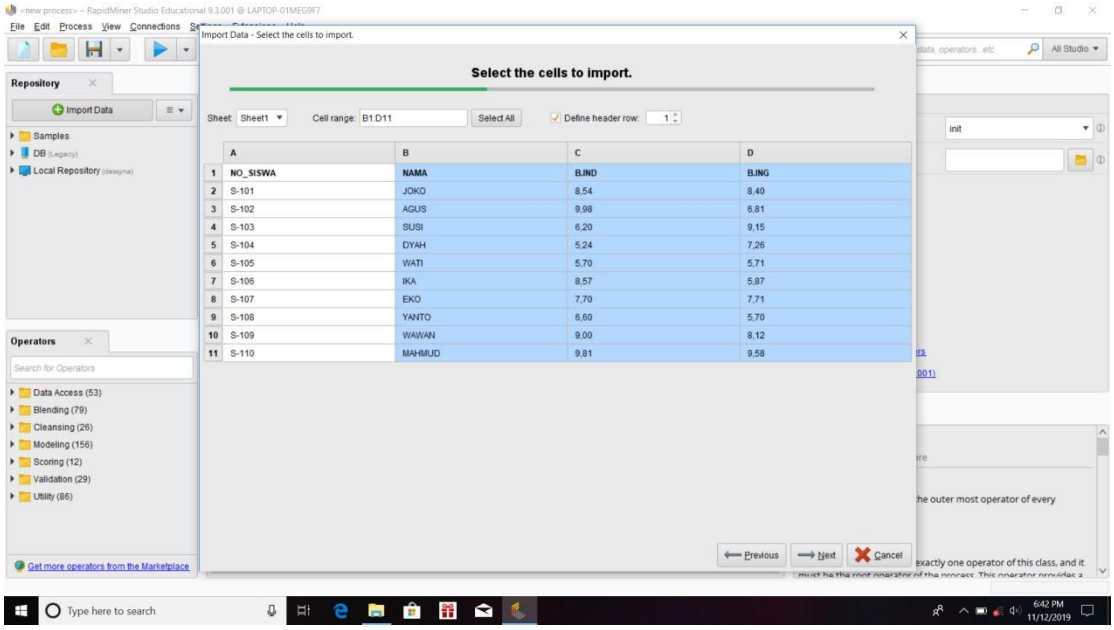
MODUL 10 CLUSTERING : K-MEANS

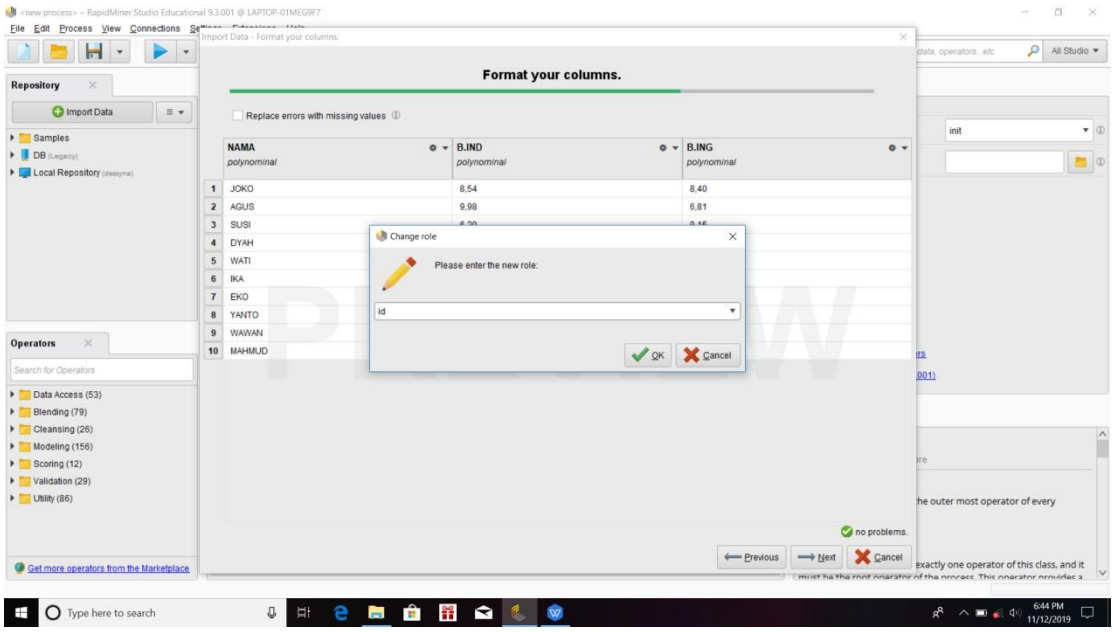
Langkah - langkah Praktikum

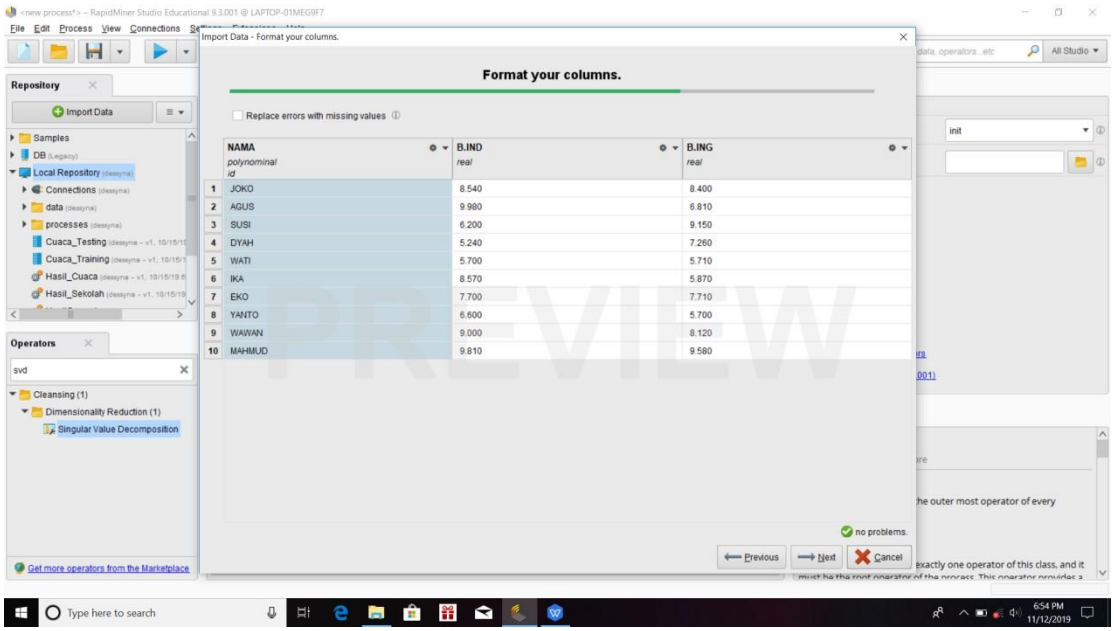
a. Algoritma K-Means Menggunakan RapidMiner

