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Class : X

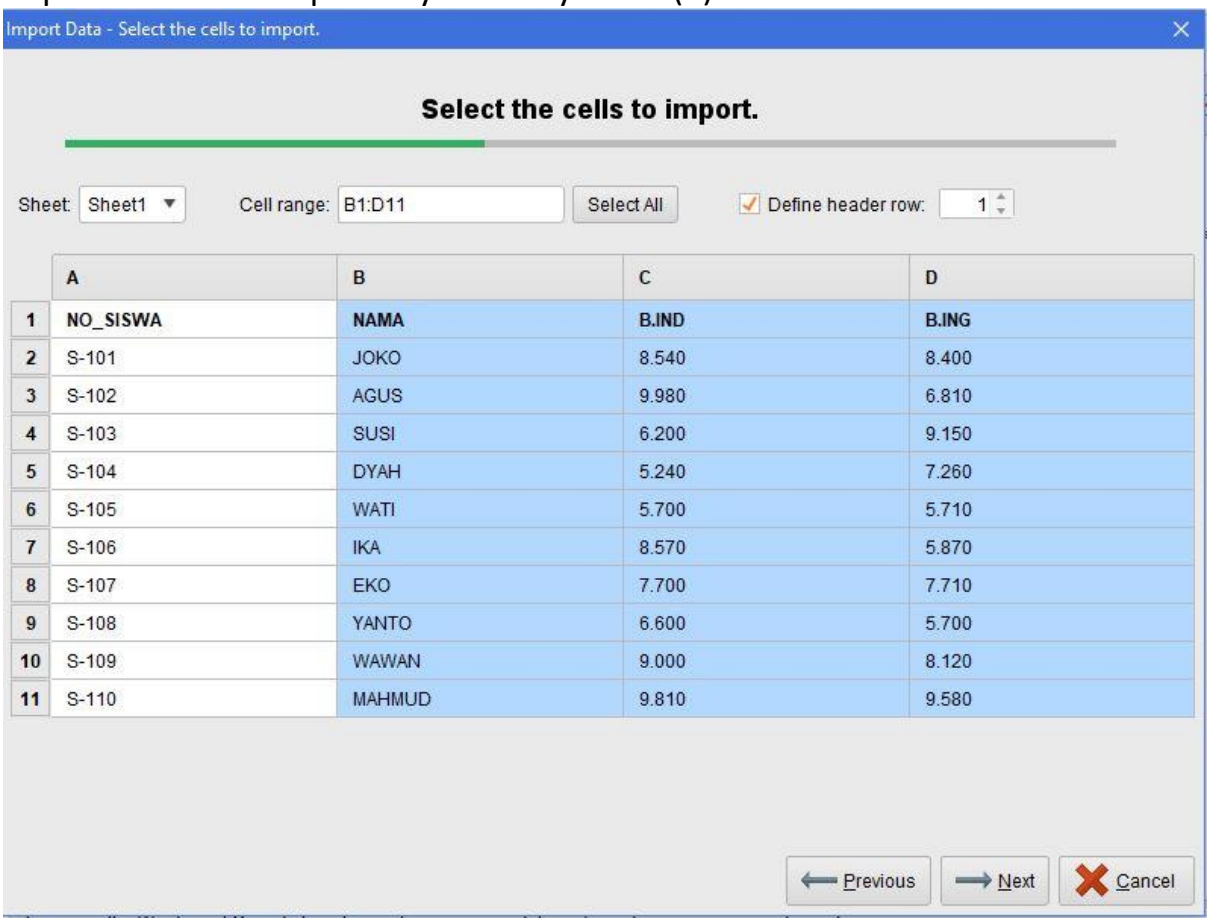
Module 10 Practicum Report

Practicum

1. Tabel_NilauUjian.xlsx Table

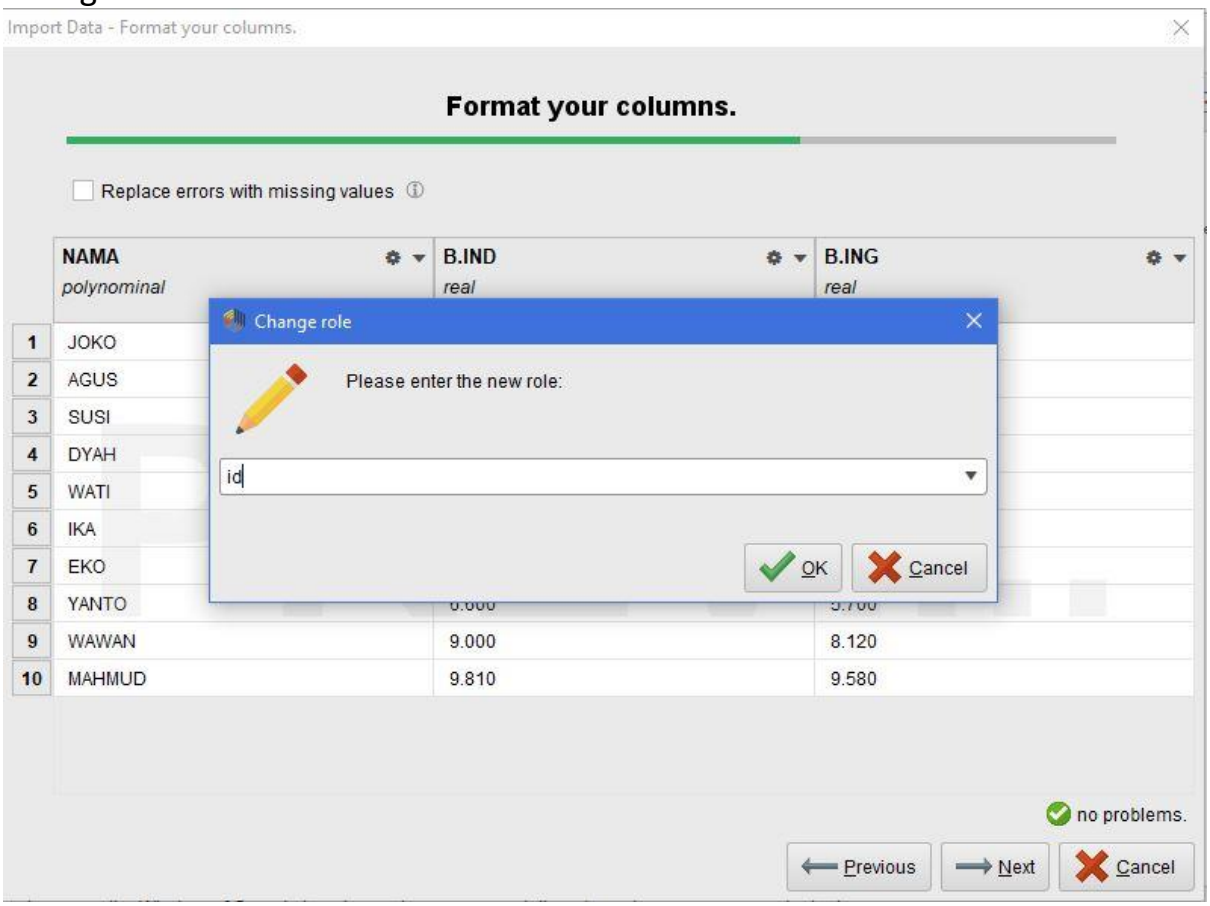
	A	B	C	D
1	NO_SISWA	NAMA	B.IND	B.ING
2	S-101	JOKO	8,54	8,4
3	S-102	AGUS	9,98	6,81
4	S-103	SUSI	6,2	9,15
5	S-104	DYAH	5,24	7,26
6	S-105	WATI	5,7	5,71
7	S-106	IKA	8,57	5,87
8	S-107	EKO	7,7	7,71
9	S-108	YANTO	6,6	5,7
10	S-109	WAWAN	9	8,12
11	S-110	MAHMUD	9,81	9,58

