

Nama : Dessy Nur Azizah
NIM : L200170016
Kelas : A

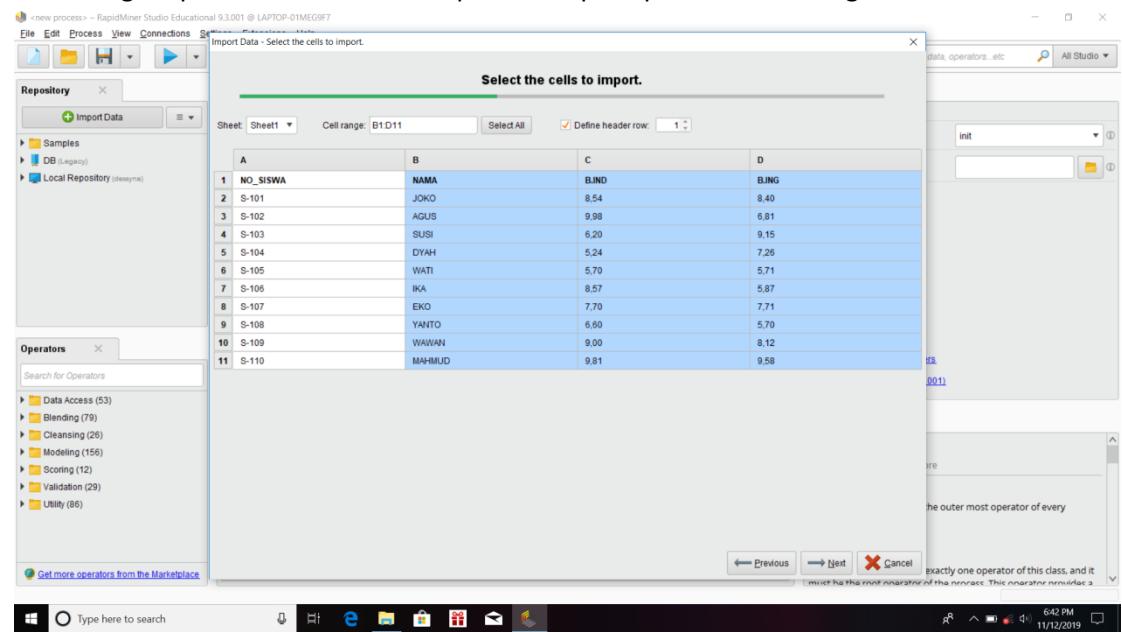
MODUL 10

CLUSTERING : K-MEANS

Langkah - langkah Praktikum

a. Algoritma K-Means Menggunakan RapidMiner

1. Buka Ms. Excel, dan buatlah tabel data nilai ujian siswa tersebut, Simpan dengan nama Tabel_NilaiUjian.xls
2. Jalankan aplikasi RapidMiner
3. Gunakan file Tabel_NilaiUjian.xls sebagai data yang akan digunakan dalam proses Clustering. Import file ini ke dalam repositori seperti pada Modul 8 Kegiatan 8.4.2



4. Ubah kolom NAMA menjadi id, dengan cara klik Change role >> id >> OK

Format your columns.

Replace errors with missing values

NAMA	B.IND	B.ING
polynomial	polynomial	polynomial
1 JOKO	8.54	8.40
2 AGUS	9.98	6.81
3 SUSI	6.00	6.46
4 DYAH		
5 WATI		
6 IKA		
7 EKO		
8 YANITO		
9 WAWAN		
10 MAHMUD		

Please enter the new role:

OK Cancel

no problems.

Previous Next Cancel

This screenshot shows the RapidMiner Studio interface with a 'Format your columns' dialog open. The dialog displays a table of student names and their scores for B.IND and B.ING. A modal window titled 'Change role' is overlaid, asking for a new role name. The current role is 'id'. The system status bar at the bottom right shows '644 PM 11/12/2019'.

Format your columns.

Replace errors with missing values

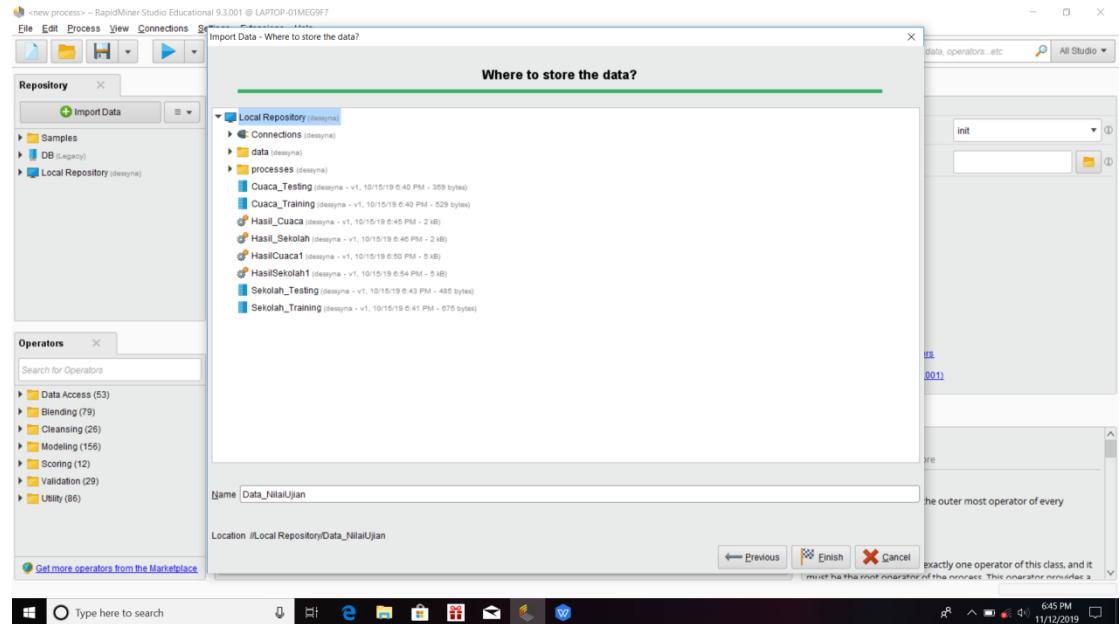
NAMA	B.IND	B.ING
polynomial	real	real
1 JOKO	8.540	8.400
2 AGUS	9.980	6.810
3 SUSI	6.200	9.150
4 DYAH	5.240	7.260
5 WATI	5.700	5.710
6 IKA	8.570	5.870
7 EKO	7.700	7.710
8 YANITO	6.600	5.700
9 WAWAN	9.000	8.120
10 MAHMUD	9.810	9.580

no problems.

