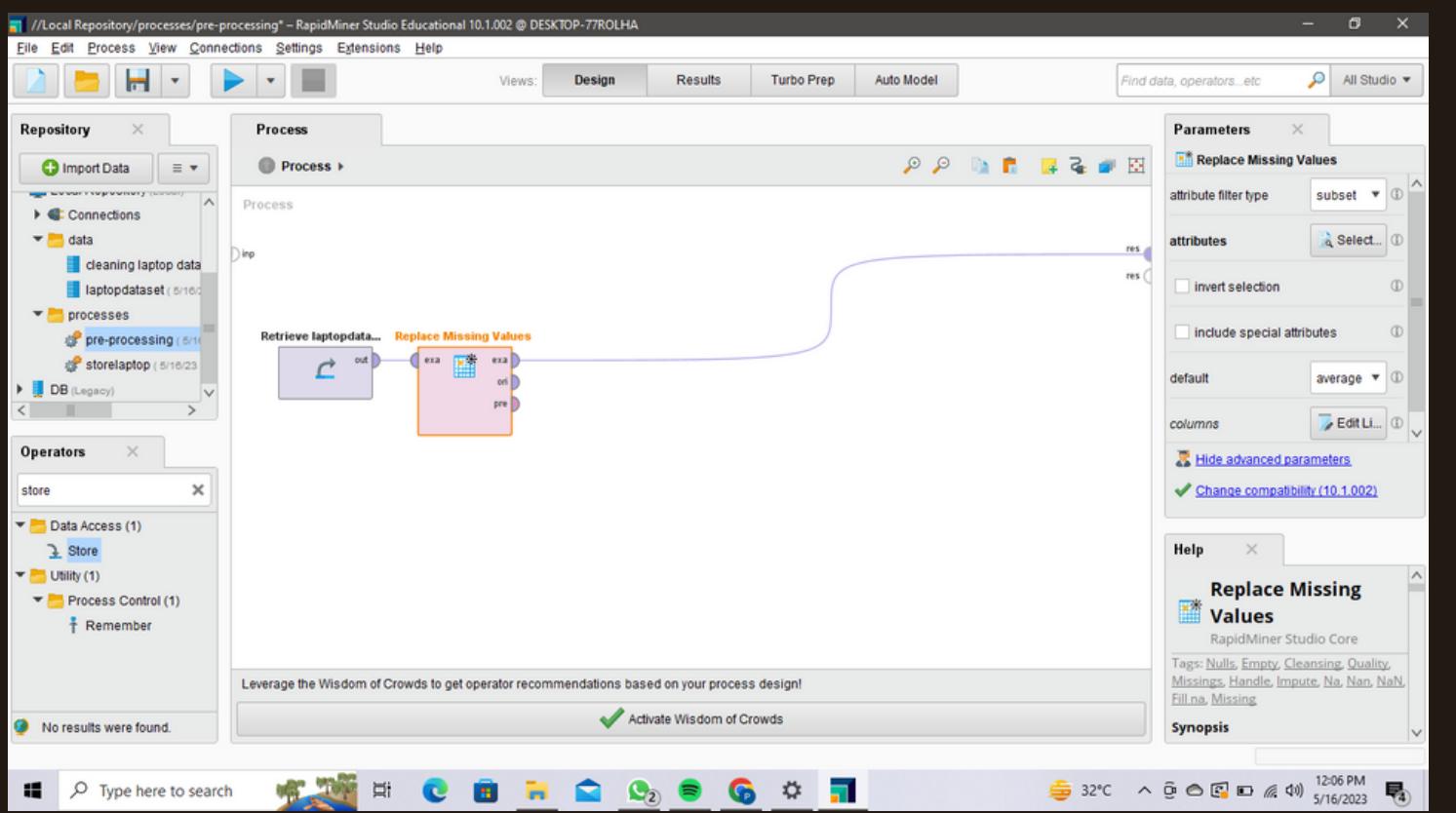


Screenshot of RapidMiner Studio showing the 'Results' view of the dataset. A red box highlights a row where the 'Operating System Version' attribute is listed as 'No OS ?'.