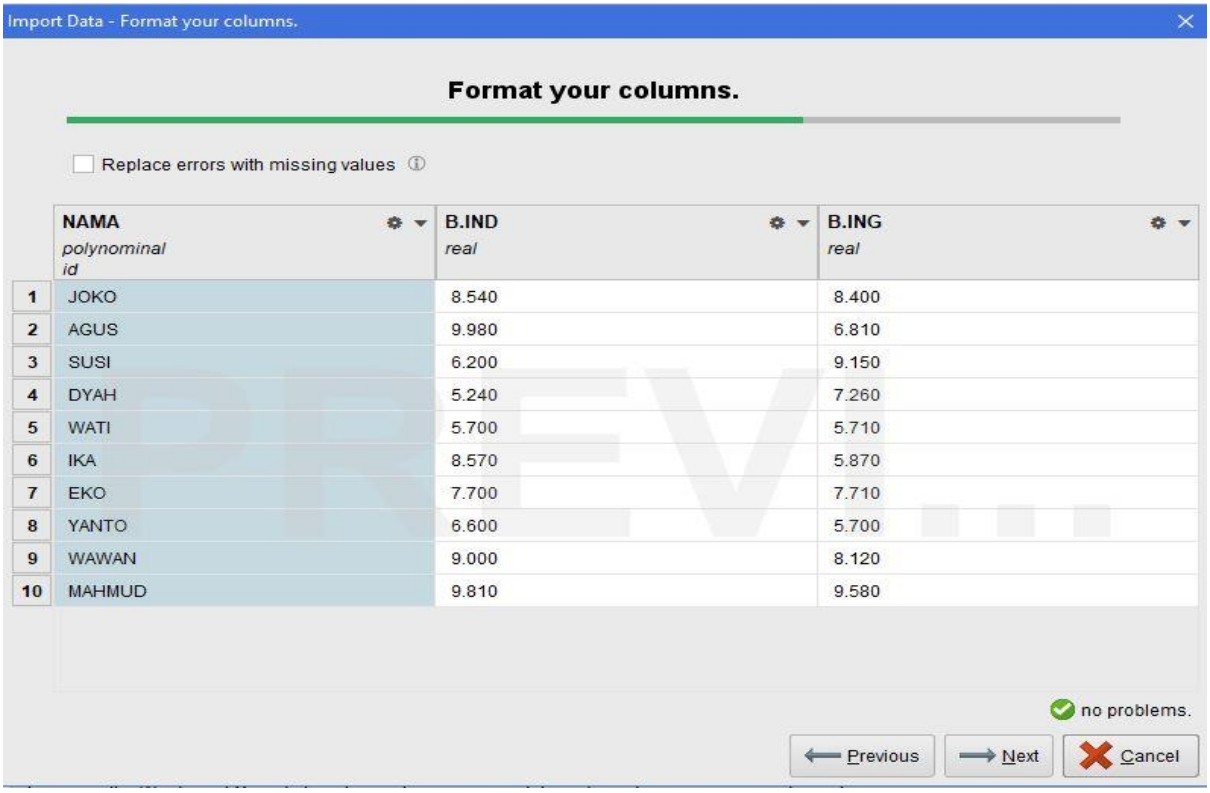
2. Import file to the Repository and only three (3) column that we use.



	A	B	C	D
1	NO_SISWA	NAMA	B.IND	B.ING
2	S-101	JOKO	8.540	8.400
3	S-102	AGUS	9.980	6.810
4	S-103	SUSI	6.200	9.150
5	S-104	DYAH	5.240	7.260
6	S-105	WATI	5.700	5.710
7	S-106	IKA	8.570	5.870
8	S-107	EKO	7.700	7.710
9	S-108	YANTO	6.600	5.700
10	S-109	WAWAN	9.000	8.120
11	S-110	MAHMUD	9.810	9.580

