Muhibah Fata Tika
L200170156
Praktikum DWDM
F

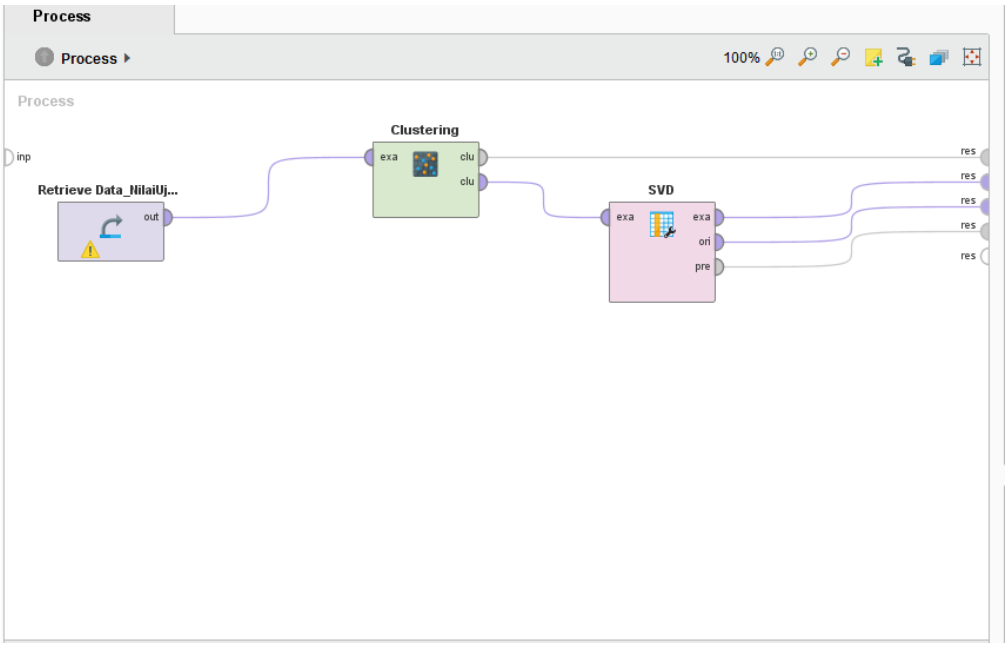
Laporan dan Tugas
Praktikum DWDM
Modul 10
Clustering : K-Means

Latihan

1. File Tabel_NilaiUjian.xls

	A	B	C	D
1	NO_SISWA	NAMA	BIND	BING
2	S-101	JOKO	8,54	8,4
3	S-102	AGUS	9,98	6,81
4	S-103	SUSI	6,2	9,15
5	S-104	DYAH	5,24	7,26
6	S-105	WATI	5,7	5,71
7	S-106	IKA	8,57	5,87
8	S-107	EKO	7,7	7,71
9	S-108	YANTO	6,6	5,7
10	S-109	WAWAN	9	8,12
11	S-110	MAHMUD	9,81	9,58
12				
13				
14				
15				
16				
17				
18				
19				
20				

2. Memasukan Data_NilaiUjian , K-Mean, dan SVD ke dalam operator dan menghubungkan masing-masing connector.



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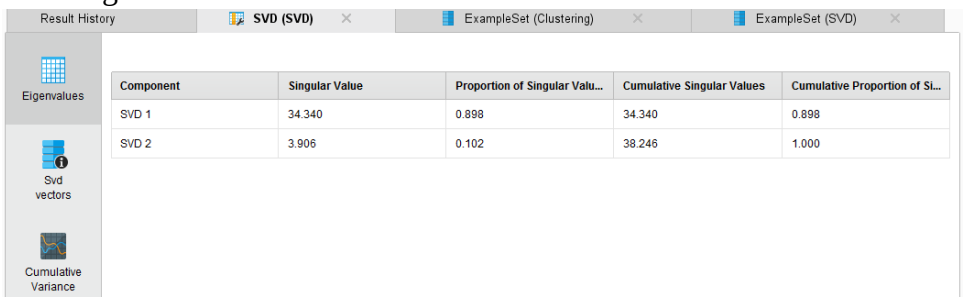
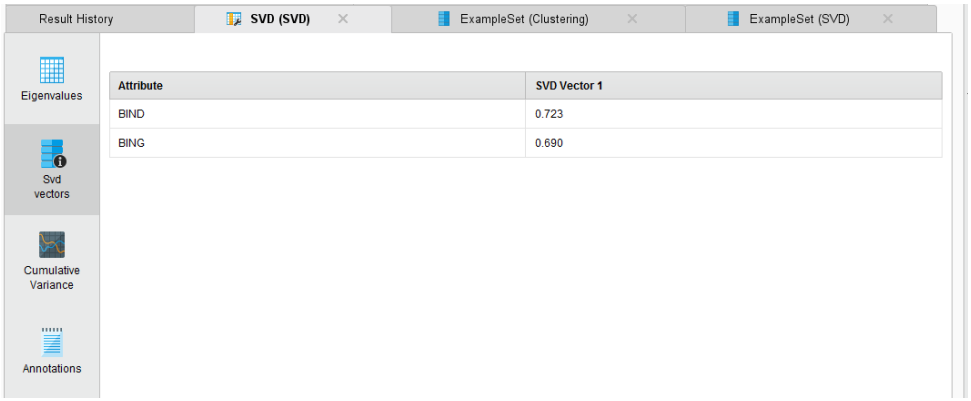
3. Berikut hasil proses Clustering dengan algoritma K-Means :
   a) SVD
      i. Nilai Eigenvalue