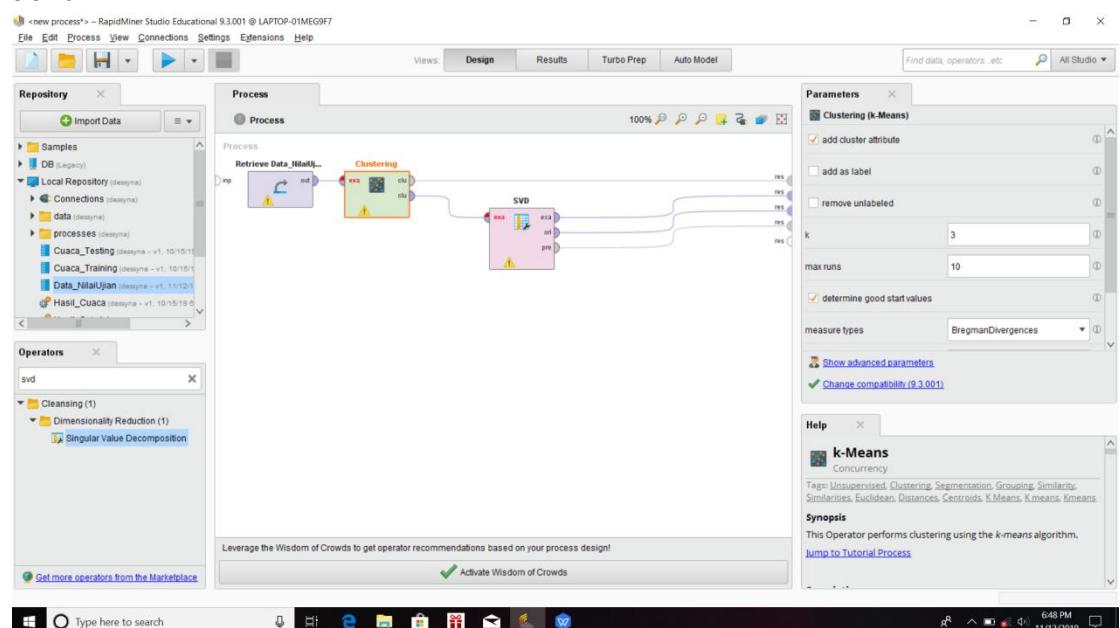
Previous Next Cancel

This screenshot shows the same RapidMiner Studio interface after the role change. The 'Format your columns' dialog now displays 'real' instead of 'polynomial' for the first row. The system status bar at the bottom right shows '654 PM 11/12/2019'.

5. Beri nama Data_NilaiUjian masukkan pada repositories. Kemudian klik finish



6. Gunakan Data_NilaiUjian ini dan masukkan dalam area process.
 7. Tambahkan operator k-Means. Ubah nama operator ini menjadi k-Means. Hubungkan utput operator retrieve ke entry exa operator ini dan output clu (cluster model) dihubungkan ke connector res panel. Ubah nilai parameter k = 3 pada operator ini. Angka ini digunakan untuk menentukan jumlah kelompok siswa.



8. Tambahkan pula operator SVD (Singular Value Decompositon). hubungkan output clu (clustered set) ke-2 operaor clustering(k-Means) ke adalam entry exa operator SVD dan 3 port output exa, ori dan pre terhadap connector panel res.
 9. Jalankan process dengan menekan tombol Run.

10. Berikut hasil process Clustering dengan algoritma K-Means.

a) SVD

i. Nilai Eigenvalue

The screenshot shows the RapidMiner Studio interface with the 'SVD (SVD)' process selected. The 'Eigenvalues' tab is active, showing the following data:

Component	Singular Value	Proportion of Singular Values	Cumulative Singular Values	Cumulative Proportion of Singular Values
SVD 1	34.340	0.898	34.340	0.898
SVD 2	3.906	0.102	38.246	1.000

The 'Repository' panel on the right lists various datasets and processes. The taskbar at the bottom shows the date and time as 6:55 PM on 11/12/2019.

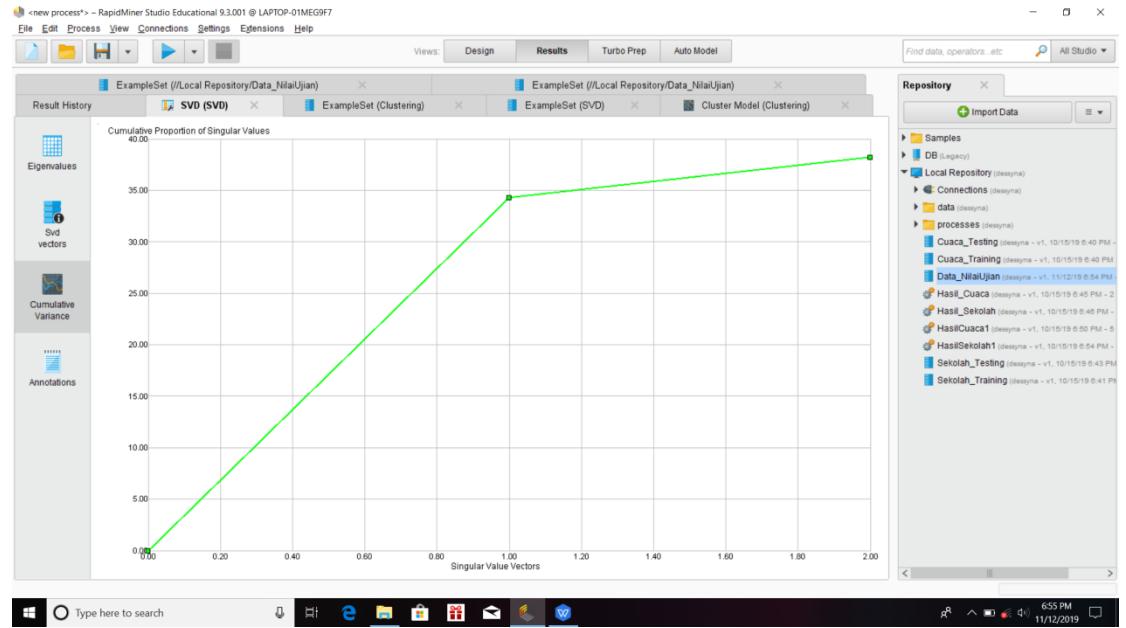
ii. Nilai Svd vectors

The screenshot shows the RapidMiner Studio interface with the 'SVD (SVD)' process selected. The 'Svd vectors' tab is active, showing the following data:

Attribute	SVD Vector 1
B IND	0.723
B ING	0.690

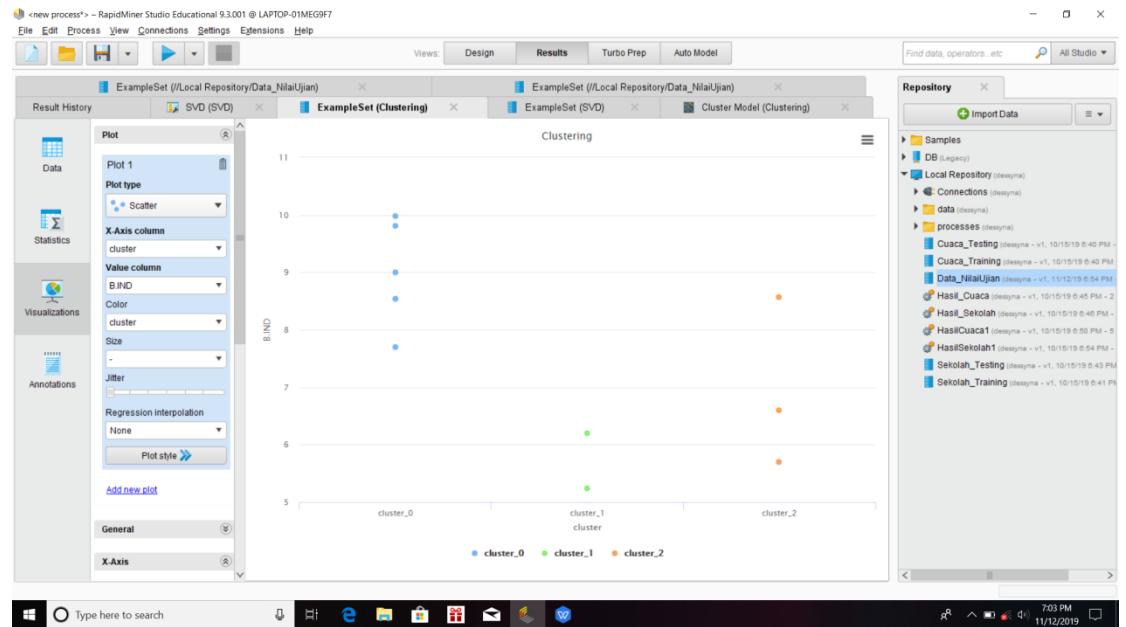
The 'Repository' panel on the right lists various datasets and processes. The taskbar at the bottom shows the date and time as 6:55 PM on 11/12/2019.