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

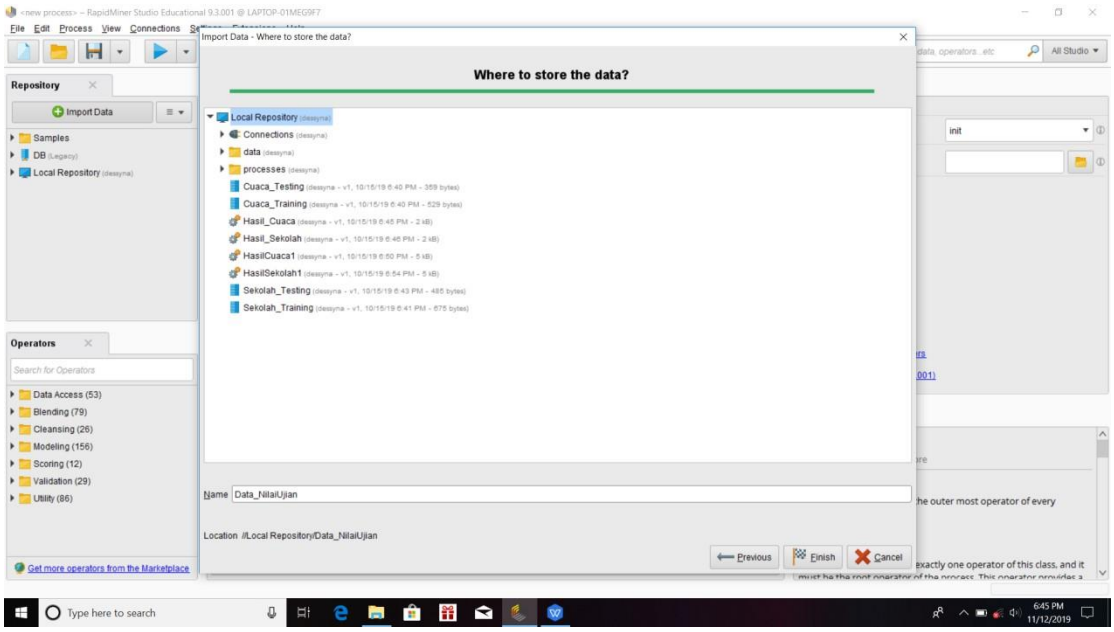


4. Ubah kolom NAMA menjadi id, dengan cara klik Change role >> id >> OK

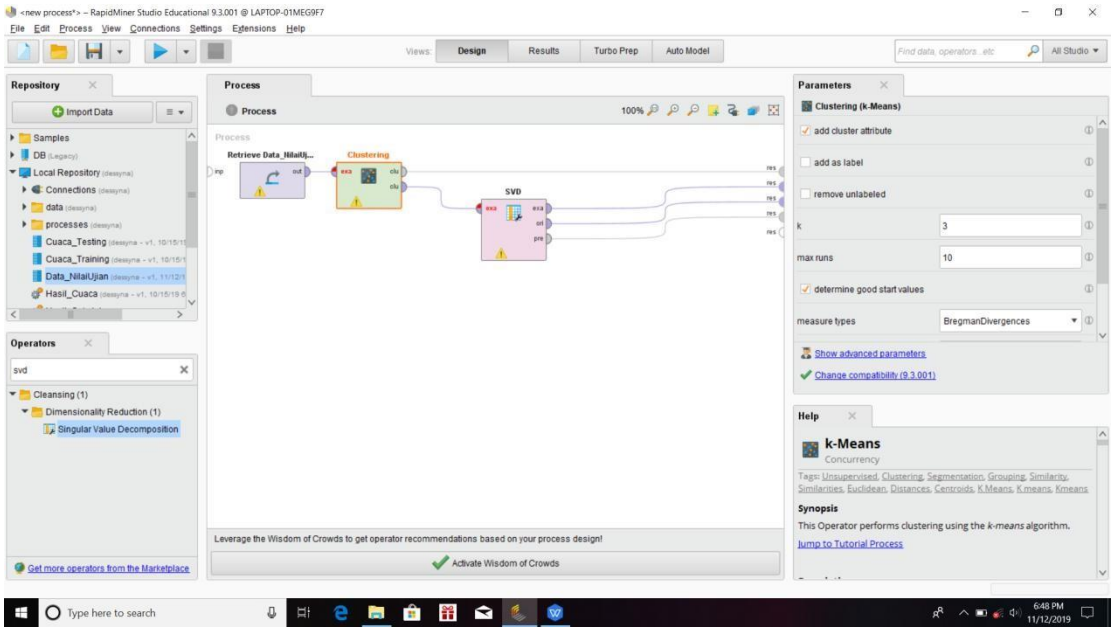




5. Beri nama Data_NilaiUiandan masukkan pada repositories. Kemudian klik finish



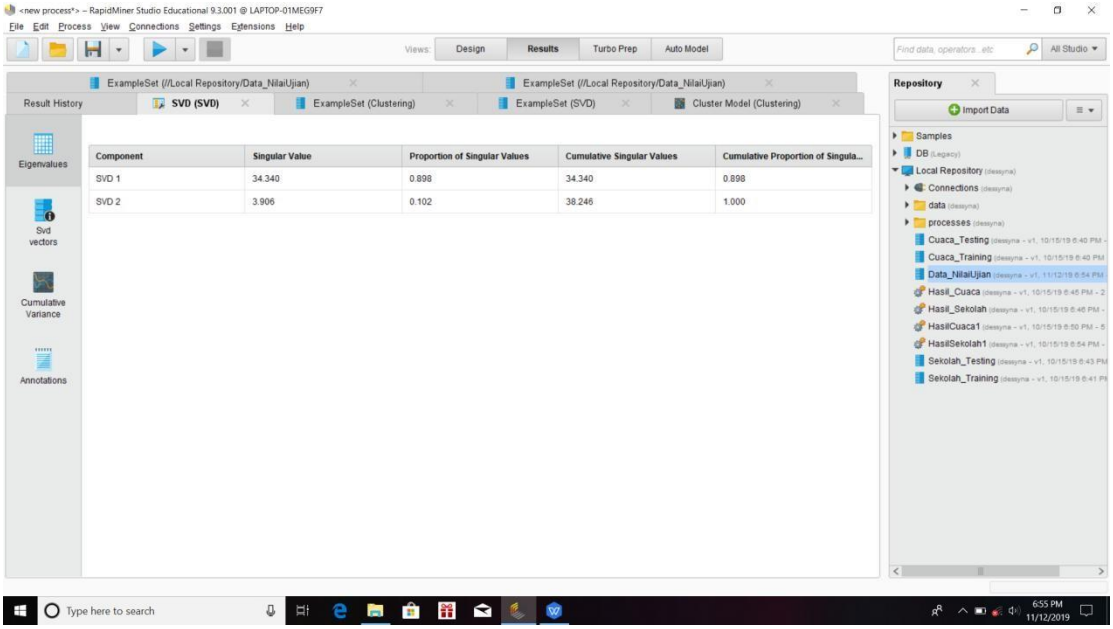
6. Gunakan Data_NilaiUjian ini dan masukkan dalam area process.
7. Tambahkan operator k-Means. Ubah nama operator ini menjadi k-Means. Hubungkan utput operator retrive ke entry exa operator ini dan output clu (cluster model) dihubungkan ke connector res panel. Ubah nilai parameter k = 3 pada operator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



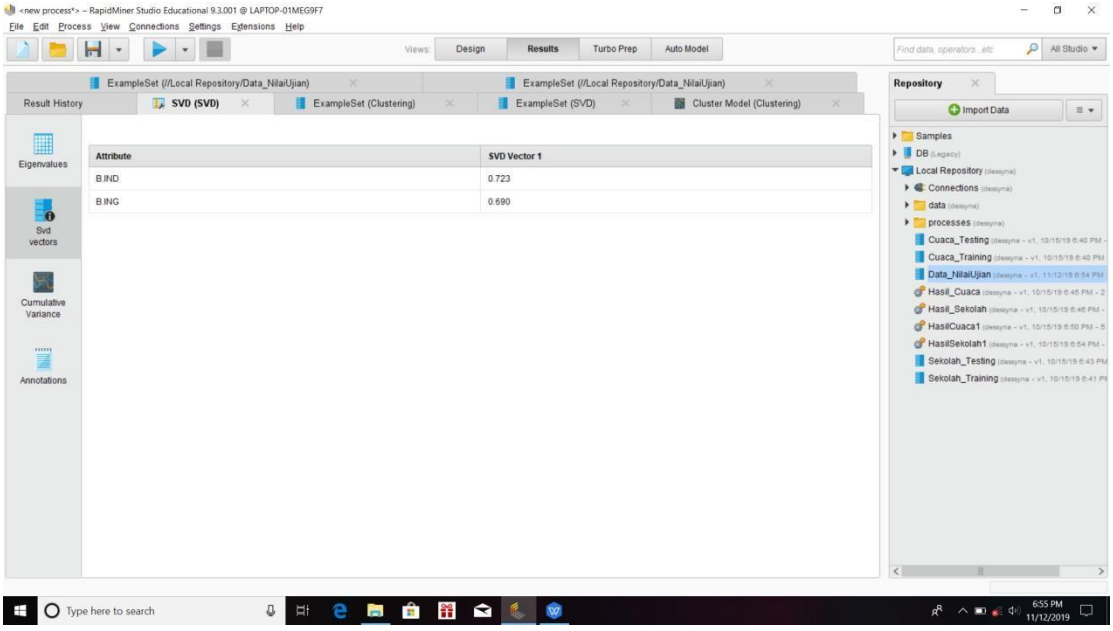
8. Tambahkan pula operator SVD (Singular Value Decompositon). hubungkan output clu (clustered set) ke-2 operaor clustering(k-Means) ke adalam entry exa operator SVD dan 3 port output exa, ori dan pre terhadap connector panel res.
9. Jalankan process dengan menekan tombol Run.
10. Berikut hasil process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