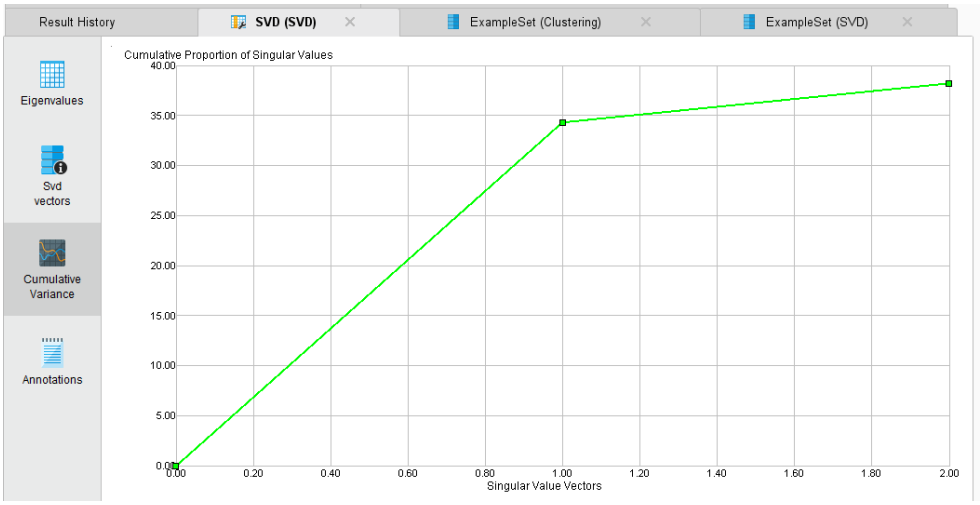
Component	Singular Value	Proportion of Singular Valu...	Cumulative Singular Values	Cumulative Proportion of Si...
SVD 1	34.340	0.898	34.340	0.898
SVD 2	3.906	0.102	38.246	1.000

      ii. Nilai Svd Vectors



Attribute	SVD Vector 1
BIND	0.723
BING	0.690

      iii. Nilai Cumulative Variance



   b) ExampleSet(K-Means)
      i. Kelompok Siswa Bidang BINDO

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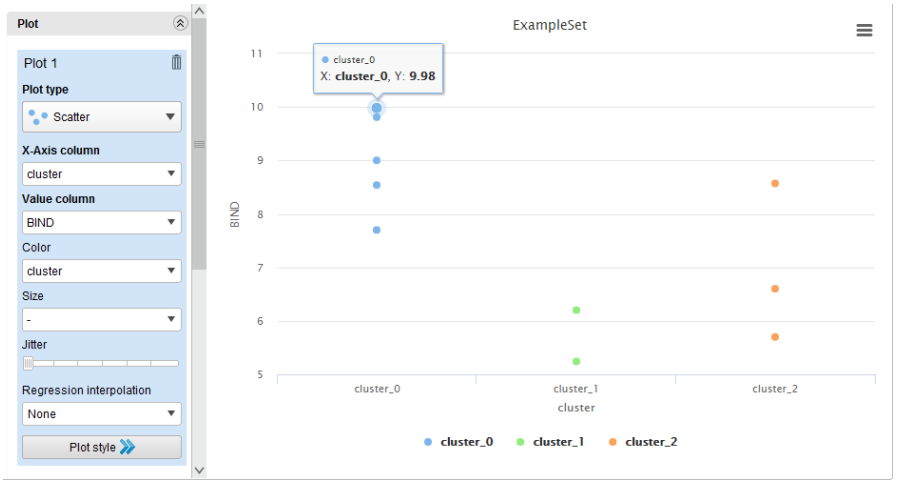
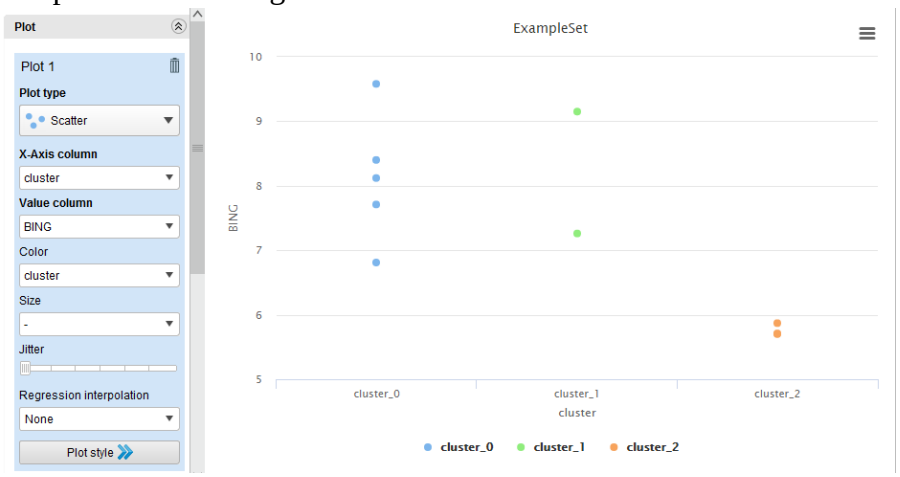
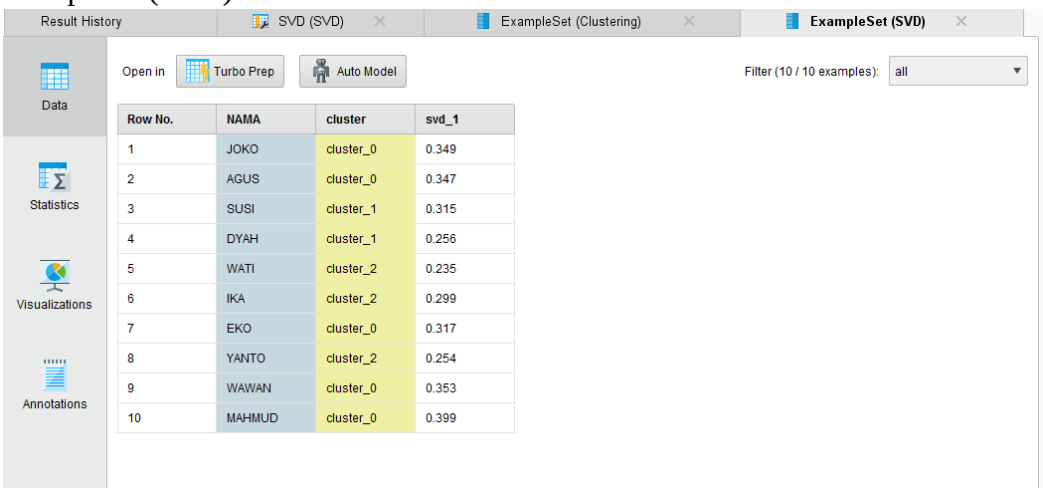


ii. Kelompok Siswa Bidang BING



c) ExampleSet(SVD)