iii. Nilai cumulative variance

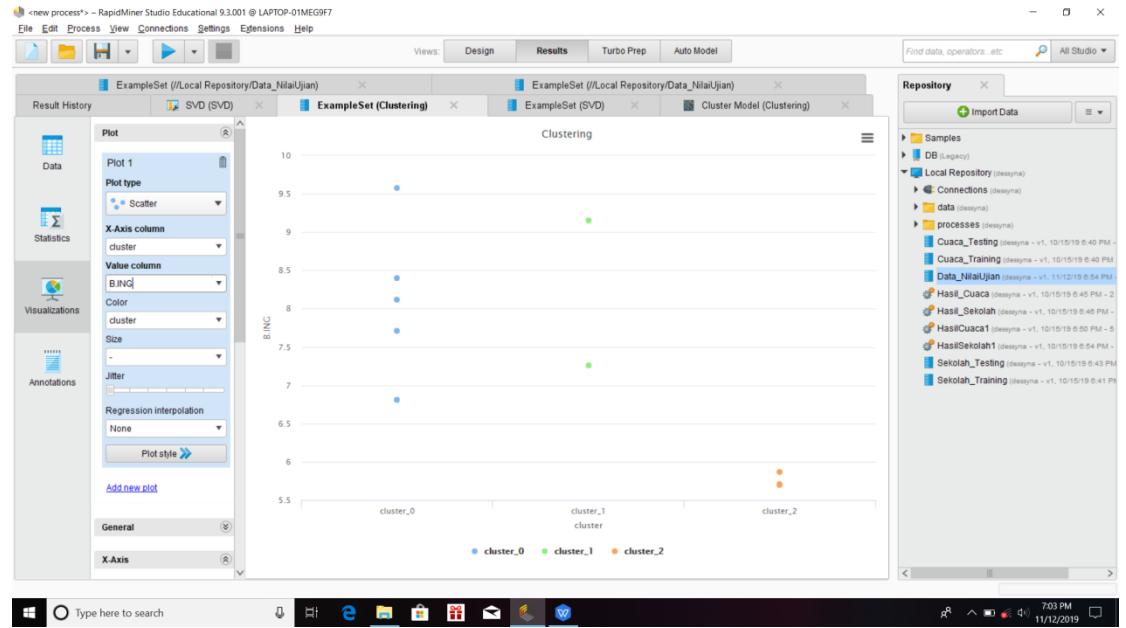


b) ExampleSet (k-Means)

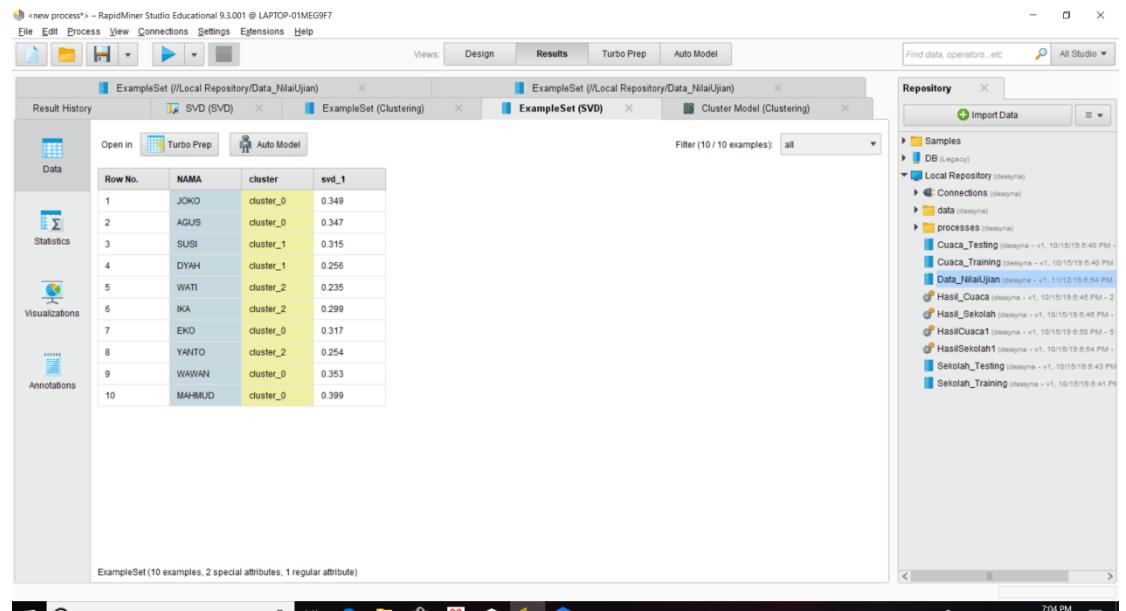
i. Kelompok Siswa bidang B.Indonesia



ii. Kelompok Siswa bidang B. Inggris

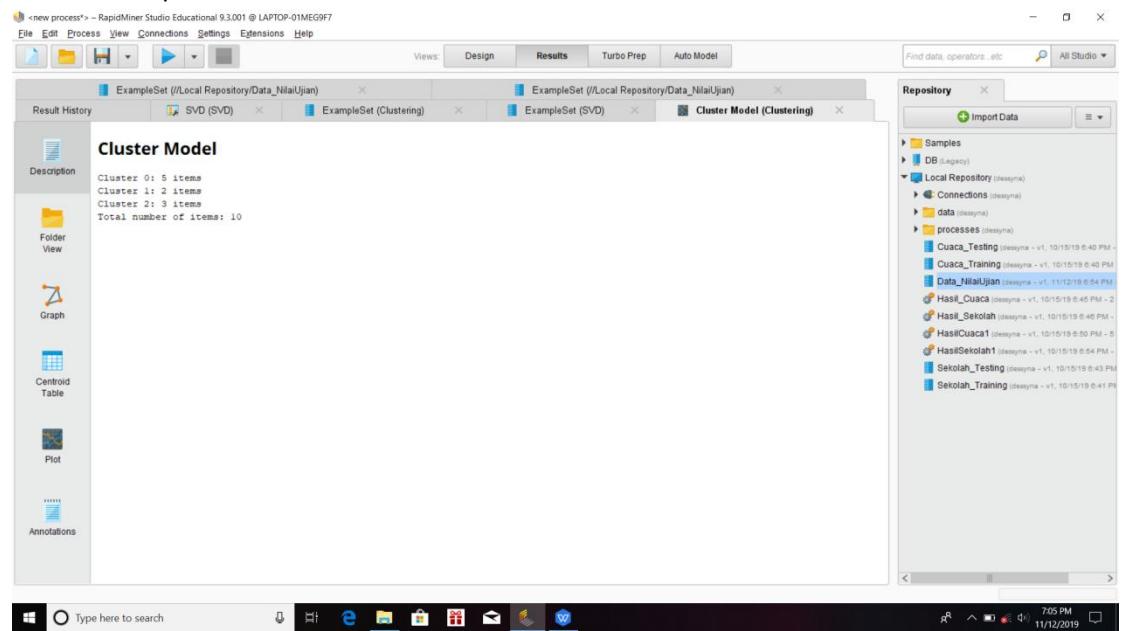


c) ExampleSet (SVD)