Row No.	Manufacturer	Model Name	Category	Screen Size	Screen	CPU	RAM	Storage	GPU	Operating S...	Operating S...
8	Dell	Inspiron 3567	Notebook	15.6"	1366x768	Intel Core i5 ...	4GB	500GB HDD	AMD Radeon ...	Windows	10
9	HP	Probook 450	Notebook	15.6"	Full HD 1920...	Intel Core i5 ...	8GB	1TB HDD	Intel HD G...	Windows	10
10	Lenovo	Legion Y520...	Gaming	15.6"	IPS Panel Ful...	Intel Core i7 ...	8GB	128GB SSD ...	Nvidia GeFor...	Windows	10
11	Dell	Inspiron 5567	Notebook	15.6"	1366x768	Intel Core i7 ...	8GB	1TB HDD	AMD Radeon ...	Windows	10
12	Dell	Latitude 5480	Notebook	14.0"	Full HD 1920...	Intel Core i5 ...	8GB	128GB SSD	Intel HD G...	Windows	10
13	HP	EliteBook Folio	Netbook	12.5"	Full HD 1920...	Intel Core M 6...	8GB	512GB SSD	Intel HD G...	Windows	10
14	HP	15-bs005nv (i...	Notebook	15.6"	Full HD 1920...	Intel Core i3 ...	4GB	128GB SSD ...	AMD Radeon ...	Windows	10
15	Lenovo	V110-15IAP (...	Notebook	15.6"	1366x768	Intel Celeron ...	4GB	128GB SSD	Intel HD G...	No OS	?
16	Lenovo	ThinkPad T560	Notebook	15.6"	Full HD 1920...	Intel Core i5 ...	8GB	256GB SSD	Intel HD G...	Windows	10
17	Dell	Inspiron 5378	2 in 1 Convert...	13.3"	Full HD / Tou...	Intel Core i5 ...	8GB	256GB SSD	Intel HD G...	Windows	10
18	Asus	ZenBook UX3...	Notebook	13.3"	Quad HD+ 32...	Intel Core i5 ...	8GB	256GB SSD	Intel HD G...	Windows	10
19	HP	Spectre 13-V...	Ultrabook	13.3"	IPS Panel Ful...	Intel Core i7 ...	8GB	256GB SSD	Intel HD G...	Windows	10
20	Acer	Aspire ES1-5...	Notebook	15.6"	1366x768	Intel Pentium ...	4GB	500GB HDD	Intel HD G...	Windows	10
21	Asus	Rog GL553V...	Gaming	15.6"	Full HD 1920...	Intel Core i7 ...	16GB	256GB SSD ...	Nvidia GeFor...	Windows	10

Membersihkan Missing Values

Untuk membersihkan missing values dapat menggunakan operator Replace Missing Value.



Setelah di Run, Missing value di atribut operating system version menjadi tidak ada.

Two screenshots of the RapidMiner Studio interface are shown side-by-side, illustrating the result of a data processing step.

Left Screenshot (Original Data):

- Operating System Version:** Polynominal, 0 missing, Least X (4), Most 10 (286), Values 10 (286), 7 (35), ...[1 more]
- Manufacturer:** Polynominal, 0 missing, Least Samsung (1), Most HP (95), Values HP (95), Lenovo (71), ...[10 more]
- Model Name:** Polynominal, 0 missing, Least ZenBook UX310UA-WB..., Most Inspiron 3567 (9), Values Inspiron 3567 (9), ...[1 more]
- Category:** Polynominal, 0 missing, Least Workstation (5), Most Notebook (178), Values Notebook (178), ...[1 more]
- Screen Size:** Polynominal, 0 missing, Least 15.0" (1), Most 15.6" (170), Values 15.6" (170), 14.0" (1), ...[1 more]
- Screen:** Polynominal, 0 missing, Least Touchscreen 1366x768 ..., Most Full HD 1920x1080 (110), Values Full HD 1920x1080 (110), ...[1 more]
- CPU:** Polynominal, 0 missing, Least Samsung [...] 0GHz (1), Most Intel Co [...] 5GHz (39), Values Intel Co [...] 0U 2.5GHz (39), Intel Co [...] 0U 2.3GHz (39), ...[1 more]