Row No.	NAMA	cluster	svd_1
1	JOKO	cluster_0	0.349
2	AGUS	cluster_0	0.347
3	SUSI	cluster_1	0.315
4	DYAH	cluster_1	0.256
5	WATI	cluster_2	0.235
6	IKA	cluster_2	0.299
7	EKO	cluster_0	0.317
8	YANTO	cluster_2	0.254
9	WAWAN	cluster_0	0.353
10	MAHMUD	cluster_0	0.399

d) Cluster Model

i. Description

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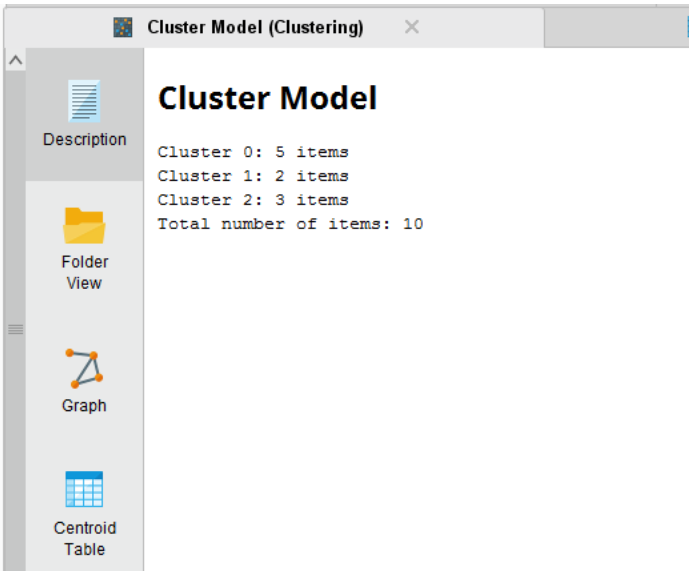
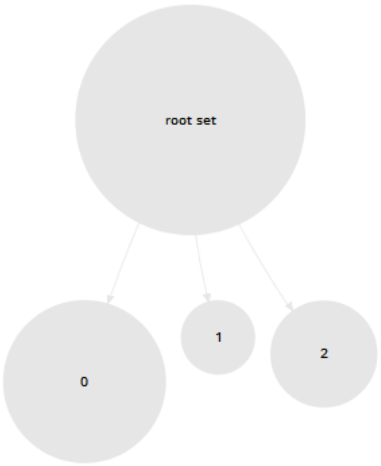


ii. Graph



Berdasarkan hasil kegiatan diatas dapat disimpulkan pembagian kelompok siswa yang akan diajukan untuk olimpiade Bahasa Indonesia dan Bahasa Inggris adalah sbb :

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Row No.	NAMA	cluster ↑	BIND	BING
1	JOKO	cluster_0	8.540	8.400
2	AGUS	cluster_0	9.980	6.810
7	EKO	cluster_0	7.700	7.710
9	WAWAN	cluster_0	9	8.120
10	MAHMUD	cluster_0	9.810	9.580
3	SUSI	cluster_1	6.200	9.150
4	DYAH	cluster_1	5.240	7.260
5	WATI	cluster_2	5.700	5.710
6	IKA	cluster_2	8.570	5.870
8	YANTO	cluster_2	6.600	5.700

Pembagian kelompok yang diajukan untuk lomba olimpiade :

1. Cluster_2 yang diajukan untuk lomba olimpiade bidang Bahasa Indonesia.
2. Cluster_0 yang diajukan untuk lomba olimpiade bidang Bahasa Inggris.