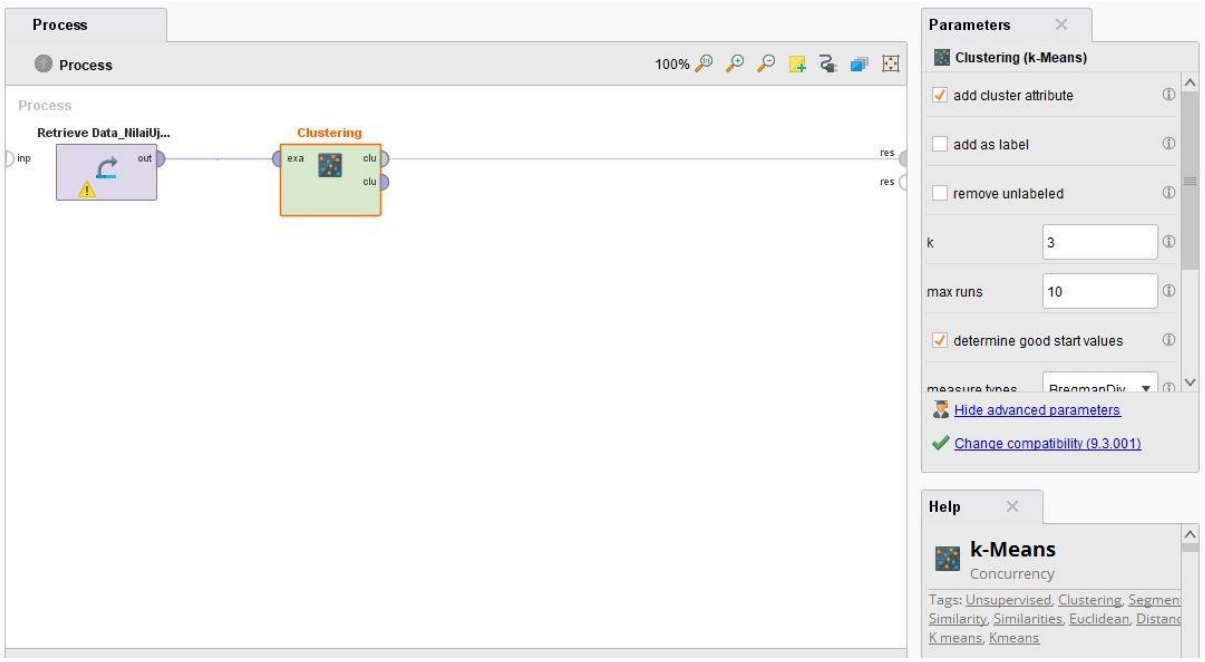
3. Change **NAMA** colum to as an **id**