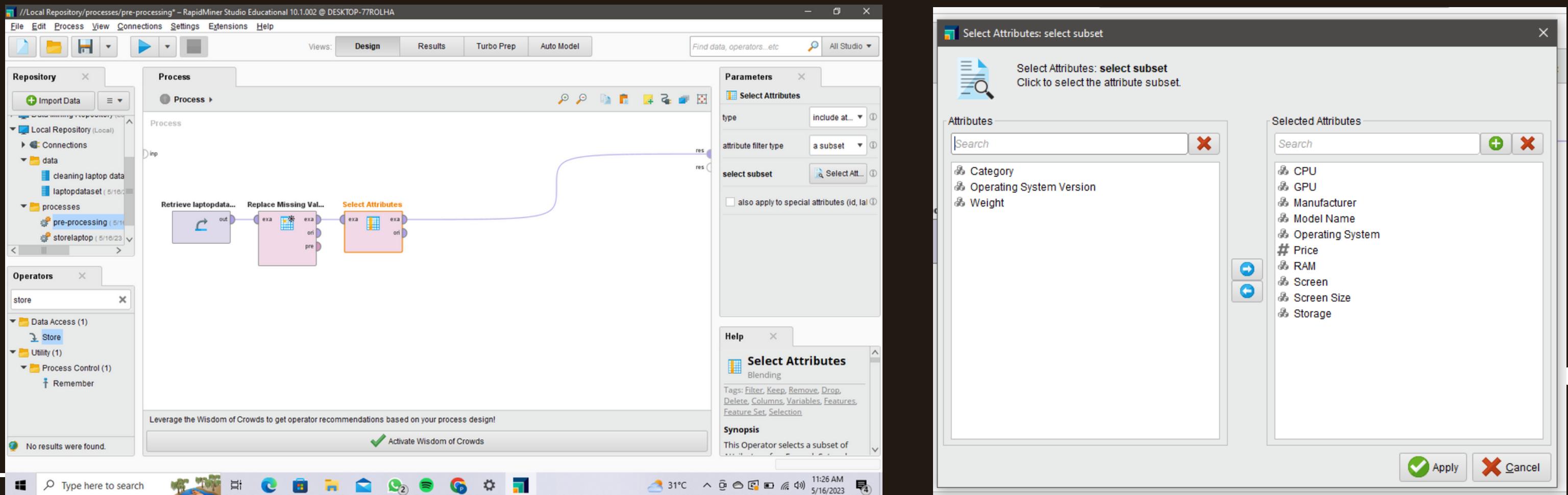
Right Screenshot (Processed Data):

- CPU:** Polynominal, 0 missing, Least Samsung [...] 0GHz (1), Most Intel Co [...] 5GHz (39), Values Intel Co [...] 0U 2.5GHz (39), Intel Co [...] 0U 2.3GHz (39), ...[1 more]
- RAM:** Polynominal, 0 missing, Least 64GB (1), Most 8GB (136), Values 8GB (136), 4GB (104), ...[6 more]
- Storage:** Polynominal, 0 missing, Least 512GB SS [...] ybrid (1), Most 256GB SSD (94), Values 256GB SSD (94), 1TB HDD (53), ...[20 more]
- GPU:** Polynominal, 0 missing, Least Nvidia Quadro M500M (1), Most Intel HD [...] 520 (87), Values Intel HD Graphics 520 (87), Intel HD Graphics 620 (56), ...[1 more]
- Operating System:** Polynominal, 0 missing, Least Android (1), Most Windows (287), Values Windows (287), Linux (14), ...[4 more]
- Weight:** Polynominal, 0 missing, Least 4Kgs (1), Most 2.2kg (23), Values 2.2kg (23), 2.4kg (17), ...[96 more]
- Price:** Real, 0 missing, Min 1547208, Max 35345700, Average 9891671.472