a) SVD

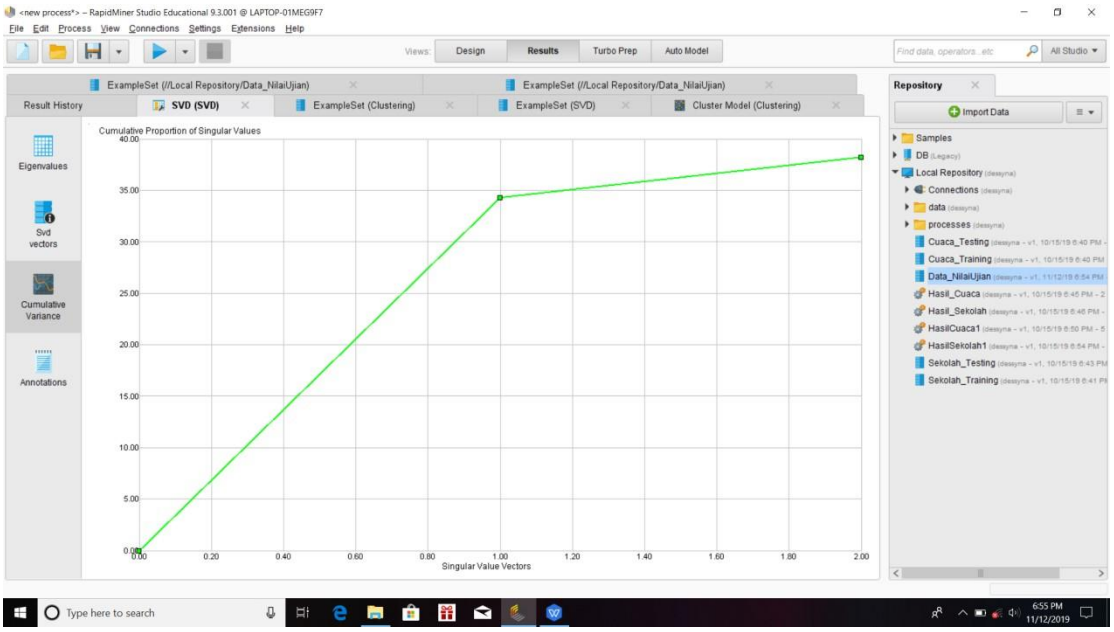
i. Nilai Eigenvalue



ii. Nilai Svd vectors

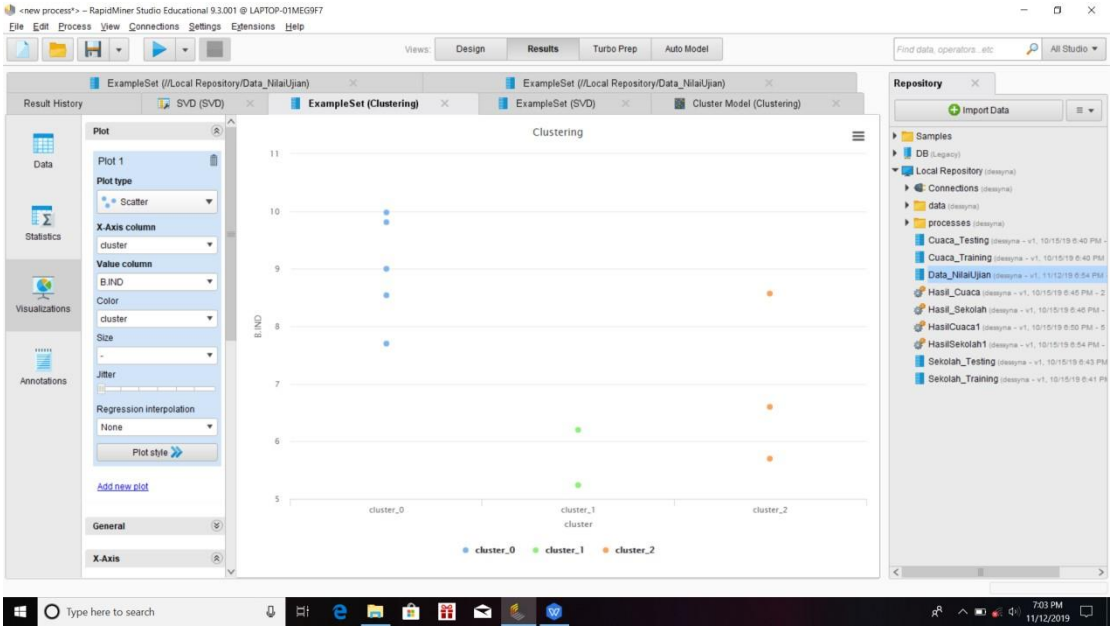


iii. Nilai cumulative variance

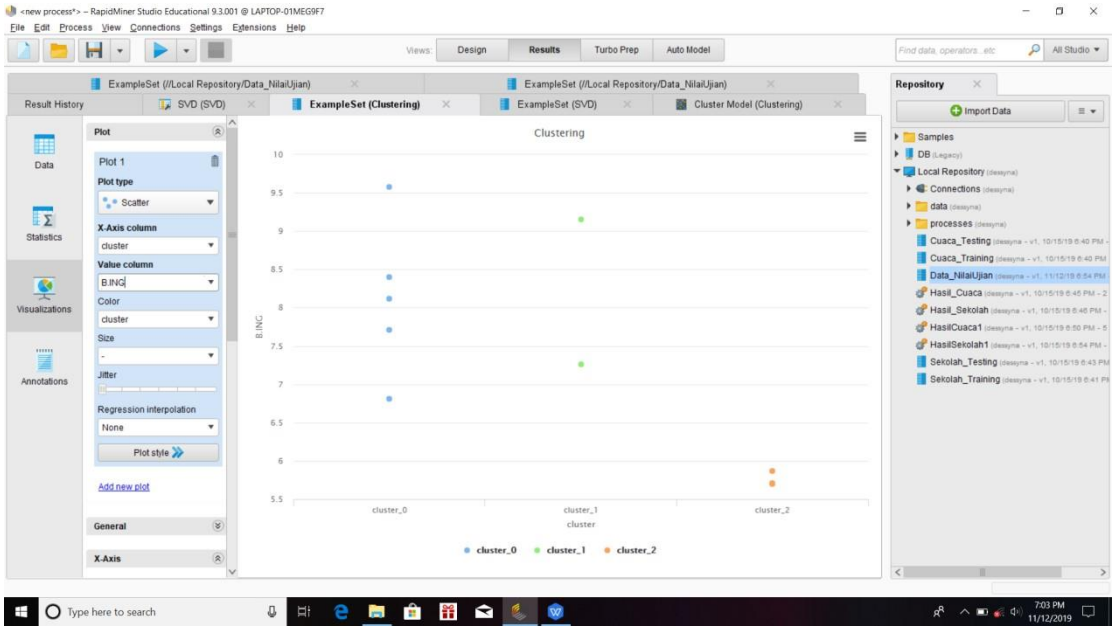


b) ExampleSet (k-Means)

i. Kelompok Siswa bidang B.Indonesia

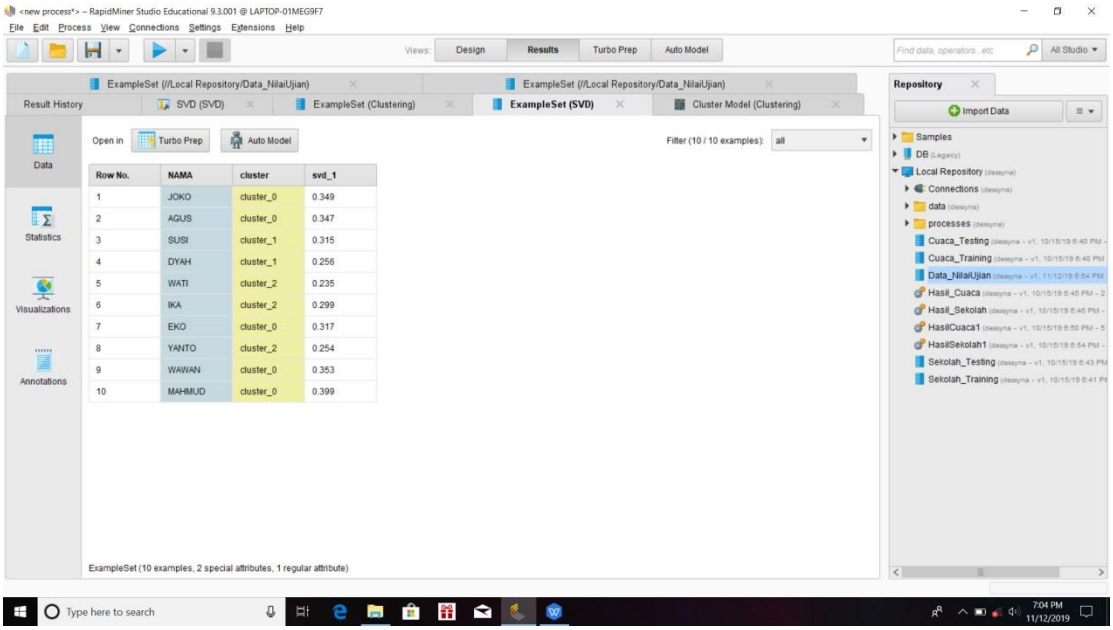


ii. Kelompok Siswa bidang B.Inggris



c)

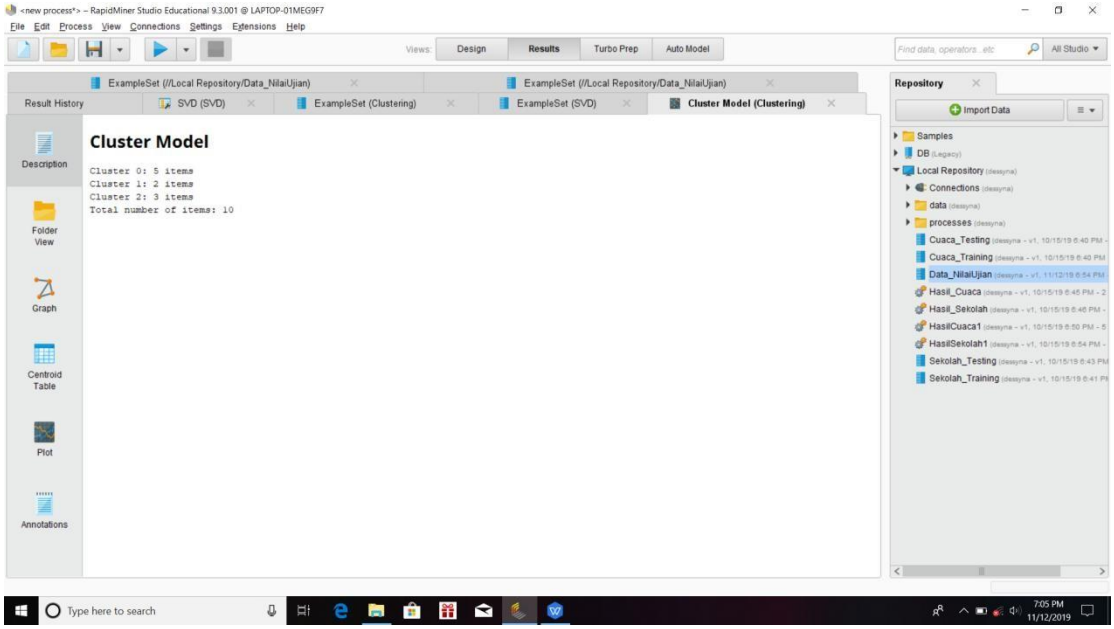
ExampleSet (SVD)



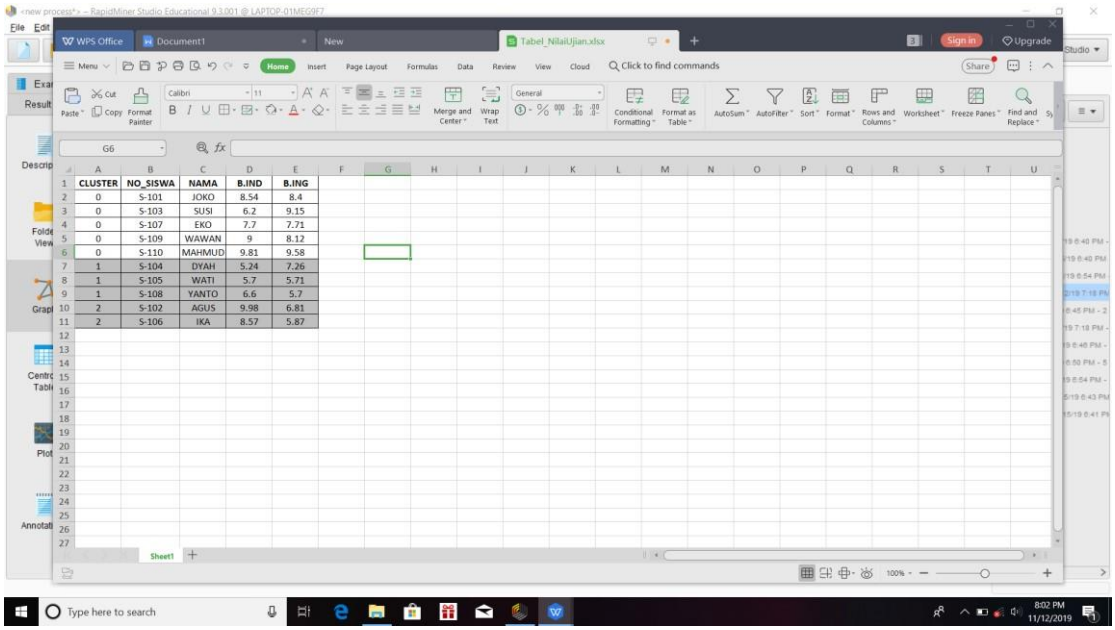
Row No.	NAMA	cluster	svd_1
1	JOKO	cluster_0	0.349
2	AGUS	cluster_0	0.347
3	SUSI	cluster_1	0.315
4	DYAH	cluster_1	0.256
5	WATI	cluster_2	0.235
6	IKA	cluster_2	0.299
7	EKO	cluster_0	0.317
8	YANTO	cluster_2	0.254
9	WAWAN	cluster_0	0.353
10	MAHMUD	cluster_0	0.399