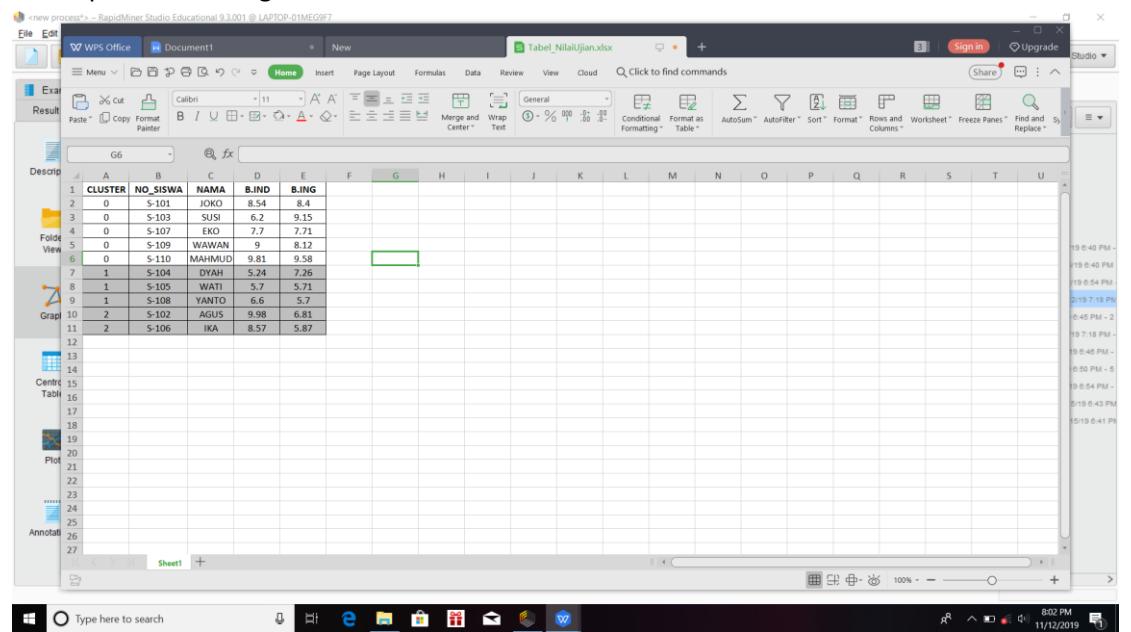


d) Cluster Model (Clustering)

i. Description



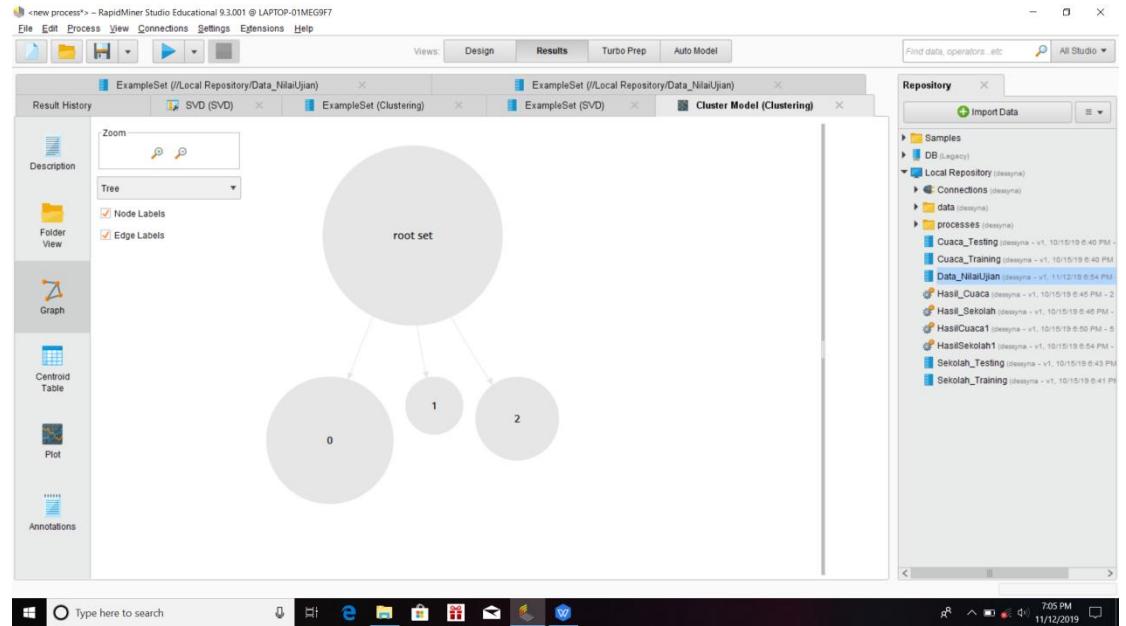
b. Interpretasi Hasil Aggoritma K-Means



Pembagian kelompok yang diajukan untuk lomba olimpiade :

1. Cluster_2 yang diajukan untuk lomba olimpiade bidang B.Indonesia
2. Cluster_0 yang diajukan untuk lomba olimpiade bidang B.England

ii. Graph



Tugas

1. Buatlah tipe berikut dengan menggunakan Microsoft Excel !

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	NO_SISWA	NAMA	B.IND	B.ING	MTK	IPA													
2	S-101	YOKO	6.946091051	9.76655197	6.400701886	5.561797903													
3	S-102	AGUS	8.927866683	9.552811877	7.834146055	9.407904628													
4	S-103	SUJI	8.783662979	6.069341438	5.001231269	7.733433863													
5	S-104	DYAH	9.142285245	7.702192587	8.041770661	9.03306207													
6	S-105	WATI	8.065556869	7.923331391	5.338498288	6.72221931													
7	S-106	IKA	7.354354584	9.18292395	9.668485457	9.223160414													
8	S-107	EKO	7.37341481	5.782211515	7.846805065	8.986749852													
9	S-108	YANTO	6.187878682	6.138585665	9.380143341	5.640649491													
10	S-109	WAWAN	6.352430836	7.667098448	9.027589108	8.930262766													
11	S-110	MAHMUD	9.557750774	7.208304925	8.676005152	7.828432092													
12	S-111	BUDI	5.000221474	7.982355875	9.244884025	5.583383635													
13	S-112	SANTI	7.832484303	7.905048622	7.586385154	5.714966367													
14	S-113	DIAN	6.36937844	8.454482483	9.010179636	6.87866741													
15	S-114	DANI	9.205411027	8.834176759	5.213821488	5.075841129													
16	S-115	AHMAD	6.672282117	5.622583461	7.407860401	5.956249118													
17	S-116	BAYU	5.128274954	5.062253146	5.407970115	8.562173563													
18	S-117	RISA	5.914562545	9.257454574	6.03388747	5.181892126													
19	S-118	RAMI	9.642489592	7.2121403324	8.023001825	6.752380073													
20	S-119	YANI	7.50765808	5.367688022	9.5561954	8.865848409													
21	S-120	RATHI	6.524777301	8.502775869	6.016231659	9.135420483													
22	S-121	INDAH	6.485487012	6.574451248	5.150098078	5.319564425													
23	S-122	JONO	9.785377166	9.835131244	7.027548972	5.730500811													
24	S-123	SARAH	8.208108527	6.924350459	6.814151404	8.481927472													
25	S-124	RAMA	7.590406452	7.36062342	5.828736084	7.597229715													
26	S-125	BAMBANG	8.038076793	5.307019747	5.7320864	9.34551479													
27	S-126	HADI	7.006021651	7.475932852	6.264661311	6.584696993													
28	S-127	NANA	5.075351864	7.682685913	6.130761757	6.264368747													
29	S-128	FEBRI	9.597445846	8.914587056	6.78582682	5.172053349													
30	S-129	DENI	7.557827573	8.063801813	6.086578441	8.757632073													
31	S-130	TONI	6.340335171	6.170818596	8.295743535	6.658043851													