Tugas

1. Buatlah tabel berikut dengan menggunakan ms excel!

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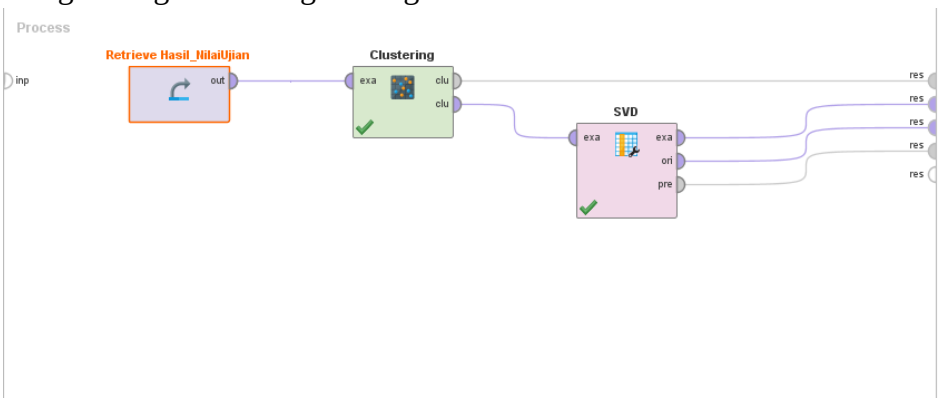
	A	B	C	D	E	F	G	H
1	NO_SISWA	NAMA	BIND	BING	MTK	IPA		
2	S-101	JOKO	8,832923	5,381484	9,25946	8,358434		
3	S-102	AGUS	7,274027	7,711295	7,25671	6,827912		
4	S-103	SUSI	7,648919	5,559118	6,893995	6,384616		
5	S-104	DYAH	8,743835	6,010422	6,135455	9,575997		
6	S-105	WATI	7,564679	6,745907	9,668828	8,880262		
7	S-106	IKA	9,917457	6,588361	8,307545	9,682888		
8	S-107	EKO	8,370947	9,184156	6,900044	5,057011		
9	S-108	YANTO	7,686237	8,806692	9,788426	6,968011		
10	S-109	WAWAN	7,803385	6,720755	7,391244	9,657253		
11	S-110	MAHMUD	5,188312	5,905899	5,334686	5,355178		
12	S-111	BUDI	7,607314	8,160954	5,359179	5,482086		
13	S-112	SANTI	5,581736	5,077795	8,028308	7,498617		
14	S-113	DIAN	6,443209	6,714424	8,627602	7,671428		
15	S-114	DANI	9,858114	7,908446	8,538806	9,355554		
16	S-115	AHMAD	7,157453	6,104786	6,757508	5,579092		
17	S-116	BAYU	5,381684	9,171715	7,275343	9,124247		
18	S-117	RISA	6,373922	8,578875	8,920409	6,934708		
19	S-118	RANI	6,108237	6,337411	9,458547	8,945652		
20	S-119	YANI	9,789627	5,333432	7,570383	7,421573		
21	S-120	RATIH	7,483795	5,758292	9,257449	5,087677		
22	S-121	INDAH	5,781015	9,485992	9,856123	9,819025		
23	S-122	JONO	7,572071	8,037521	8,183873	8,690041		
23	S-122	JONO	7,572071	8,037521	8,183873	8,690041		
24	S-123	SARAH	7,949748	9,993497	6,508616	6,220429		
25	S-124	RAMA	9,426558	8,010638	7,533687	6,113909		
26	S-125	BAMBANG	7,102503	8,108147	5,787763	6,058307		
27	S-126	HADI	9,777833	6,26915	7,741989	9,72298		
28	S-127	NANA	9,968578	9,792407	5,707173	6,714507		
29	S-128	FEBRI	5,573656	5,386808	6,400711	6,318283		
30	S-129	DENI	7,848513	9,211158	5,493766	5,763039		
31	S-130	TONI	8,27512	9,521996	6,235307	9,796078		

2. Lakukan kembali kegiatan 10.4.1 dan 10.4.2 pada modul 10 ini secara lengkap menggunakan data yang terdapat pada tabel **Tabel Data Nilai Ujian 30 Siswa** tersebut, dengan ketentuan jumlah Cluster=4. Catat dan tulis semua hasilnya pada lembar jawaban anda, untuk gambar bisa di*copy-paste* .
   1) Memasukan Hasil_NilaiUjian , K-Mean, dan SVD ke dalam operator dan menghubungkan masing-masing connector.



   2) Berikut hasil proses Clustering dengan algoritma K-Means :
      a. SVD
         i) Nilai Eigenvalue

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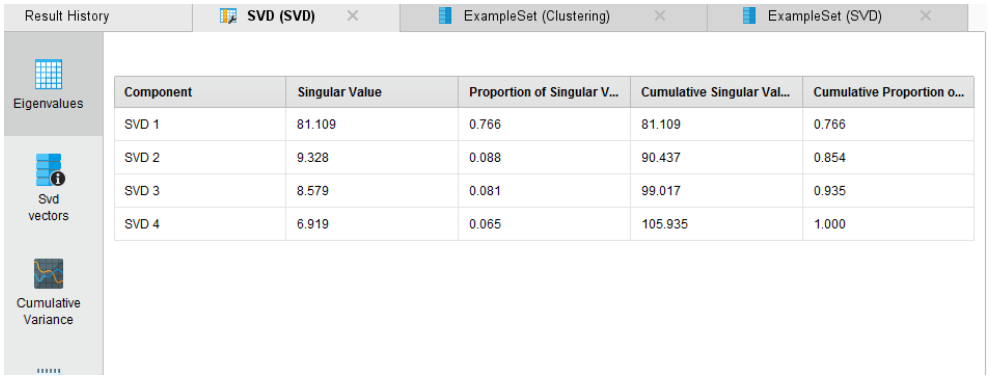
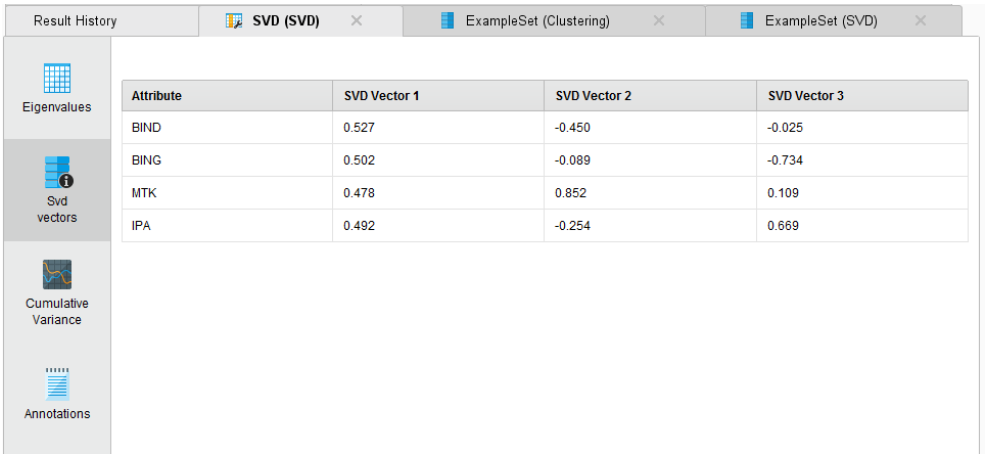