d) Cluster Model (Clustering)

i. Description



b. Interpretasi Hasil Agoritma K-Means

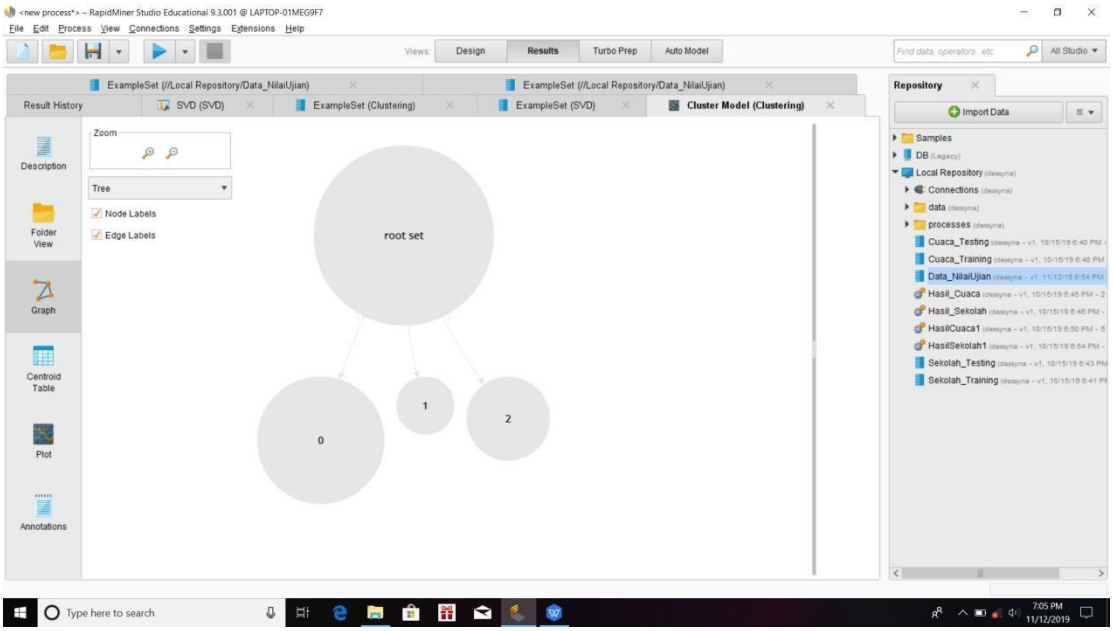


CLUSTER	NO_SISWA	NAMA	B.IND	B.ING
0	S-101	JOKO	8.54	8.4
0	S-103	SUSI	6.2	9.15
0	S-107	EKO	7.7	7.71
0	S-109	WAWAN	9	8.12
0	S-110	MAHMUD	9.81	9.58
1	S-104	DYAH	5.24	7.26
1	S-105	WATI	5.7	5.71
1	S-108	YANTO	6.6	5.7
2	S-102	AGUS	9.98	6.81
2	S-106	IKA	8.57	5.87

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.Inggris

ii. Graph


<new process*> – RapidMiner Studio Educational 9.3.001 @ LAPTOP-01MEG9F7
File Edit Process View Connections Settings Extensions Help
Views: Design Results Turbo Prep Auto Model
Find data, operators...etc
All Studio
ExampleSet (/Local Repository/Data_NilaiUjian)
ExampleSet (/Local Repository/Data_NilaiUjian)
Result History
SVD (SVD)
ExampleSet (Clustering)
ExampleSet (SVD)
Cluster Model (Clustering)
Description
Folder View
Graph
Centroid Table
Plot
Annotations
Zoom
Tree
Node Labels
Edge Labels
root set
0
1
2
Repository
Import Data
Samples
DB (Legacy)
Local Repository (dessyna)
Connections (dessyna)
data (dessyna)
processes (dessyna)
Cuaca_Testing
Cuaca_Training
Data_NilaiUjian
Hasil_Cuaca
Hasil_Sekolah
HasilCuaca1
HasilSekolah1
Sekolah_Testing
Sekolah_Training
Type here to search
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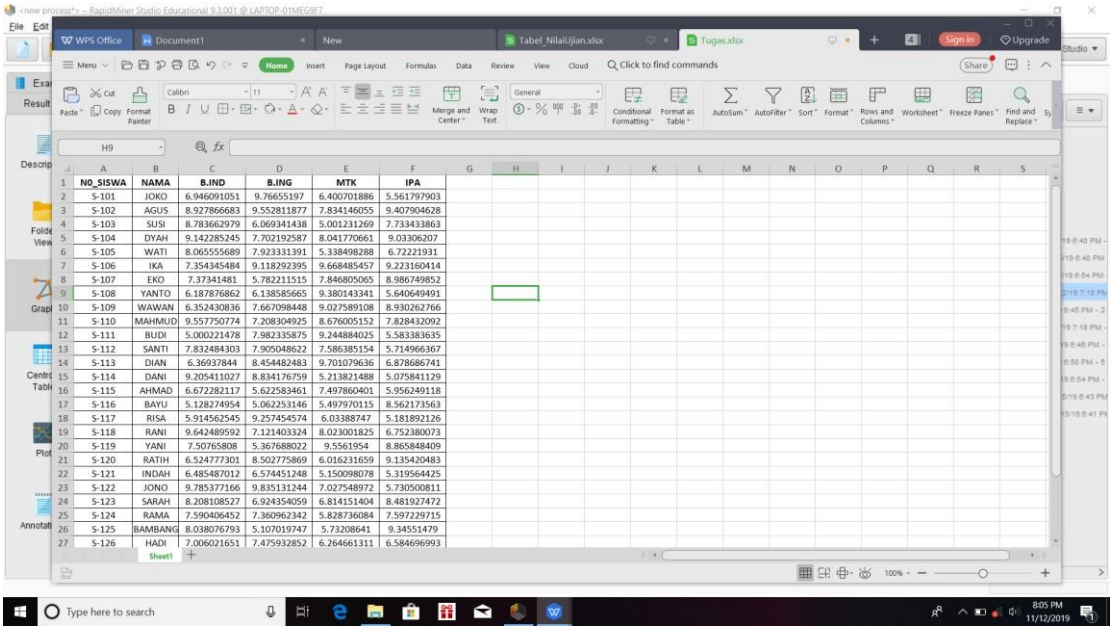
11/12/2019

Tugas

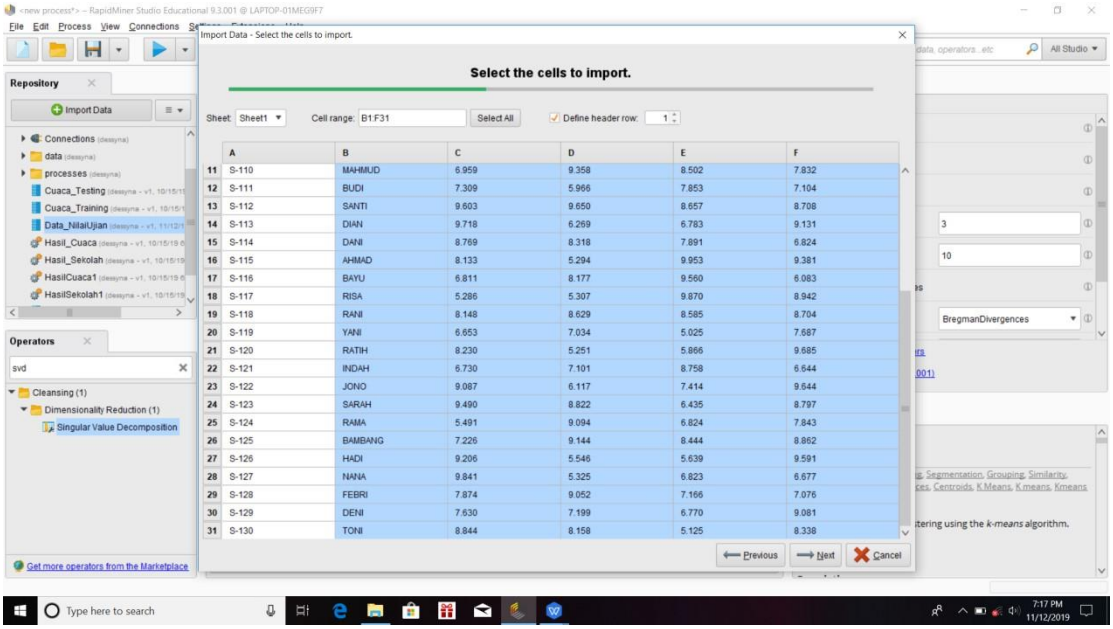
1. Buatlah tabe berikut dengan menggunakan Microsoft Excel !