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
8	S-107	EKO	7.37341481	5.782211515	7.846805065	8.986749852													
9	S-108	WAWAN	6.352430836	7.667098448	9.027589108	8.930262766													
10	S-109	MAHMUD	9.557750774	7.208304925	8.676005152	7.828432092													
11	S-110	BUDI	5.000221474	7.982355875	9.244884025	5.583383635													
12	S-111	SANTI	7.832484303	7.905048622	7.586385154	5.714966367													
13	S-112	DIAN	6.36937844	8.454482483	9.010179636	6.87866741													
14	S-113	DANI	9.205411027	8.834176759	5.213821488	5.075841129													
15	S-114	AHMAD	6.672282117	5.622583461	7.407860401	5.956249118													
16	S-115	BAYU	5.128274954	5.062253146	5.407970115	8.562173563													
17	S-116	RISA	5.914562545	9.257454574	6.03388747	5.181892126													
18	S-117	RAMI	9.642489592	7.2121403324	8.023001825	6.752380073													
19	S-118	YANI	7.50765808	5.367688022	9.5561954	8.865848409													
20	S-119	RATHI	6.524777301	8.502775869	6.016231659	9.135420483													
21	S-120	INDAH	6.485487012	6.574451248	5.150098078	5.319564425													
22	S-121	JONO	9.785377166	9.835131244	7.027548972	5.730500811													
23	S-122	SARAH	8.208108527	6.924350459	6.814151404	8.481927472													
24	S-123	RAMA	7.590406452	7.36062342	5.828736084	7.597229715													
25	S-124	BAMBANG	8.038076793	5.307019747	5.7320864	9.34551479													
26	S-125	HADI	7.006021651	7.475932852	6.264661311	6.584696993													
27	S-126	NANA	5.075351864	7.682685913	6.130761757	6.264368747													
28	S-127	FEBRI	9.597445846	8.914587056	6.78582682	5.172053349													
29	S-128	TONI	6.340335171	6.170818596	8.295743535	6.658043851													
30	S-129																		
31	S-130																		

2. Lakukan kembali kegiatan 10.4.1 dan 10.4.2 pada modul 10 tabel Tabel_NilaiUjian 30 siswa tersebut dengan ketentuan jumlah Cluster = 4. catat dan tulis semua hasilnya pada lembar jawaban anda

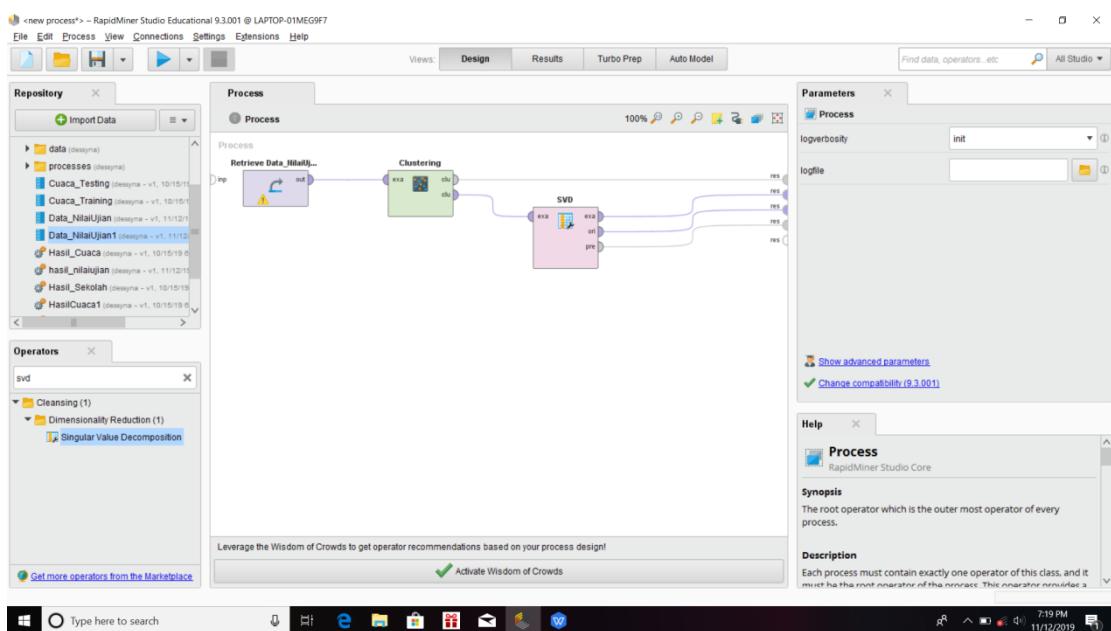
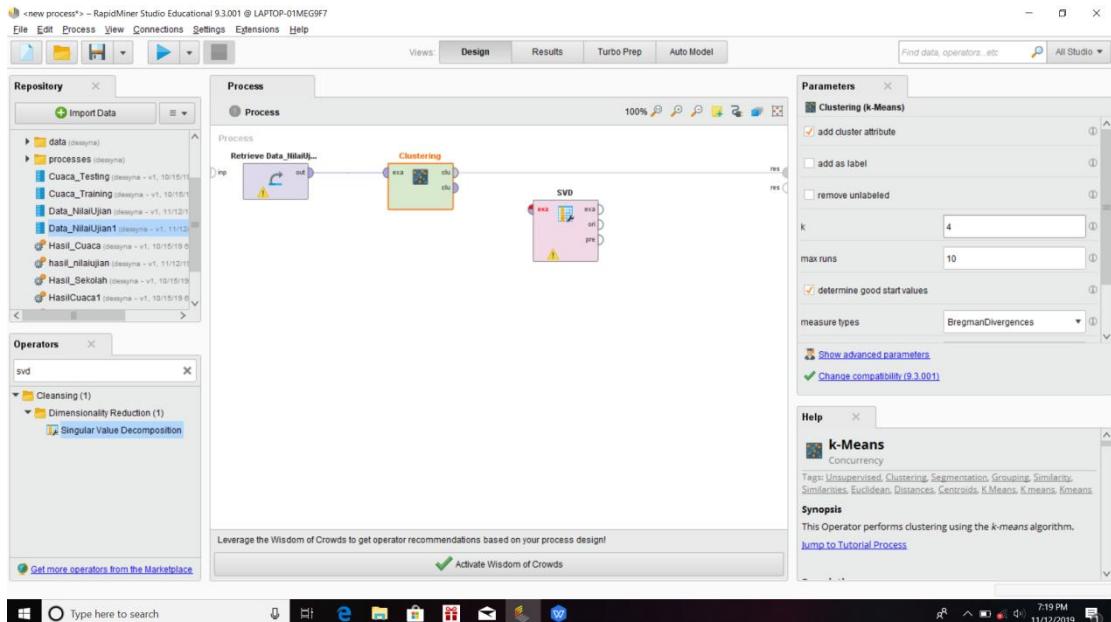
a) Mengimport data nilai 30 siswa ke dalam rapidMiner