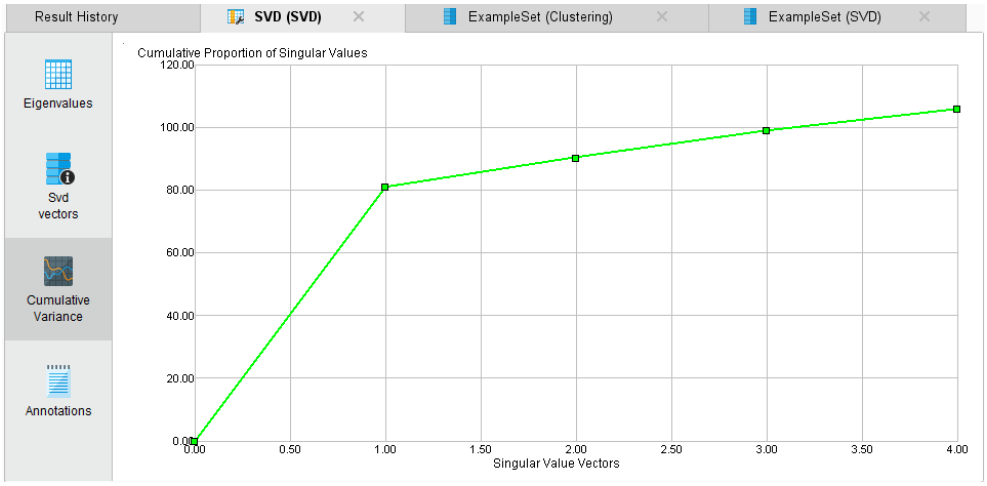
Component	Singular Value	Proportion of Singular V...	Cumulative Singular Val...	Cumulative Proportion o...
SVD 1	81.109	0.766	81.109	0.766
SVD 2	9.328	0.088	90.437	0.854
SVD 3	8.579	0.081	99.017	0.935
SVD 4	6.919	0.065	105.935	1.000

ii) Nilai Svd Vectors



Attribute	SVD Vector 1	SVD Vector 2	SVD Vector 3
BIND	0.527	-0.450	-0.025
BING	0.502	-0.089	-0.734
MTK	0.478	0.852	0.109
IPA	0.492	-0.254	0.669

iii) Nilai Cumulative Variance



b. ExampleSet(K-Means)
   - Kelompok siswa bidang bindo

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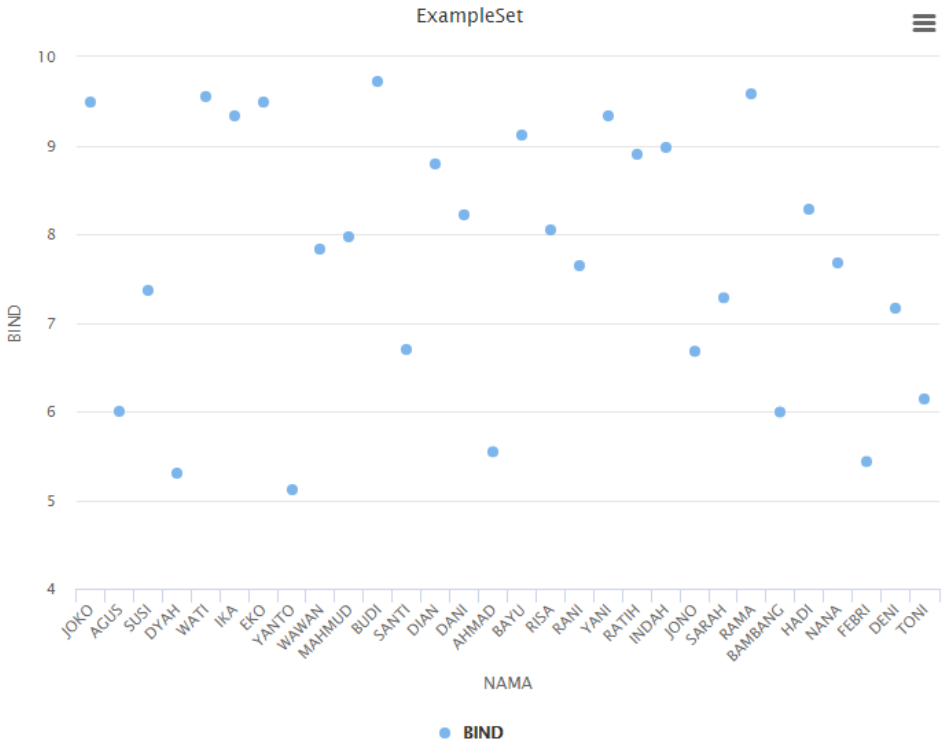
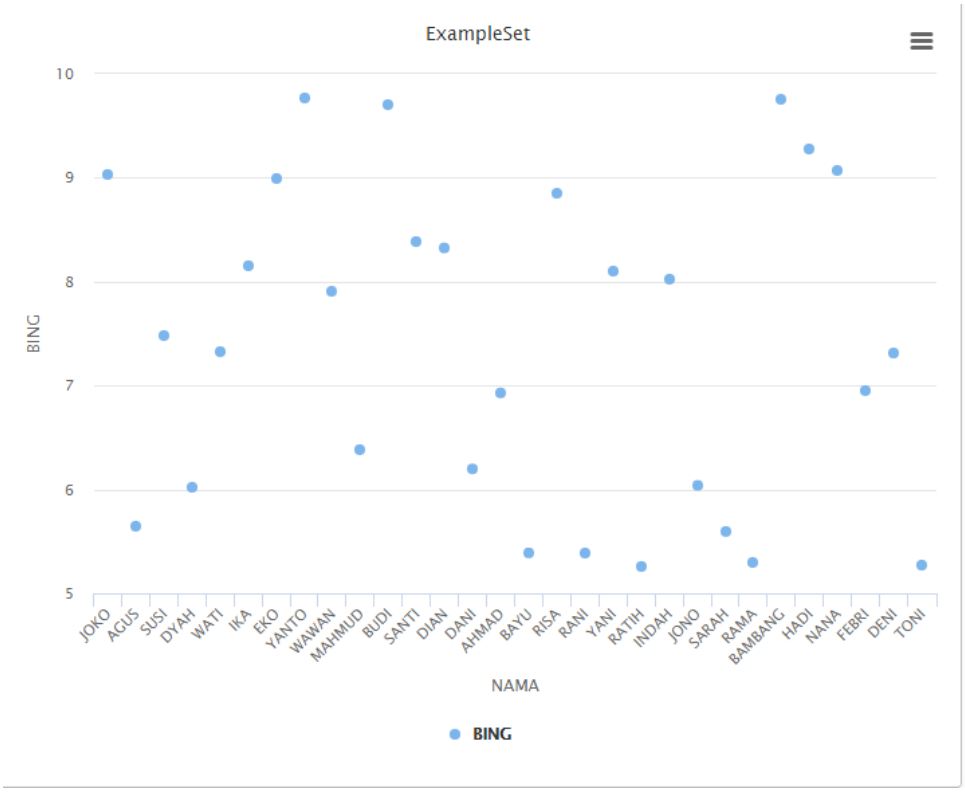