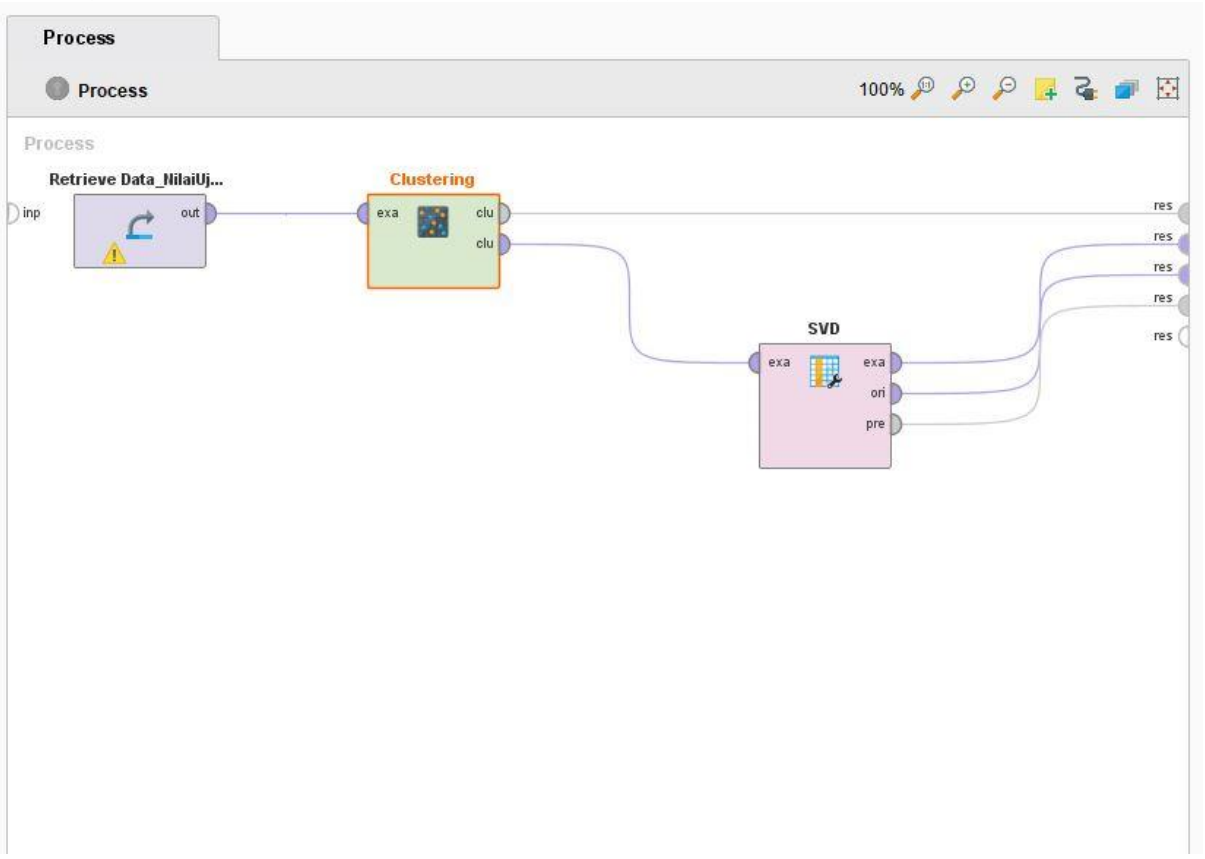


4. Give a name Data_NilaiUjian then click Finish

5. Create a model with Data_NilaiUjian then add operator k-Means. After that change parameter k to 3



6. Add operator SVD (Singular Value Decomposition)



7. Then run the process

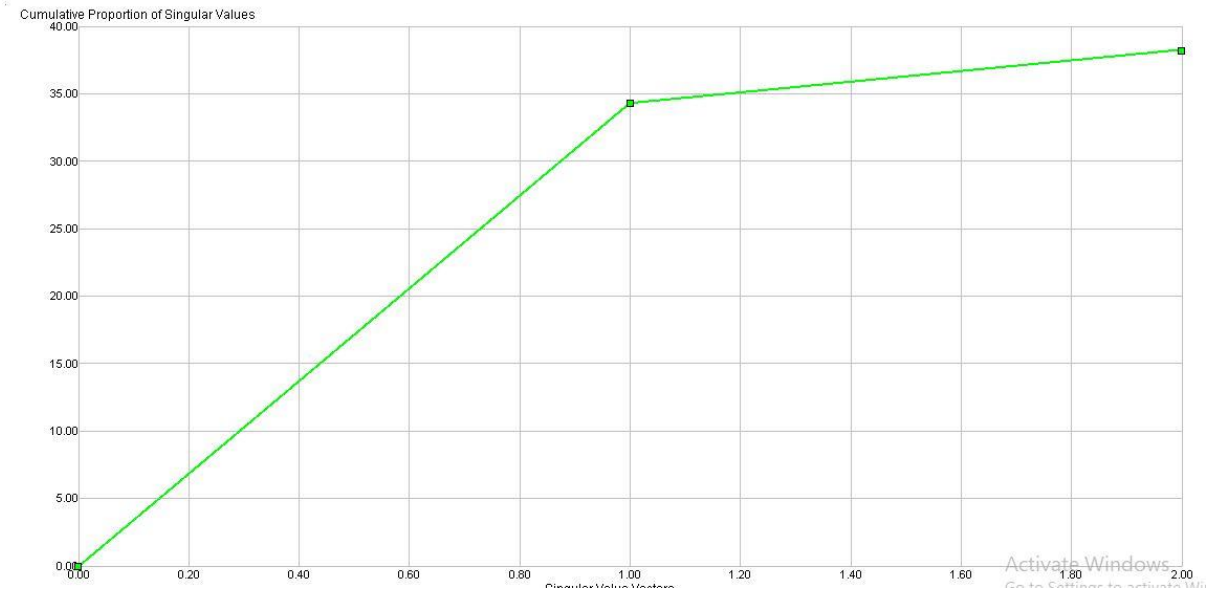
8. The result of the process Clustering using K-Means Algorithm:
    a. SVD
        - Eigenvalue