A	B	C	D	E	F
S-110	MAHMUD	6.959	9.358	8.502	7.832
S-111	BUDI	7.309	5.966	7.853	7.104
S-112	SANTI	9.603	9.650	8.857	8.708
S-113	DIAN	9.718	6.269	6.783	9.131
S-114	DANI	8.769	8.318	7.891	8.624
S-115	AHMAD	8.133	5.294	9.953	9.381
S-116	BAYU	6.811	8.177	9.560	6.083
S-117	RISA	5.286	5.307	9.870	8.942
S-118	RANI	8.148	8.629	8.585	8.704
S-119	YANI	6.653	7.034	5.025	7.687
S-120	RATIH	8.230	5.251	5.866	9.685
S-121	INDAH	6.730	7.101	8.758	6.644
S-122	JONO	9.087	6.117	7.414	9.844
S-123	SARAH	9.490	8.822	6.435	8.797
S-124	RAMA	5.491	9.094	6.824	7.843
S-125	BAMBANG	7.226	9.144	8.444	8.882
S-126	HADI	9.206	5.546	5.639	9.591
S-127	NANA	9.841	5.325	6.823	6.677
S-128	FEBRI	7.874	9.052	7.166	7.076
S-129	DENI	7.630	7.199	6.770	9.081
S-130	TONI	8.844	8.158	5.125	8.338

b) Merubah nama menjadi id

NAMA	B.IND	B.ING	MTK	IPA
JOKO	5.671	8.252	7.110	7.535
AGUS	6.878	7.069	6.072	5.310
SUSI	8.750	5.994	8.847	5.603
DYAH	5.092	7.966	5.672	9.594
WATI	9.254	7.735	8.849	5.909
ika	6.805	6.294	9.209	9.586
EKO	7.156	9.033	5.983	7.439
YANTO	9.807	9.505	7.593	5.922
WAWAN	6.220	9.844	8.225	8.910
MAHMUD	6.959	9.358	8.502	7.832
BUDI	7.309	5.966	7.853	7.104
SANTI	9.603	8.650	8.657	8.708
DIAN	9.718	6.269	6.783	9.131
DANI	8.769	8.318	7.891	8.624
AHMAD	8.133	5.294	9.953	9.381
BAYU	6.811	8.177	9.560	6.083
RISA	5.286	5.307	9.870	8.942
RANI	8.148	8.629	8.585	8.704
YANI	6.653	7.034	5.025	7.687

- c) Drag data nilai ke dalam lebar kerja lalu ditambahkan operator k-Means dan SVD pada K-Means dirubah k = 4



d) Menjalankan program dengan cara di Run atau klik F11

a. SVD

i. Nilai Eigenvalue

The screenshot shows the RapidMiner Studio interface with the 'Results' tab selected. A table titled 'Eigenvalues' displays the singular values and their proportions for four components (SVD 1 to SVD 4). The table has columns: Component, Singular Value, Proportion of Singular Values, Cumulative Singular Values, and Cumulative Proportion of Singular Values.

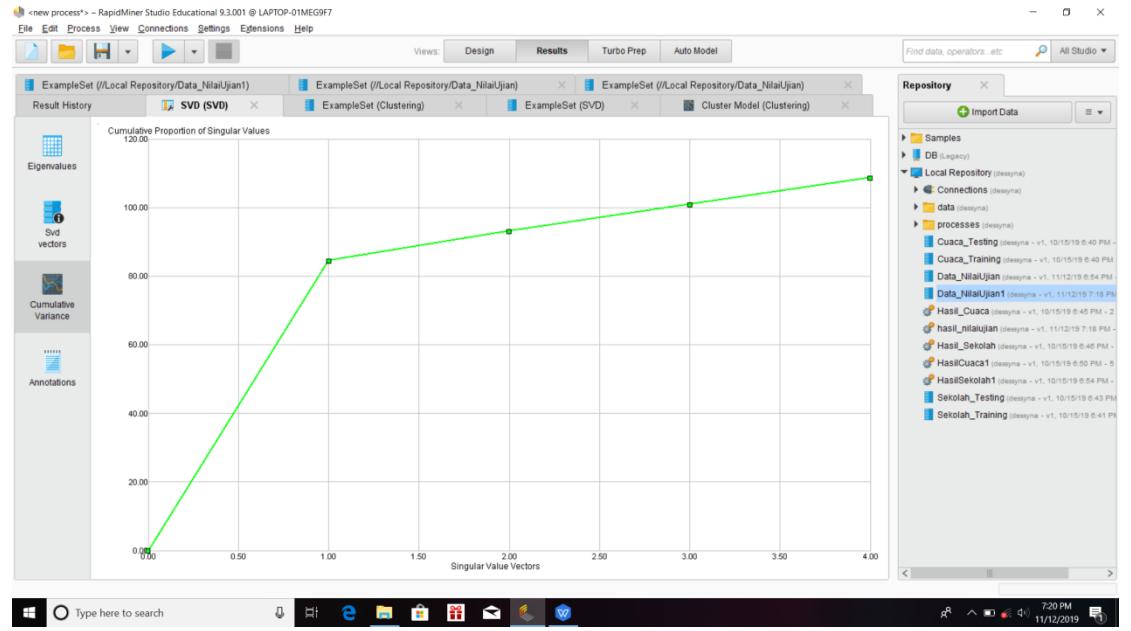
Component	Singular Value	Proportion of Singular Values	Cumulative Singular Values	Cumulative Proportion of Singular Values
SVD 1	84.541	0.777	84.541	0.777
SVD 2	8.612	0.079	93.153	0.856
SVD 3	7.866	0.072	101.019	0.929
SVD 4	7.776	0.071	108.795	1.000

ii. Nilai Svd vectors

The screenshot shows the RapidMiner Studio interface with the 'Results' tab selected. A table titled 'Svd vectors' displays the SVD vectors for four attributes (BIND, BING, MTK, IPA) across three dimensions (Vector 1, Vector 2, Vector 3). The table has columns: Attribute, SVD Vector 1, SVD Vector 2, and SVD Vector 3.

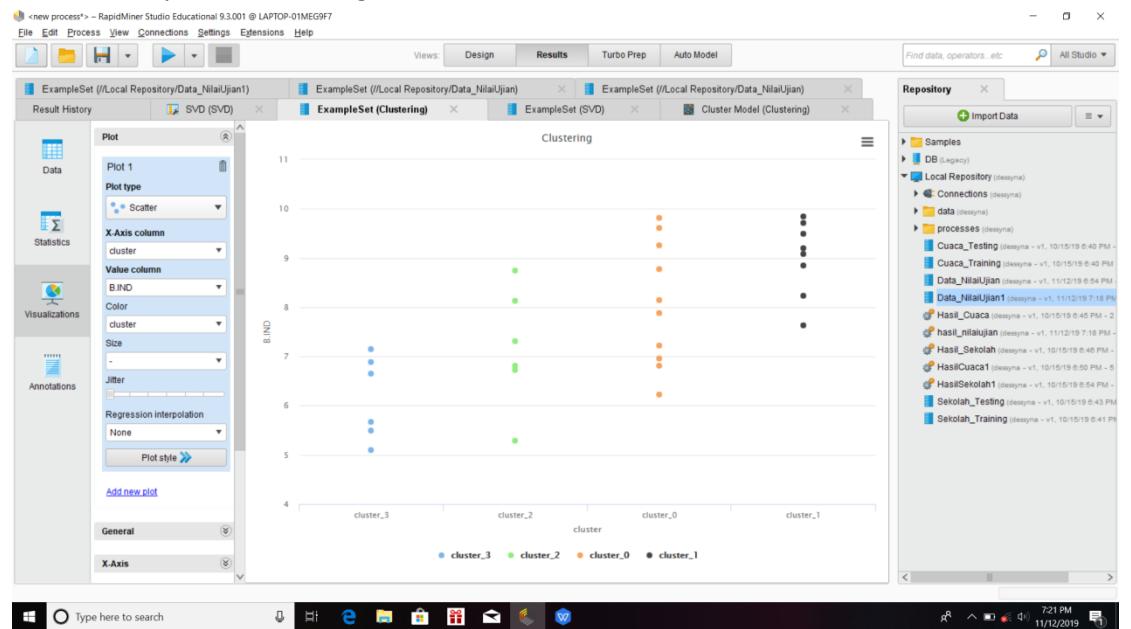
Attribute	SVD Vector 1	SVD Vector 2	SVD Vector 3
BIND	0.504	-0.440	0.738
BING	0.491	0.768	0.166
MTK	0.489	0.148	-0.337
IPA	0.516	-0.442	-0.560