- Kelompok siswa bidang bing



- Kelompok siswa bidang mtk

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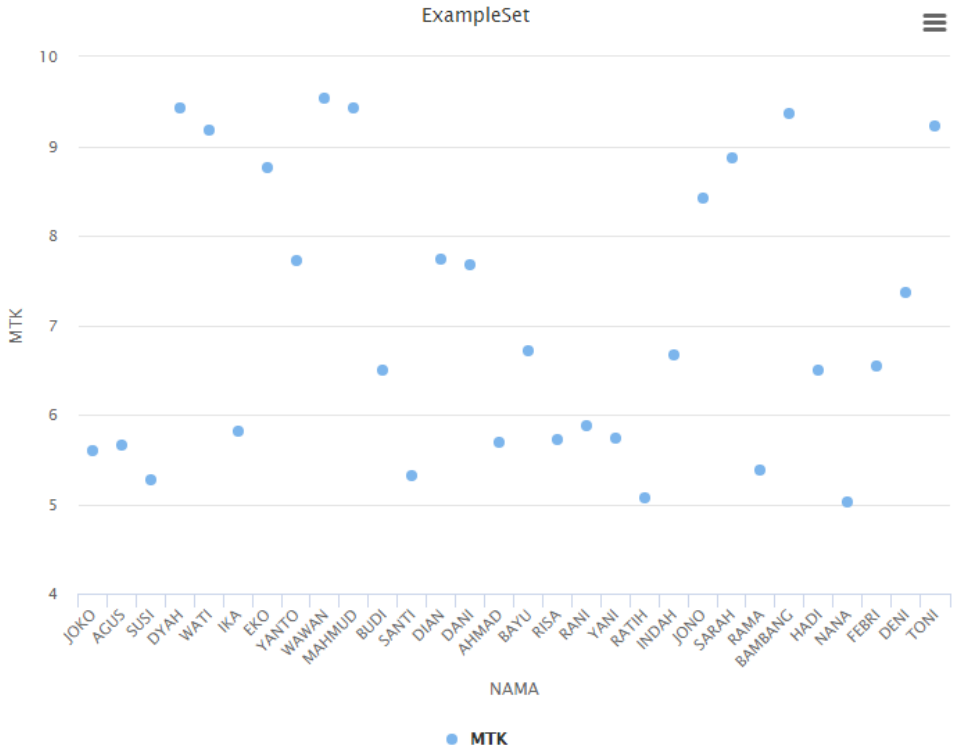
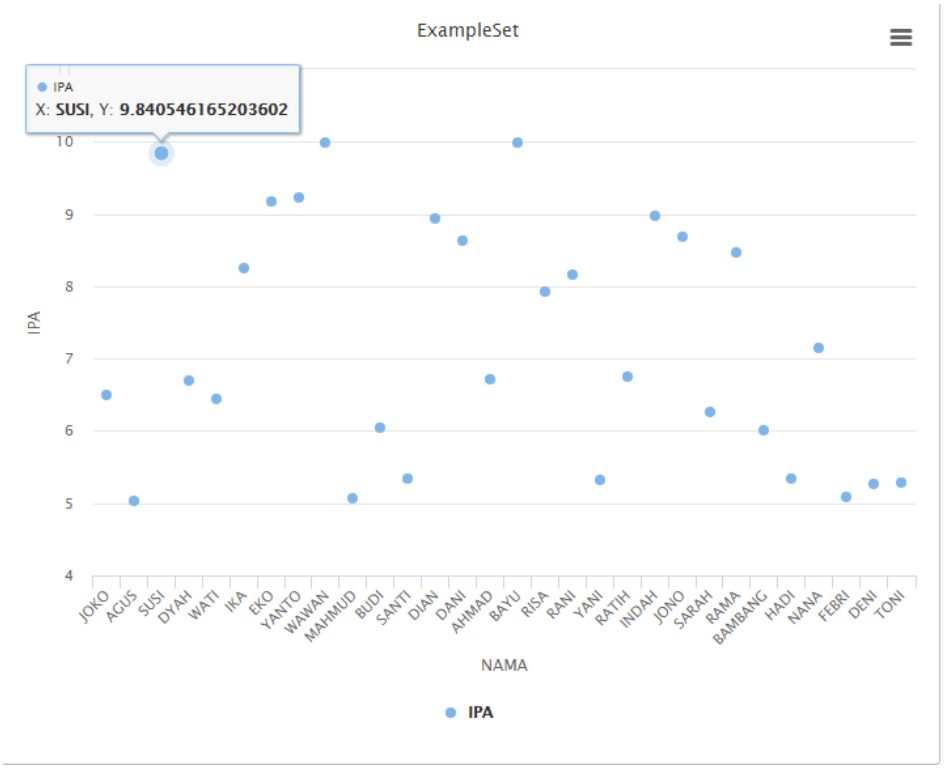