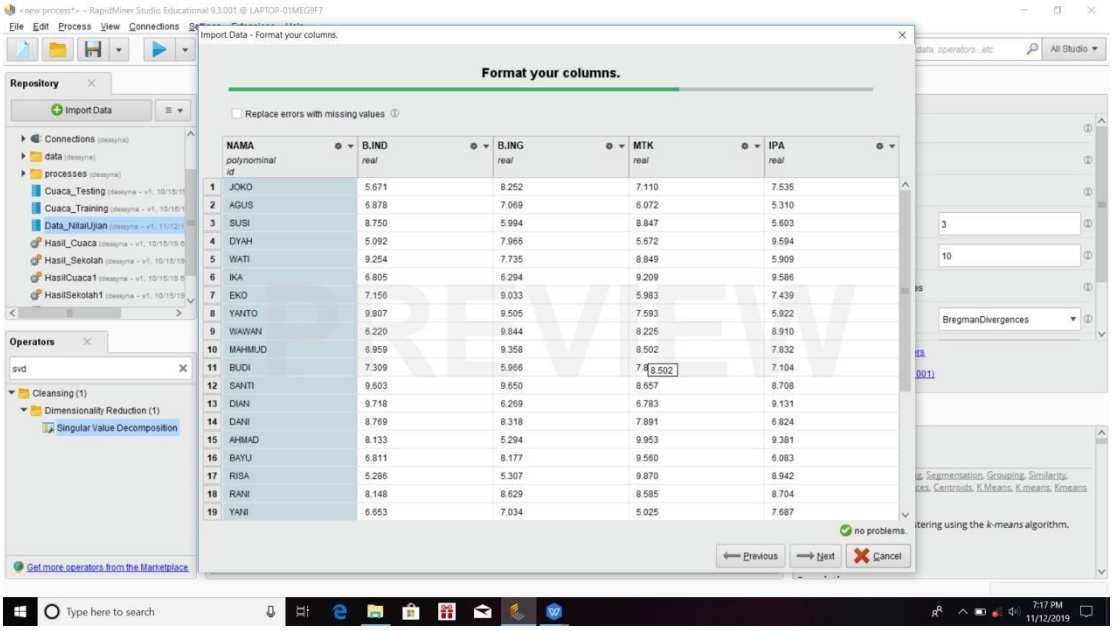
NO_SISWA	NAMA	B.IND	B.ING	MTK	IPA
S-101	JOKO	6.946091051	9.76655197	6.400701886	5.561797903
S-102	AGUS	8.927866683	9.552811877	7.834146055	9.407904628
S-103	SUSI	8.783662979	6.069341438	5.001231269	7.733433863
S-104	DYAH	9.142285245	7.702192587	8.041770661	9.03306207
S-105	WATI	8.065555689	7.923331391	5.338498288	6.72221931
S-106	IKA	7.354345484	9.118292395	9.668485457	9.223160414
S-107	EKO	7.37341481	5.782211515	7.846805065	8.986749852
S-108	YANTO	6.187876862	6.138585665	9.380143341	5.640649491
S-109	WAWAN	6.352430836	7.667098448	9.027589108	8.930262766
S-110	MAHMUD	9.557750774	7.208304925	8.676005152	7.828432092
S-111	BUDI	5.000221478	7.982335875	9.244884025	5.583383635
S-112	SANTI	7.832484303	7.905048622	7.586385154	5.714966367
S-113	DIAN	6.36937844	8.454482483	9.701079636	6.878686741
S-114	DANI	9.205411027	8.834176759	5.213821488	5.075841129
S-115	AHMAD	6.672282117	5.622583461	7.497860401	5.956249118
S-116	BAYU	5.128274954	5.062253146	5.497970115	8.562173563
S-117	RISA	5.914562545	9.257454574	6.03388747	5.181892126
S-118	RANI	9.642489592	7.121403324	8.023001825	6.752380073
S-119	YANI	7.50765808	5.367688022	9.5561954	8.865848409
S-120	RATIH	6.524777301	8.502775869	6.016231659	9.135420483
S-121	INDAH	6.485487012	6.574451248	5.150098078	5.319564425
S-122	JONO	9.785377166	9.835131244	7.027548972	5.730500811
S-123	SARAH	8.208108527	6.924354059	6.814151404	8.481927472
S-124	RAMA	7.590406452	7.360962342	5.828736084	7.597229715
S-125	BAMBANG	8.038076793	5.107019747	5.73208641	9.34551479
S-126	HADI	7.006021651	7.475932852	6.264661311	6.584696993
S-127	NANA	5.075351866	7.682685913	6.130761757	6.264368747
S-128	FEBRI	9.597445846	8.514587056	6.785882682	5.172053349
S-129	DENI	7.557827573	8.063801813	6.086578441	8.757632073
S-130	TONI	6.340335171	6.170818596	8.295743535	6.658043851

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

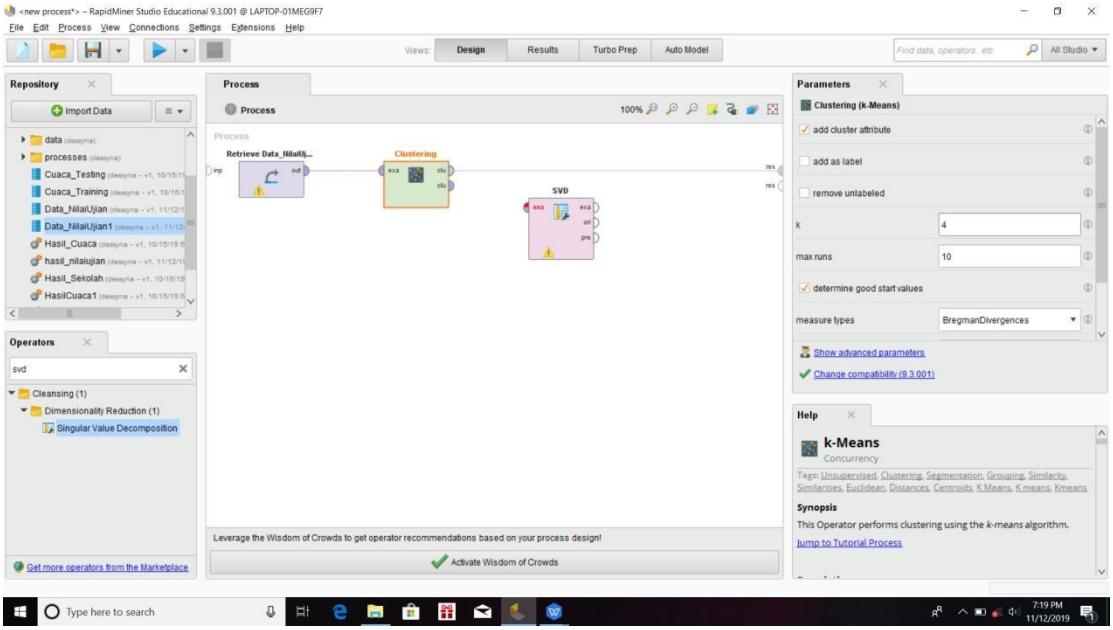
a) Mengimport data nilai 30 siswa ke dalam rapidMiner