iii. Nilai Cumulative variance

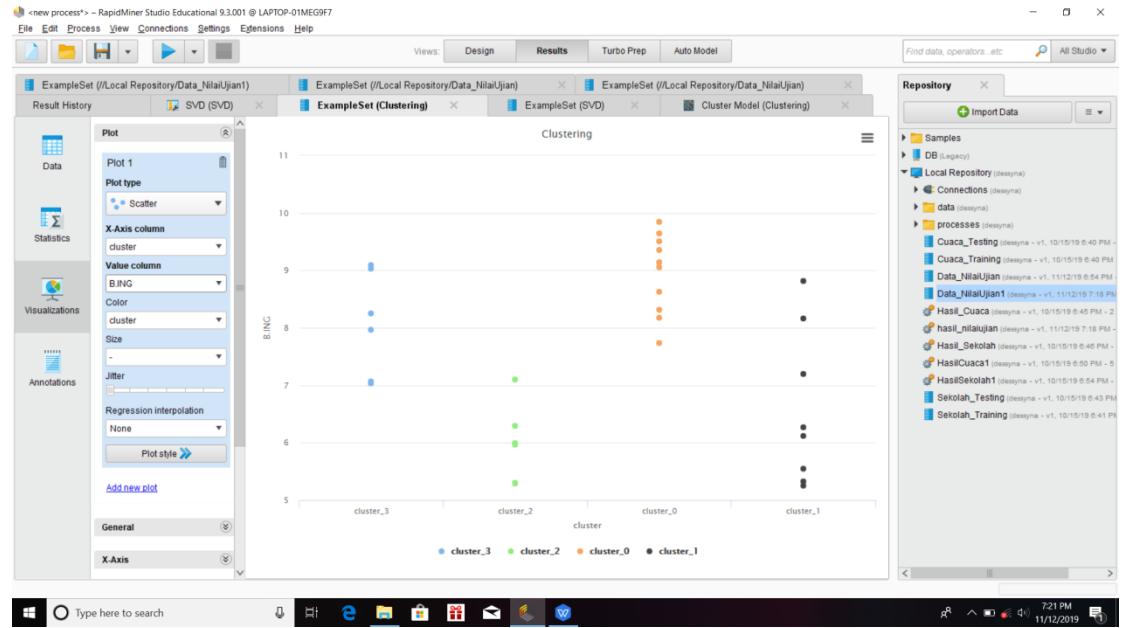


b. ExampleSet (k-Means)