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

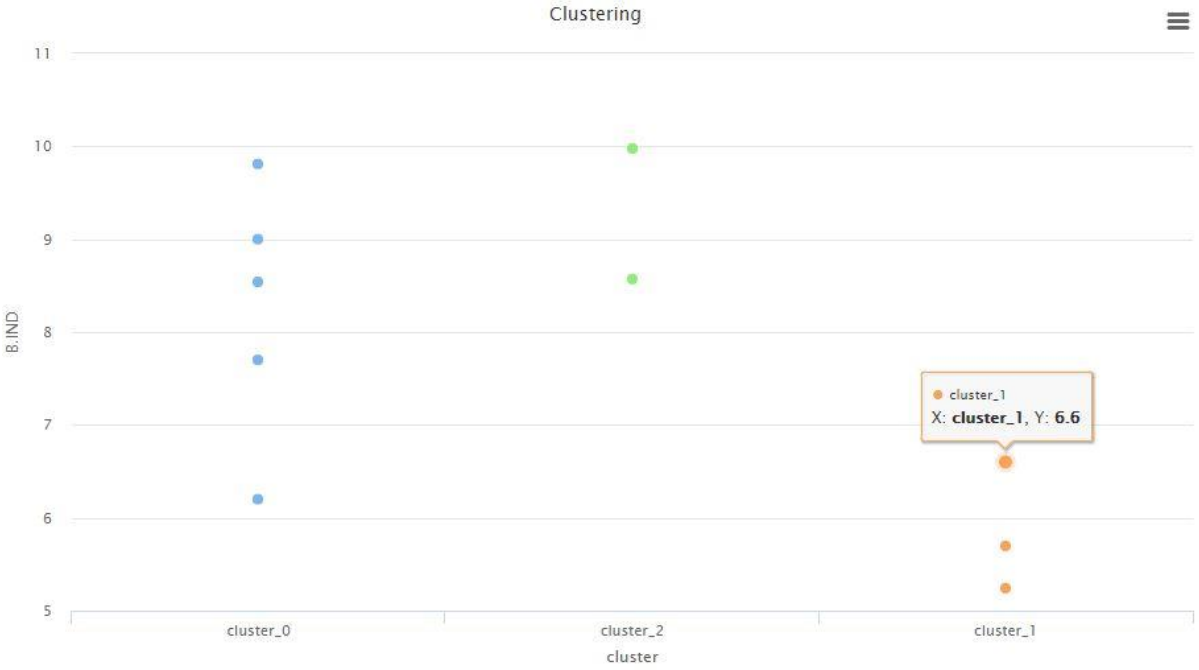
        - SVD Vectors

Attribute	SVD Vector 1
B.IND	0.723
B.ING	0.690

        - Cumulative Variance



    b. ExampleSet (k-Means)
        - Group of Student in the fields of B. Indonesia



- Group of Student in the fields of B. Inggris

c. Exampleset (SVD)