- Kelompok siswa bidang ipa



c. ExampleSet(SVD)

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Row No.	NAMA	cluster	BIND	BING	MTK	IPA
2	AGUS	cluster_0	5.998	5.652	5.655	5.028
4	DYAH	cluster_0	5.307	6.026	9.431	6.696
10	MAHMUD	cluster_0	7.962	6.385	9.427	5.059
15	AHMAD	cluster_0	5.544	6.929	5.697	6.717
22	JONO	cluster_0	6.678	6.039	8.411	8.681
23	SARAH	cluster_0	7.281	5.595	8.864	6.256
28	FEBRI	cluster_0	5.434	6.955	6.548	5.092
29	DENI	cluster_0	7.155	7.315	7.358	5.270
30	TONI	cluster_0	6.134	5.271	9.228	5.293
3	SUSI	cluster_1	7.368	7.476	5.267	9.841
14	DANI	cluster_1	8.223	6.197	7.667	8.635
16	BAYU	cluster_1	9.120	5.389	6.710	9.994
18	RANI	cluster_1	7.638	5.383	5.872	8.157
20	RATIH	cluster_1	8.899	5.254	5.067	6.748
21	INDAH	cluster_1	8.975	8.019	6.663	8.966

Row No.	NAMA	cluster	BIND	BING	MTK	IPA
21	INDAH	cluster_1	8.975	8.019	6.663	8.966
24	RAMA	cluster_1	9.580	5.291	5.383	8.467
1	JOKO	cluster_2	9.496	9.028	5.599	6.498
6	IKA	cluster_2	9.336	8.158	5.818	8.253
11	BUDI	cluster_2	9.721	9.699	6.500	6.042
12	SANTI	cluster_2	6.697	8.384	5.315	5.337
17	RISA	cluster_2	8.049	8.846	5.721	7.919
19	YANI	cluster_2	9.335	8.097	5.736	5.321
26	HADI	cluster_2	8.281	9.282	6.497	5.342
27	NANA	cluster_2	7.682	9.067	5.025	7.139
5	WATI	cluster_3	9.555	7.326	9.184	6.440
7	EKO	cluster_3	9.493	8.993	8.763	9.169
8	YANTO	cluster_3	5.119	9.763	7.713	9.236
9	WAWAN	cluster_3	7.828	7.906	9.537	9.990
13	DIAN	cluster_3	8.787	8.324	7.740	8.944

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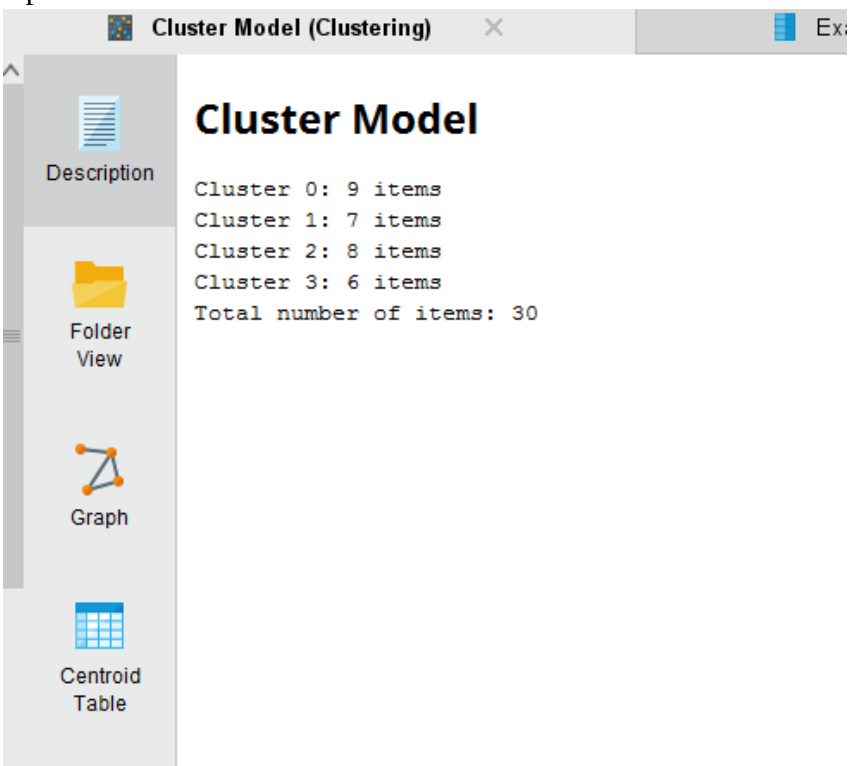
Row No.	NAMA	cluster	BIND	BING	MTK	IPA
24	RAMA	cluster_1	9.580	5.291	5.383	8.467
1	JOKO	cluster_2	9.496	9.028	5.599	6.498
6	IKA	cluster_2	9.336	8.158	5.818	8.253
11	BUDI	cluster_2	9.721	9.699	6.500	6.042
12	SANTI	cluster_2	6.697	8.384	5.315	5.337
17	RISA	cluster_2	8.049	8.846	5.721	7.919
19	YANI	cluster_2	9.335	8.097	5.736	5.321
26	HADI	cluster_2	8.281	9.282	6.497	5.342
27	NANA	cluster_2	7.682	9.067	5.025	7.139
5	WATI	cluster_3	9.555	7.326	9.184	6.440
7	EKO	cluster_3	9.493	8.993	8.763	9.169
8	YANTO	cluster_3	5.119	9.763	7.713	9.236
9	WAWAN	cluster_3	7.828	7.906	9.537	9.990
13	DIAN	cluster_3	8.787	8.324	7.740	8.944
25	BAMBANG	cluster_3	5.992	9.749	9.363	6.001