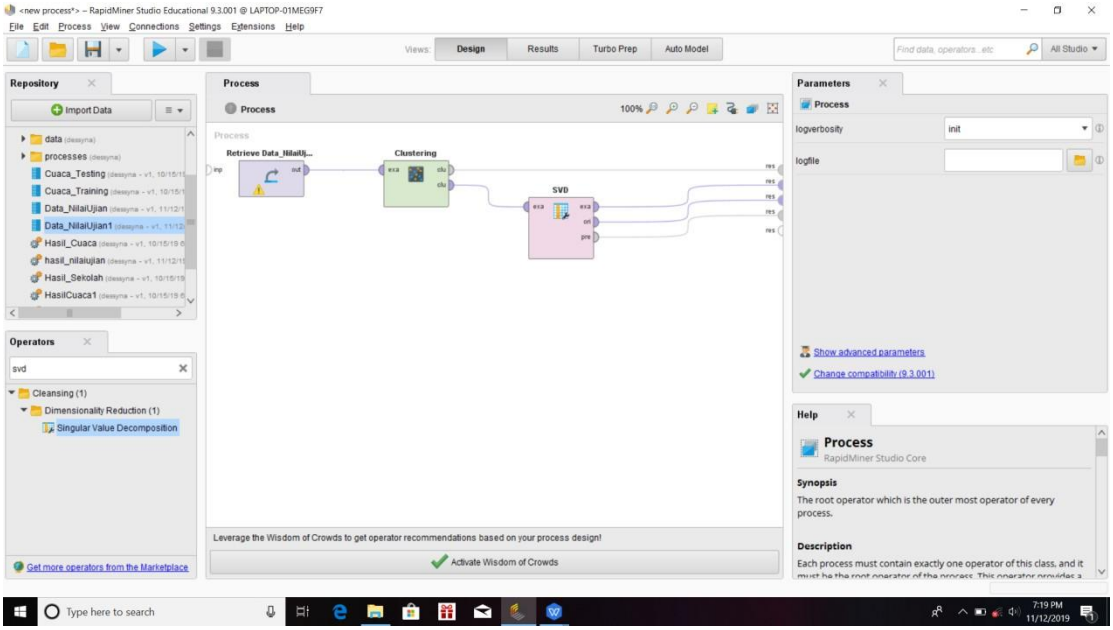


b) Merubah nama menjadi id



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

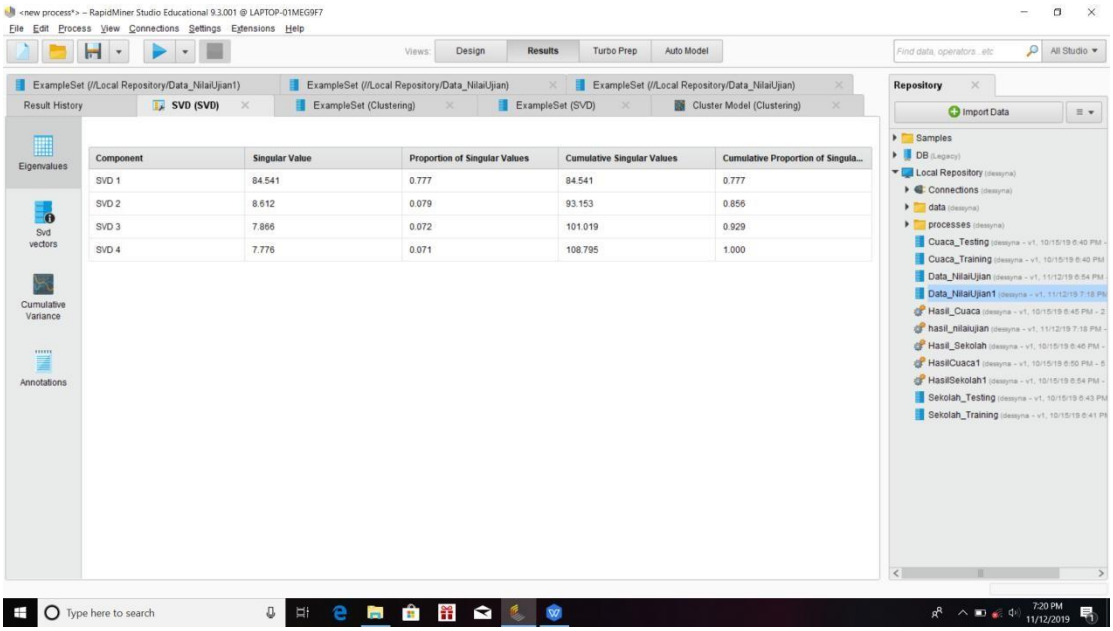




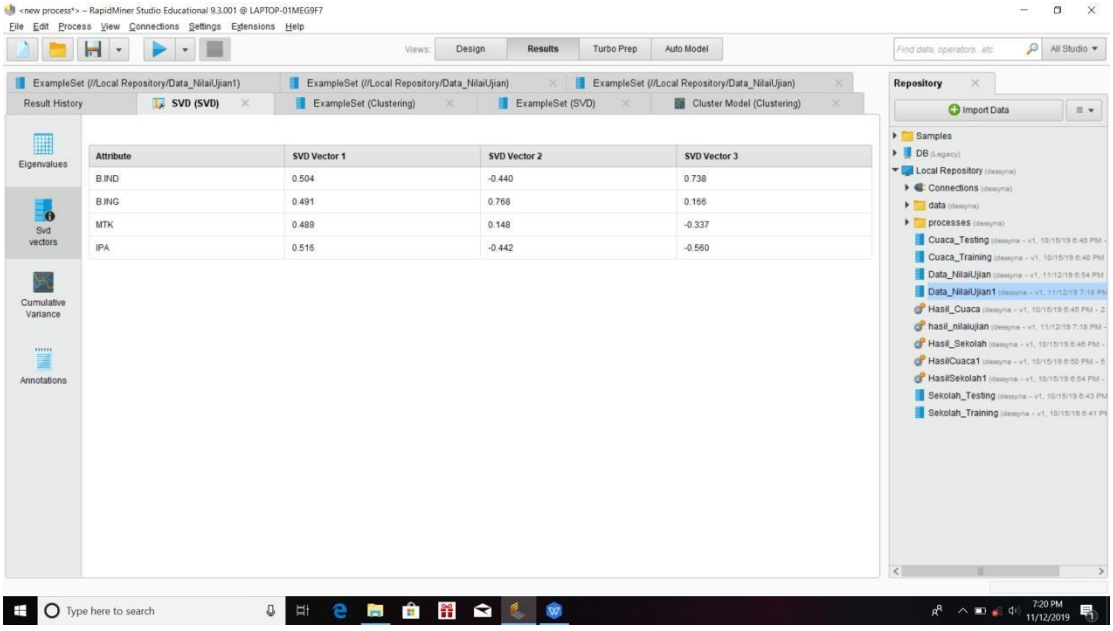
d) Menjalankan program dengan cara di Run atau klik F11

a. SVD

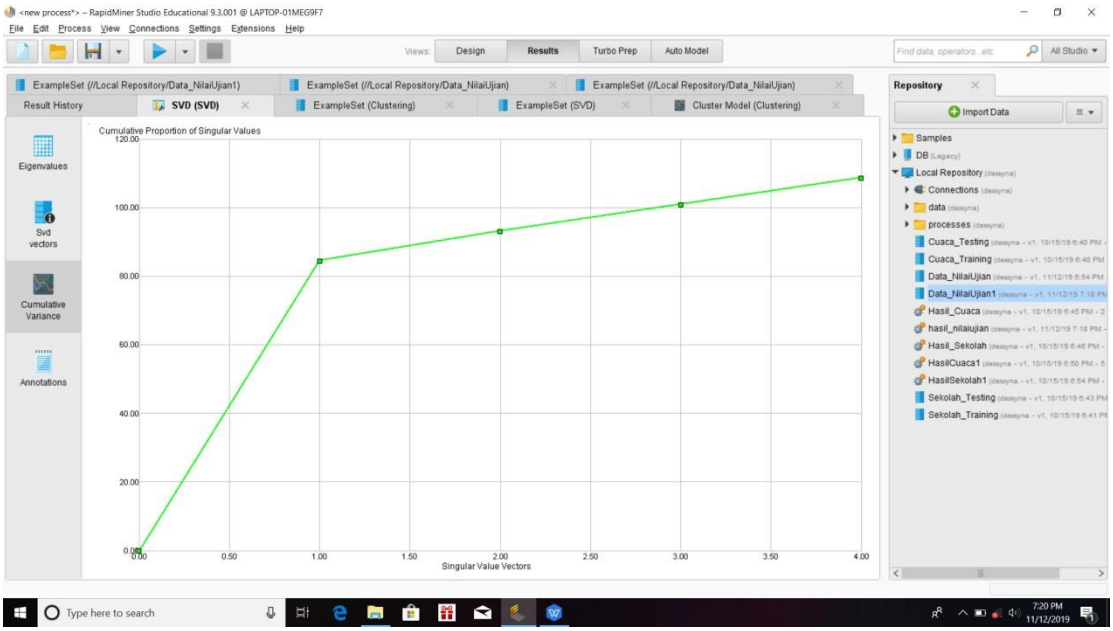
i. Nilai Eigenvalue



ii. Nilai Svd vectors



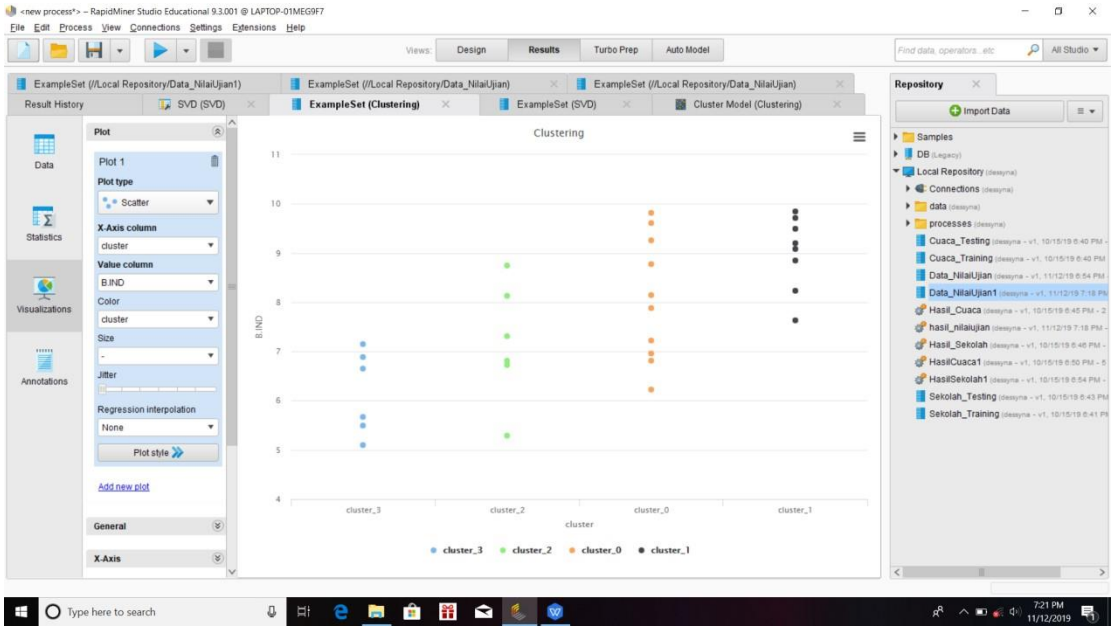
iii. Nilai Cumulative variance



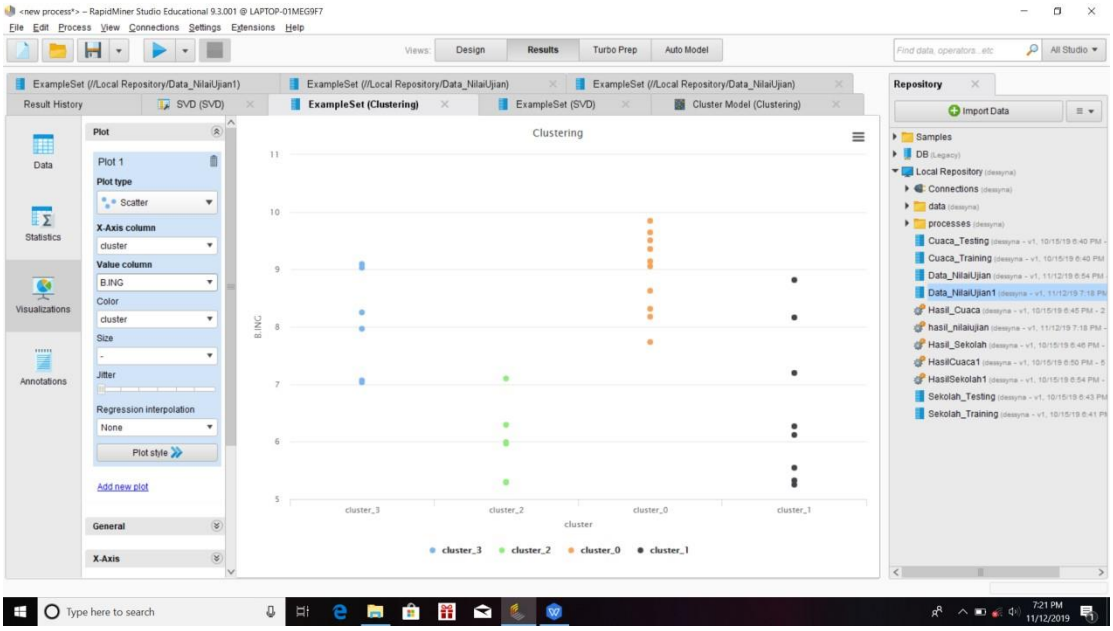
b.