Seleksi Atribut

Setelah data di bersihkan dan tidak lagi adanya anomali maka selanjutnya adalah seleksi atribut yang akan digunakan pada proses data mining. Seleksi ini menggunakan operator Select Attributes.

Atribut yang akan di hilangkan adalah Category, Operating System Version dan Weight.



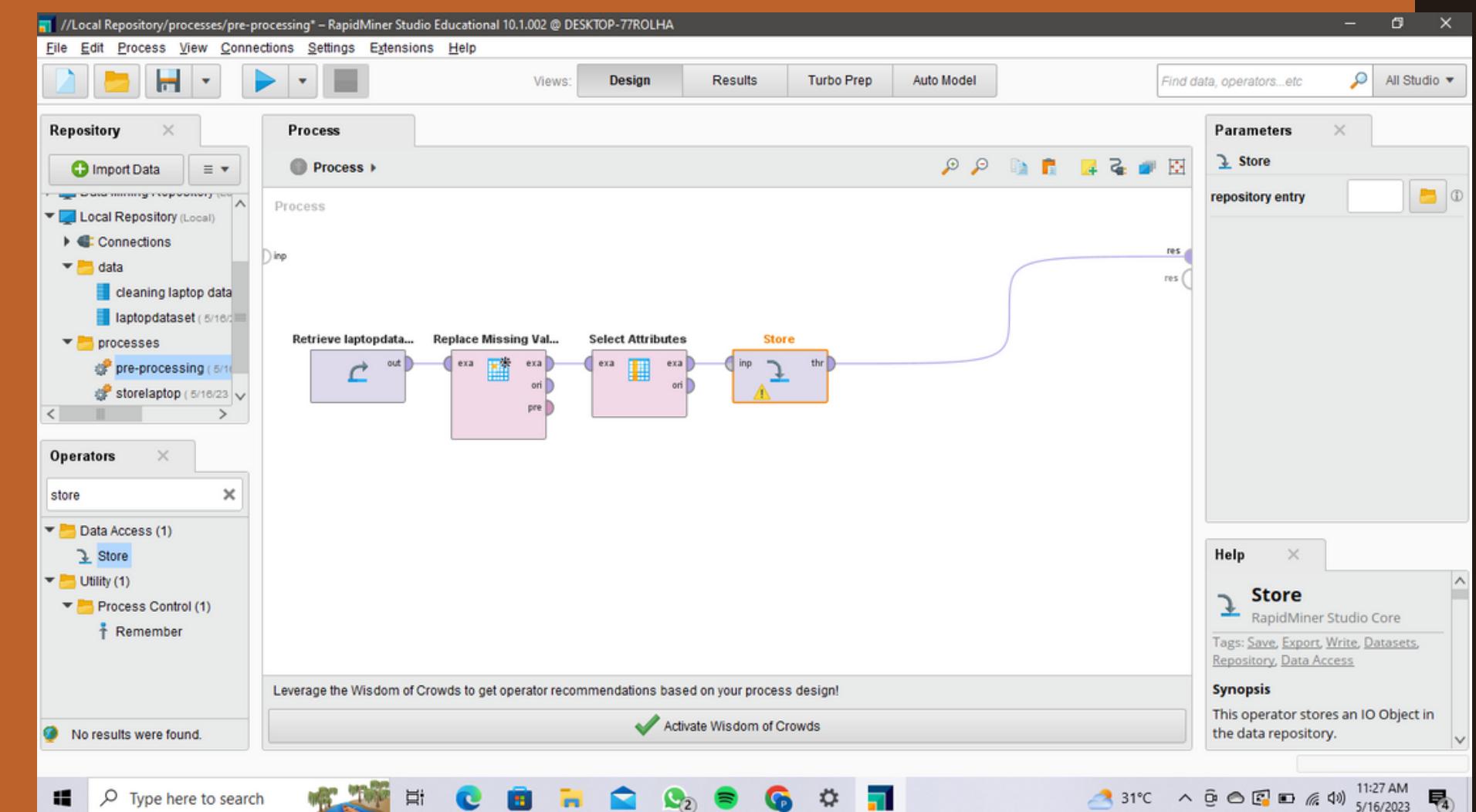
Seleksi Atribut

Setelah operator dijalankan maka atribut yang tidak terseleksi akan hilang.

Row No.	Manufacturer	Model Name	Screen Size	Screen	CPU	RAM	Storage	GPU	Operating S.	Price
1	HP	15-bs053od (...	15.6"	1366x768	Intel Core i7 ...	6GB	1TB HDD	Intel HD Grap...	Windows	5148468
2	Asus	Rog GL753V...	17.3"	Full HD 1920...	Intel Core i7 ...	16GB	256GB SSD ...	Nvidia GeFor...	Windows	15552108
3	Dell	Inspiron 7579	15.6"	IPS Panel Ful...	Intel Core i7 ...	12GB	512GB SSD	Intel HD Grap...	Windows	11550708
4	Toshiba	Portege Z30-...	13.3"	Full HD 1920...	Intel Core i5 ...	4GB	128GB SSD	Intel HD Grap...	Windows	10625940
5	Lenovo	IdeaPad 320-...	15.6"	Full HD 1920...	AMD A12-Seri...	6GB	256GB SSD	AMD Radeon ...	Windows	4881708
6	Fujitsu	LifeBook A556	15.6"	1366x768	Intel Core i5 ...	4GB	256GB SSD	Intel HD Grap...	Windows	5770908