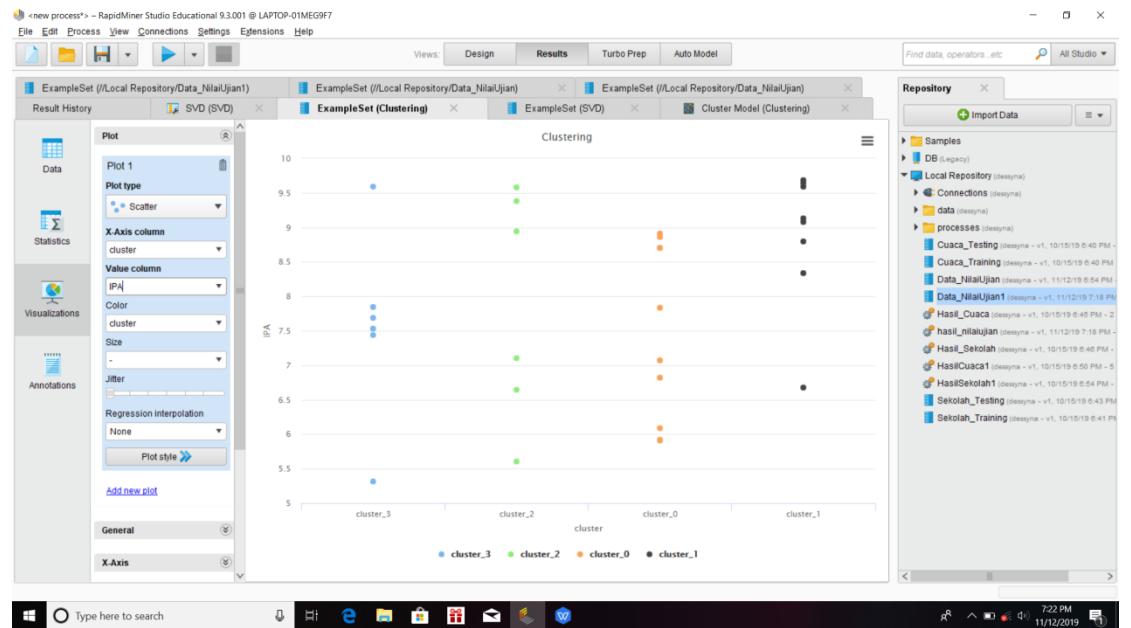
i. Kelompok Siswa bidang B.Indonesia



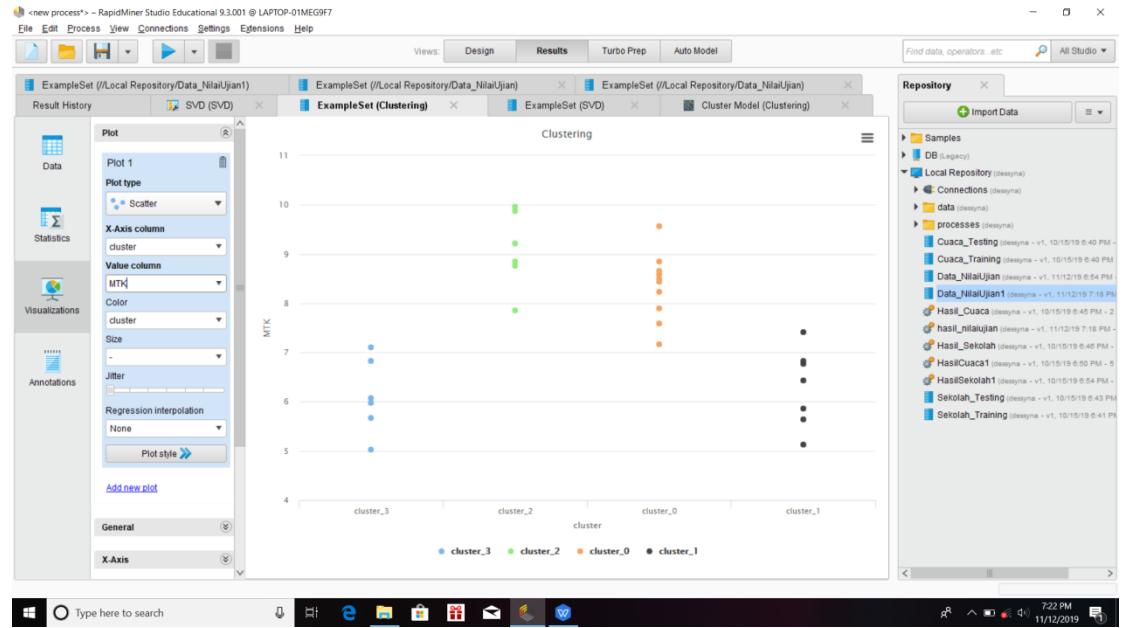
ii. Kelompok Siswa bidang B. Inggris



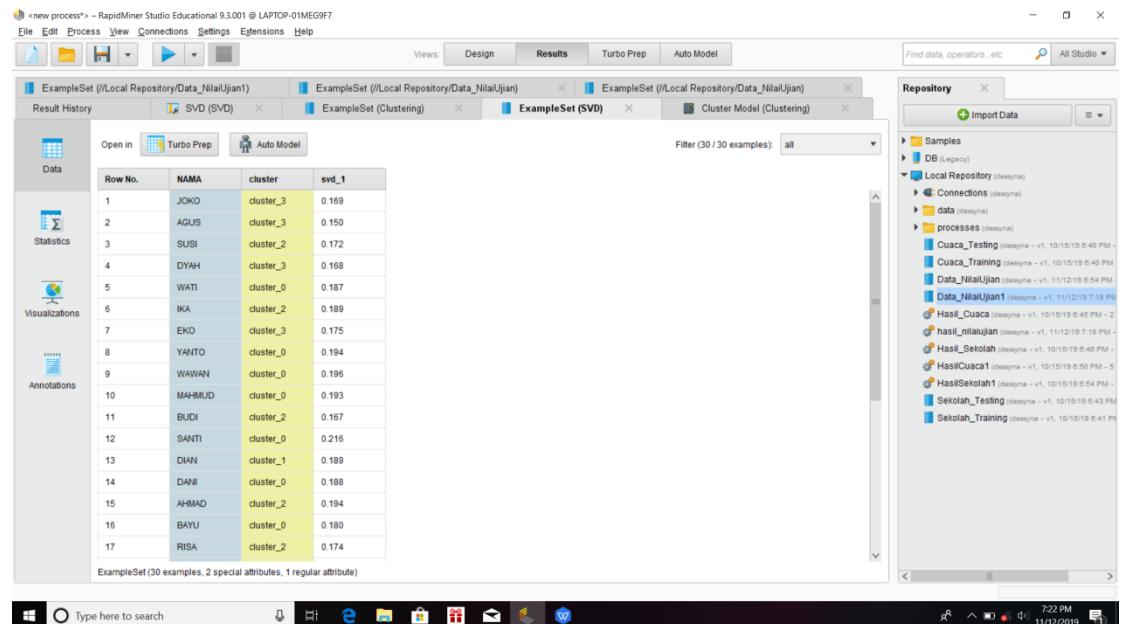
iii. Kelompok Siswa bidang IPA



iv. Kelompok Siswa bidang Matematika



c. ExampleSet (SVD)



Data View (ExampleSet)

Row No.	NAMA	cluster	svd_1
14	DANI	cluster_0	0.188
15	AHMAD	cluster_2	0.194
16	BAYU	cluster_0	0.180
17	RISA	cluster_2	0.174
18	RANI	cluster_0	0.201
19	YANI	cluster_3	0.156
20	RATIH	cluster_1	0.173
21	INDAH	cluster_2	0.173
22	JONO	cluster_1	0.191
23	SARAH	cluster_1	0.199
24	RAMA	cluster_3	0.173
25	BAMBANG	cluster_0	0.199
26	HADI	cluster_1	0.178
27	NANA	cluster_1	0.170
28	FEBRI	cluster_0	0.184
29	DENI	cluster_1	0.182
30	TONI	cluster_1	0.181

ExampleSet (30 examples, 2 special attributes, 1 regular attribute)

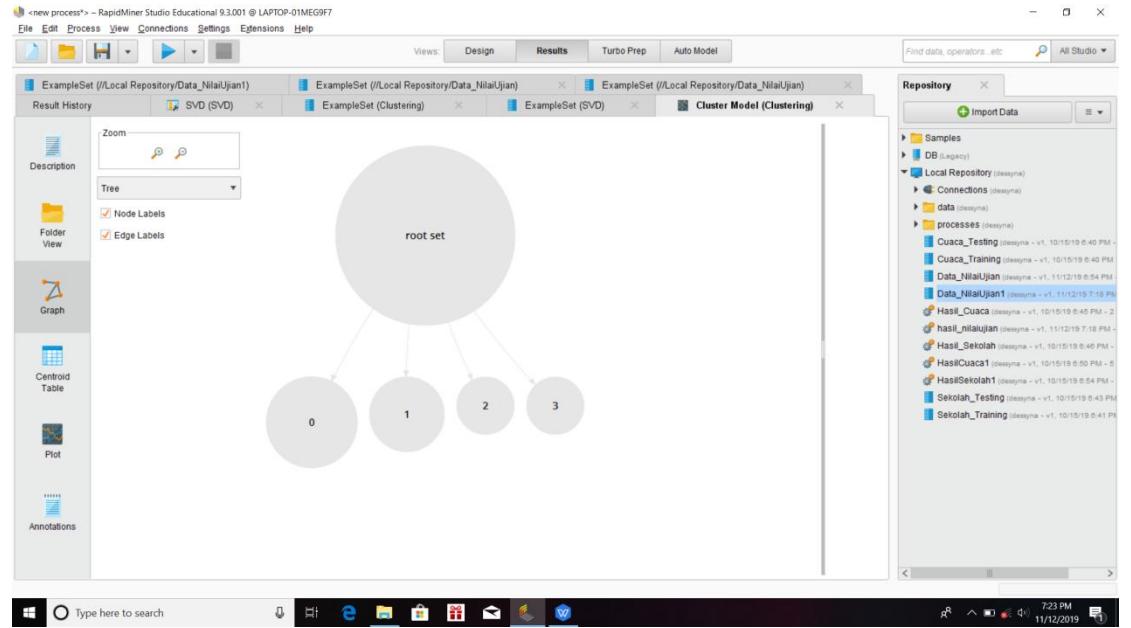
d. Cluster Mode (Clustering)

i. Description

Cluster Model

Cluster 0: 10 items
Cluster 1: 8 items
Cluster 2: 6 items
Cluster 3: 6 items
Total number of items: 30

ii. Graph



3. Tulislah masing-masing nama siswa yang terdapat dalam kelompok Cluster 0, Cluster 1, Cluster 2, dan Cluster 3.

The screenshot shows an Excel spreadsheet titled 'Document1' with data in 'Sheet2'. The table has two columns: 'CLUSTER' and 'NAMA'. The data is as follows:

	A	B
1	CLUSTER	NAMA
2	0	WATI
3	0	YANTO
4	0	WAHAN
5	0	MAHMUD
6	0	SANTI
7	0	DANI
8	0	BAYU
9	0	RANI
10	0	BAMBANG
11	0	FERBRI
12	1	DIAN
13	1	RATHI
14	1	JONO
15	1	SARAH
16	1	HADI
17	1	NANA
18	1	DENI
19	1	TONI
20	2	SUSI
21	2	IKA
22	2	BUDI
23	2	AHMAD
24	2	RISA
25	2	INDAH
26	3	JOKO
27	3	AGUS

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K22 A B C D E F G H I J K L M N O P Q R S T U

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
28	3	DYAH																			
29	3	EKO																			
30	3	YANI																			
31	3	RAMA																			
32																					
33																					
34																					
35																					
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Sheet1 Sheet2 +

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