ExampleSet (k-Means)

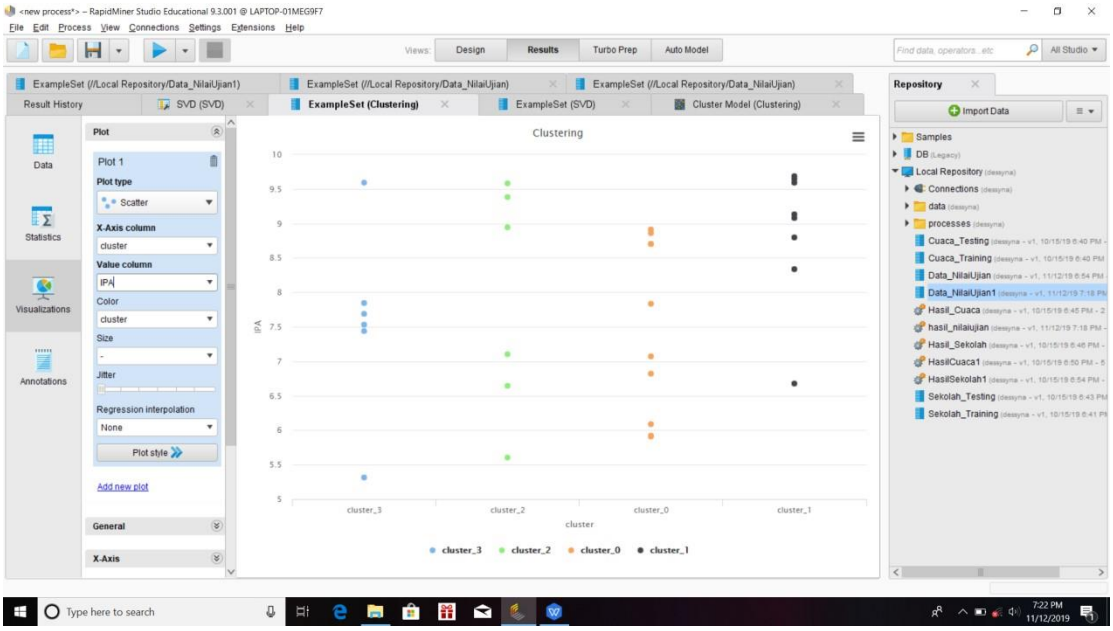
i. Kelompok Siswa bidang B.Indonesia



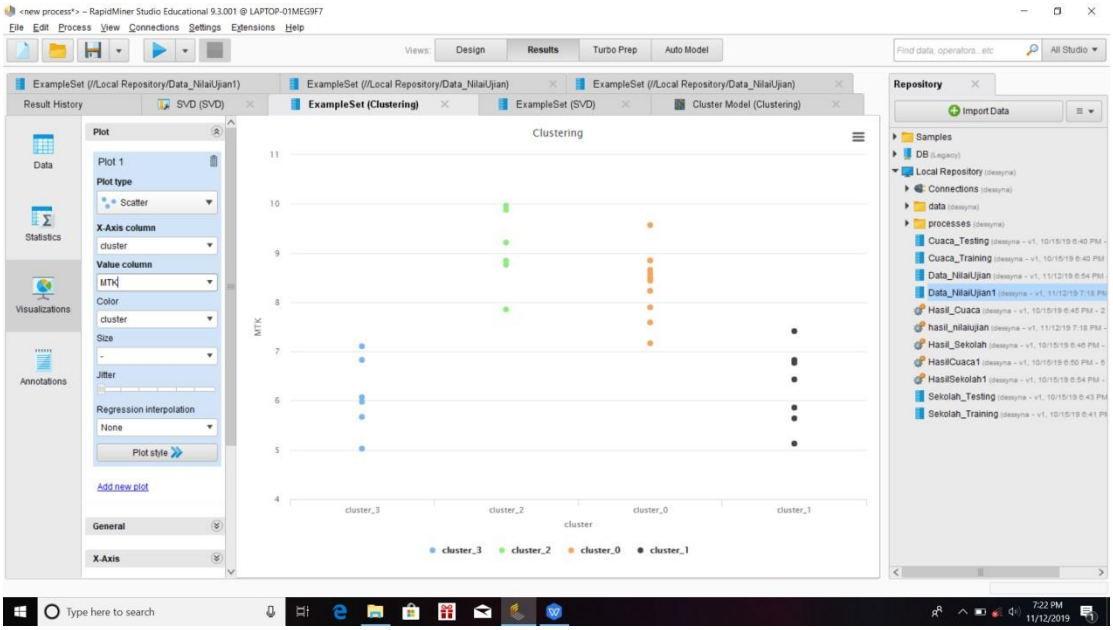
ii. Kelompok Siswa bidang B.Inggris



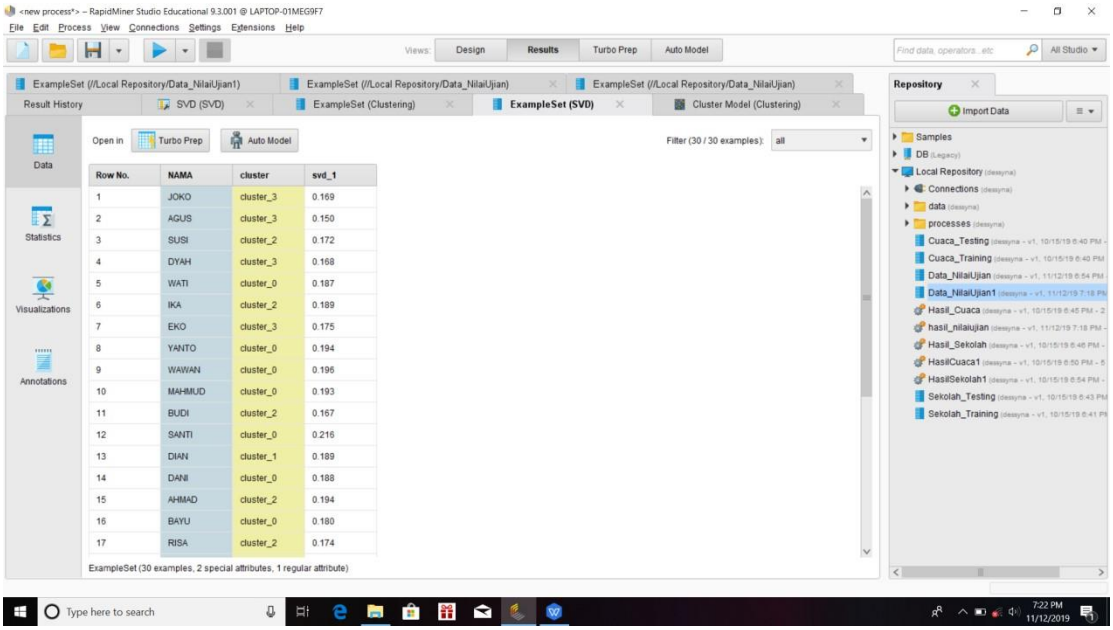
iii. Kelompok Siswa bidang IPA



iv. Kelompok Siswa bidang Matematika

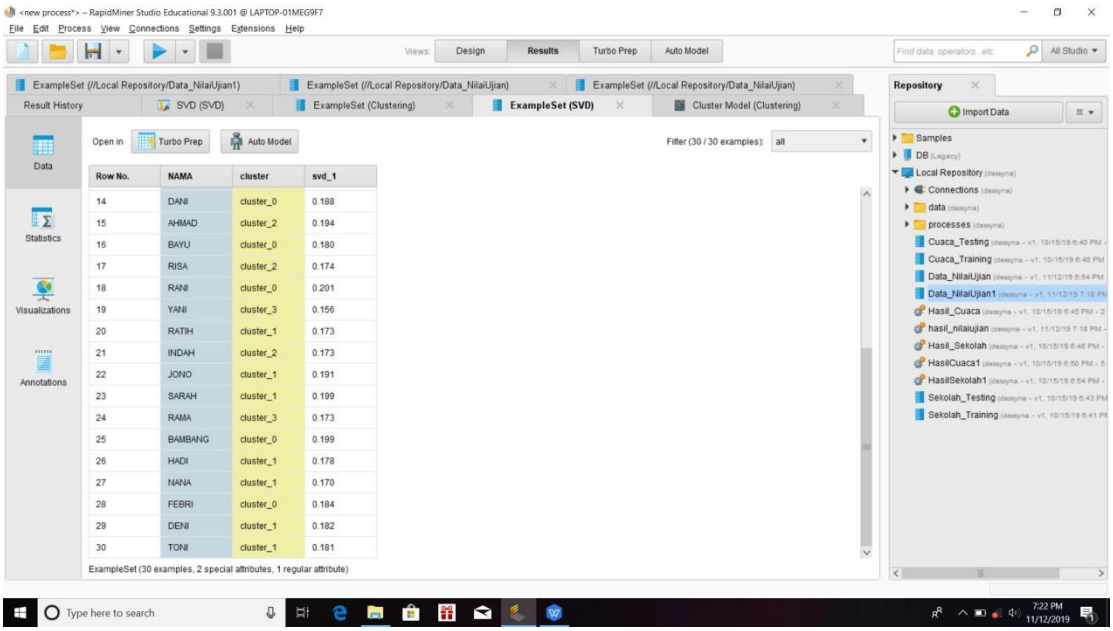


c. ExampleSet (SVD)