7	Toshiba	Tecra A40-C-...	14.0"	1366x768	Intel Core i5 ...	4GB	500GB HDD	Intel HD Grap...	Windows	8136180
8	Dell	Inspiron 3567	15.6"	1366x768	Intel Core i5 ...	4GB	500GB HDD	AMD Radeon ...	Windows	5326308
9	HP	Probook 450	15.6"	Full HD 1920...	Intel Core i5 ...	8GB	1TB HDD	Intel HD Grap...	Windows	7166952
10	Lenovo	Legion Y520-...	15.6"	IPS Panel Ful...	Intel Core i7 ...	8GB	128GB SSD ...	Nvidia GeFor...	Windows	10572588
11	Dell	Inspiron 5567	15.6"	1366x768	Intel Core i7 ...	8GB	1TB HDD	AMD Radeon ...	Windows	6660108
12	Dell	Latitude 5480	14.0"	Full HD 1920...	Intel Core i5 ...	8GB	128GB SSD	Intel HD Grap...	Windows	9950148
13	HP	EliteBook Folio	12.5"	Full HD 1920...	Intel Core M 6...	8GB	512GB SSD	Intel HD Grap...	Windows	16965936
14	HP	15-bs005nv (i...	15.6"	Full HD 1920...	Intel Core i3 ...	4GB	128GB SSD ...	AMD Radeon ...	Windows	4437108
15	Lenovo	V110-15IAP (...	15.6"	1366x768	Intel Celeron ...	4GB	128GB SSD	Intel HD Grap...	No OS	2406353.040

Simpan data

Setelah semua tahapan pre-processing dilakukan maka data di simpan menggunakan operator store ke repository yang sudah dibuat.





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Thank You!

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