ExampleSet (30 examples, 2 special attributes, 4 regular attributes)

d. Cluster Model

- Description



- Graph

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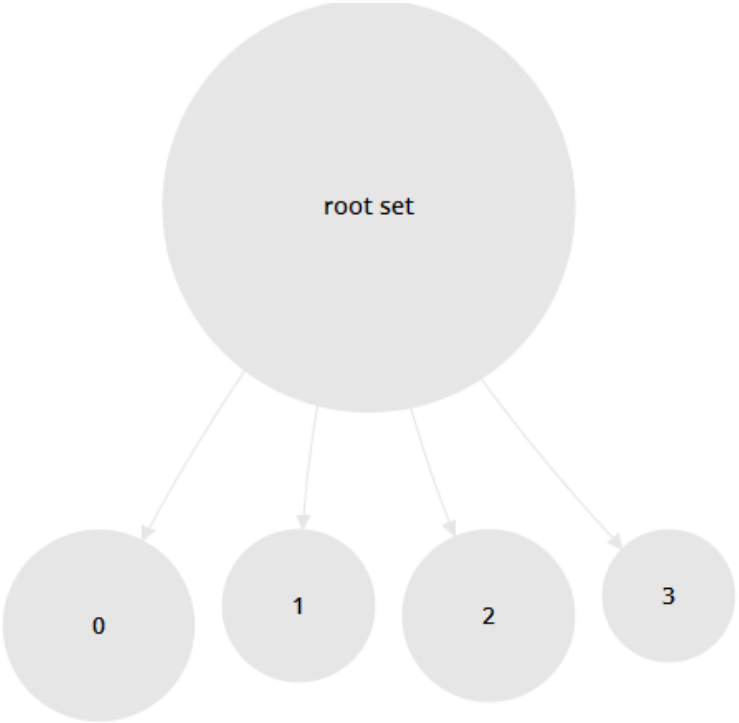

3) Tulislah Masing-masing nama siswa yang terdapat dalam kelompok Cluster 0, Cluster 1, Cluster 2, dan Cluster 3.

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Row No.	NAMA	cluster	BIND	BING	MTK	IPA
2	AGUS	cluster_0	5.998	5.652	5.655	5.028
4	DYAH	cluster_0	5.307	6.026	9.431	6.696
10	MAHMUD	cluster_0	7.962	6.385	9.427	5.059
15	AHMAD	cluster_0	5.544	6.929	5.697	6.717
22	JONO	cluster_0	6.678	6.039	8.411	8.681
23	SARAH	cluster_0	7.281	5.595	8.864	6.256
28	FEBRI	cluster_0	5.434	6.955	6.548	5.092
29	DENI	cluster_0	7.155	7.315	7.358	5.270
30	TONI	cluster_0	6.134	5.271	9.228	5.293
3	SUSI	cluster_1	7.368	7.476	5.267	9.841
14	DANI	cluster_1	8.223	6.197	7.667	8.635
16	BAYU	cluster_1	9.120	5.389	6.710	9.994
18	RANI	cluster_1	7.638	5.383	5.872	8.157
20	RATIH	cluster_1	8.899	5.254	5.067	6.748
21	INDAH	cluster_1	8.975	8.019	6.663	8.966

Row No.	NAMA	cluster	BIND	BING	MTK	IPA
21	INDAH	cluster_1	8.975	8.019	6.663	8.966
24	RAMA	cluster_1	9.580	5.291	5.383	8.467
1	JOKO	cluster_2	9.496	9.028	5.599	6.498
6	IKA	cluster_2	9.336	8.158	5.818	8.253
11	BUDI	cluster_2	9.721	9.699	6.500	6.042
12	SANTI	cluster_2	6.697	8.384	5.315	5.337
17	RISA	cluster_2	8.049	8.846	5.721	7.919
19	YANI	cluster_2	9.335	8.097	5.736	5.321
26	HADI	cluster_2	8.281	9.282	6.497	5.342
27	NANA	cluster_2	7.682	9.067	5.025	7.139
5	WATI	cluster_3	9.555	7.326	9.184	6.440
7	EKO	cluster_3	9.493	8.993	8.763	9.169
8	YANTO	cluster_3	5.119	9.763	7.713	9.236
9	WAWAN	cluster_3	7.828	7.906	9.537	9.990
13	DIAN	cluster_3	8.787	8.324	7.740	8.944

Row No.	NAMA	cluster	BIND	BING	MTK	IPA
24	RAMA	cluster_1	9.580	5.291	5.383	8.467
1	JOKO	cluster_2	9.496	9.028	5.599	6.498
6	IKA	cluster_2	9.336	8.158	5.818	8.253
11	BUDI	cluster_2	9.721	9.699	6.500	6.042
12	SANTI	cluster_2	6.697	8.384	5.315	5.337
17	RISA	cluster_2	8.049	8.846	5.721	7.919
19	YANI	cluster_2	9.335	8.097	5.736	5.321
26	HADI	cluster_2	8.281	9.282	6.497	5.342
27	NANA	cluster_2	7.682	9.067	5.025	7.139
5	WATI	cluster_3	9.555	7.326	9.184	6.440
7	EKO	cluster_3	9.493	8.993	8.763	9.169
8	YANTO	cluster_3	5.119	9.763	7.713	9.236
9	WAWAN	cluster_3	7.828	7.906	9.537	9.990
13	DIAN	cluster_3	8.787	8.324	7.740	8.944
25	BAMBANG	cluster_3	5.992	9.749	9.363	6.001

ExampleSet (30 examples, 2 special attributes, 4 regular attributes)