Row No.	NAMA	cluster	svd_1
1	JOKO	cluster_3	0.169
2	AGUS	cluster_3	0.150
3	SUSI	cluster_2	0.172
4	DYAH	cluster_3	0.168
5	WATI	cluster_0	0.187
6	IKA	cluster_2	0.189
7	EKO	cluster_3	0.175
8	YANTO	cluster_0	0.194
9	WAWAN	cluster_0	0.196
10	MAHMUD	cluster_0	0.193
11	BUDI	cluster_2	0.167
12	SANTI	cluster_0	0.216
13	DIAN	cluster_1	0.189
14	DANI	cluster_0	0.188
15	AHMAD	cluster_2	0.194
16	BAYU	cluster_0	0.180
17	RISA	cluster_2	0.174

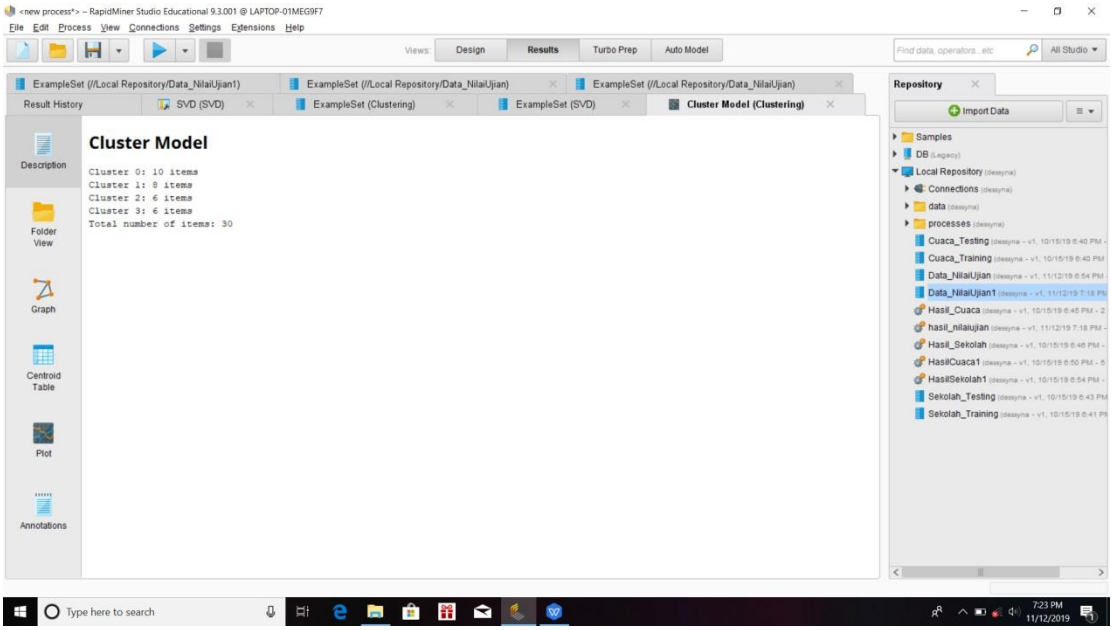
ExampleSet (30 examples, 2 special attributes, 1 regular attribute)



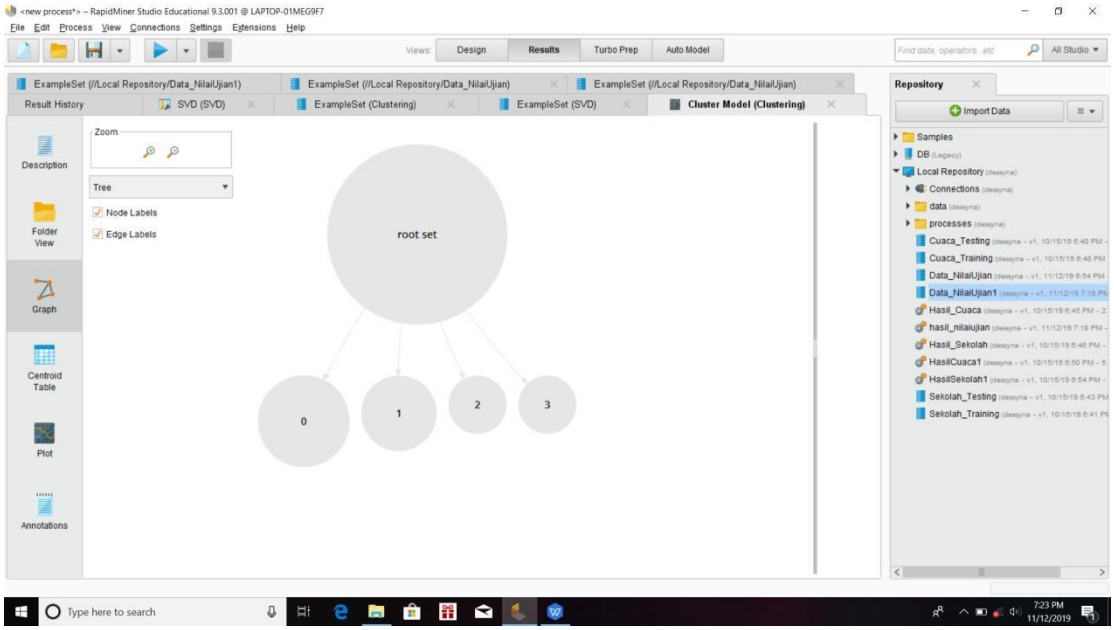
d.

Cluster Mode (Clustering)

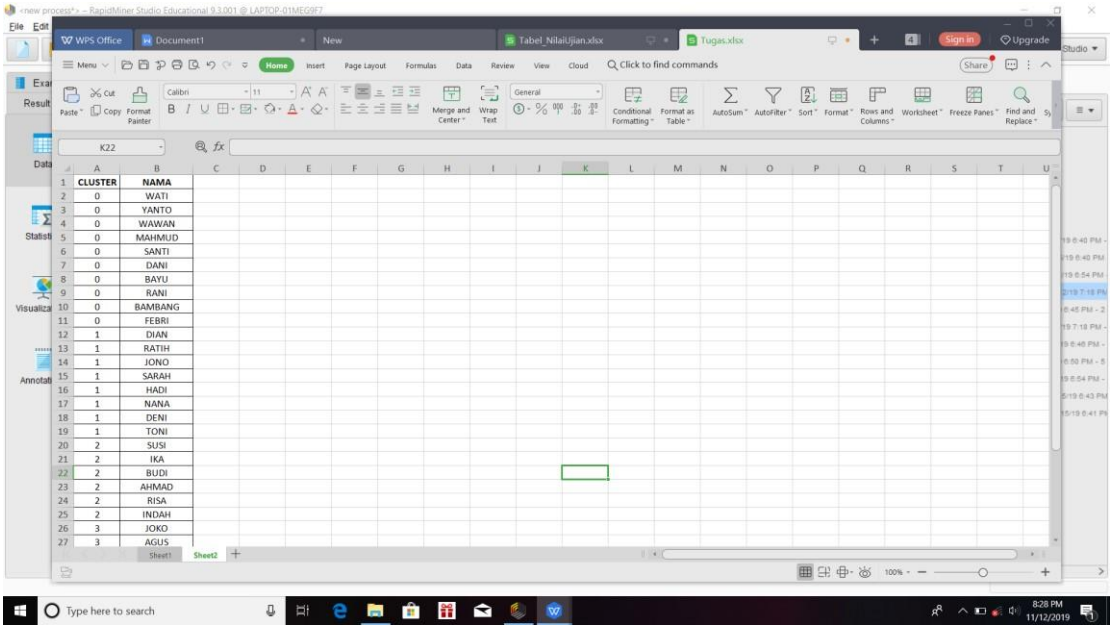
i. Description



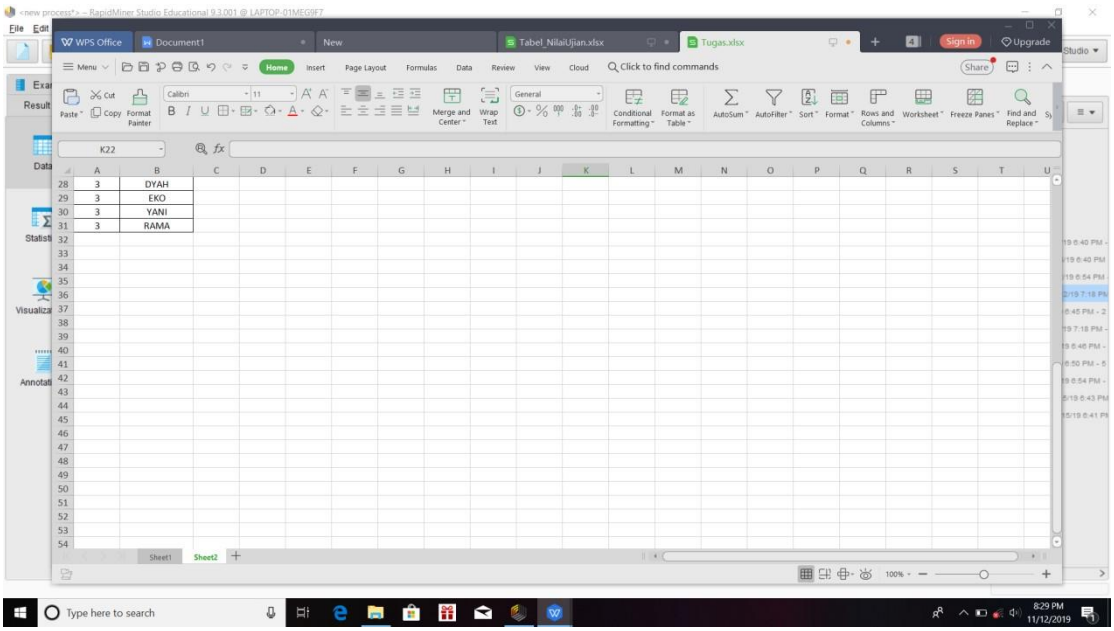
ii. Graph



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



CLUSTER	NAMA
0	WATI
0	YANTO
0	WAWAN
0	MAHMUD
0	SANTI
0	DANI
0	BAYU
0	RANI
0	BAMBANG
0	FEBRI
1	DIAN
1	RATIH
1	JONO
1	SARAH
1	HADI
1	NANA
1	DENI
1	TONI
2	SUSI
2	IKA
2	BUDI
2	AHMAD
2	RISA
2	INDAH
3	JOKO
3	AGUS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