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

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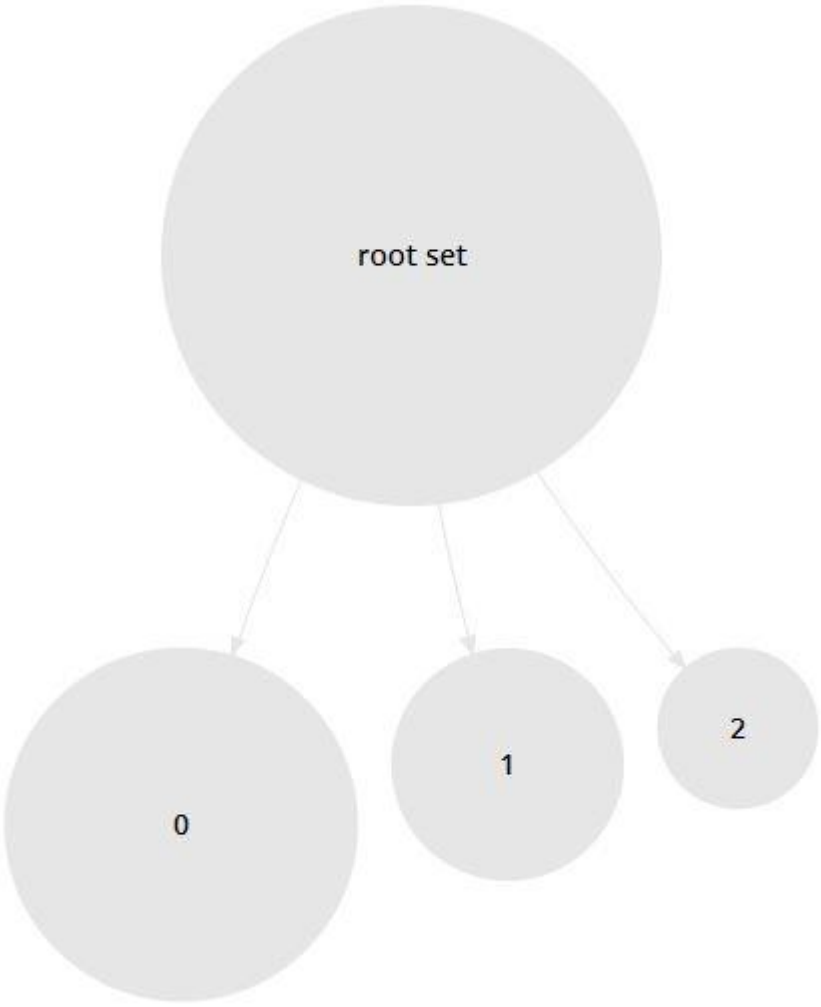
d. Cluster Model (Clustering)

- Description

Cluster Model

```
Cluster 0: 5 items
Cluster 1: 3 items
Cluster 2: 2 items
Total number of items: 10
```

- Graph



9. Interpretation of K-Means Algorithm Results

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

Assignment

1. Create a Table

	A	B	C	D	E	F
1	NO_SISWA	NAMA	B.IND	B.ING	MKT	IPA
2	S-101	JOKO	5,236639	7,262631	9,329364	8,763687
3	S-102	AGUS	7,785433	7,469356	6,074973	6,03265
4	S-103	SUSI	5,086676	9,537787	8,019213	5,457524
5	S-104	DYAH	5,665545	5,849651	9,616687	8,620817
6	S-105	WATI	8,919538	8,548679	7,984514	6,684025
7	S-106	IKA	9,785714	8,023217	6,343994	6,512408
8	S-107	EKO	5,456561	7,582555	7,341945	6,998232
9	S-108	YANTO	6,222987	7,76425	9,212317	6,273146
10	S-109	WAWAN	7,00606	7,976587	8,977098	6,362917
11	S-110	MAHMUD	7,290209	7,210586	5,570704	6,726981
12	S-111	BUDI	9,455786	9,280024	5,584139	7,026909
13	S-112	SANTI	6,514018	7,531567	8,135302	5,366518
14	S-113	DIAN	7,206962	9,066943	9,227968	5,47218
15	S-114	DANI	5,275359	6,941305	9,966014	7,059398
16	S-115	AHMAD	5,375688	9,188111	5,101009	6,249669
17	S-116	BAYU	5,783491	5,068013	9,002865	9,984
18	S-117	RISA	9,269267	8,156462	5,414703	5,64633
19	S-118	RANI	9,477728	8,212548	7,461364	7,172338
20	S-119	YANI	7,761699	7,664658	6,576059	5,785516
21	S-120	RATIH	7,077126	7,896314	8,208104	7,864934
22	S-121	INDAH	9,771781	5,239048	9,403614	9,017746
23	S-122	JONO	9,153025	9,902793	6,172319	9,955314
24	S-123	SARAH	9,792808	9,140002	6,21773	5,454176
25	S-124	RAMA	6,556259	6,16862	5,744318	9,00095
26	S-125	BAMBANG	9,256458	6,178338	5,644009	7,337855
27	S-126	HADI	5,783123	5,918868	5,790971	8,521556
28	S-127	NANA	5,685484	7,496347	5,877416	7,416558
29	S-128	FEBRI	6,198096	6,944675	5,144388	6,258921
30	S-129	DENI	5,430137	7,410722	5,203247	6,575967
31	S-130	TONI	8,538783	6,822384	7,466033	7,241206

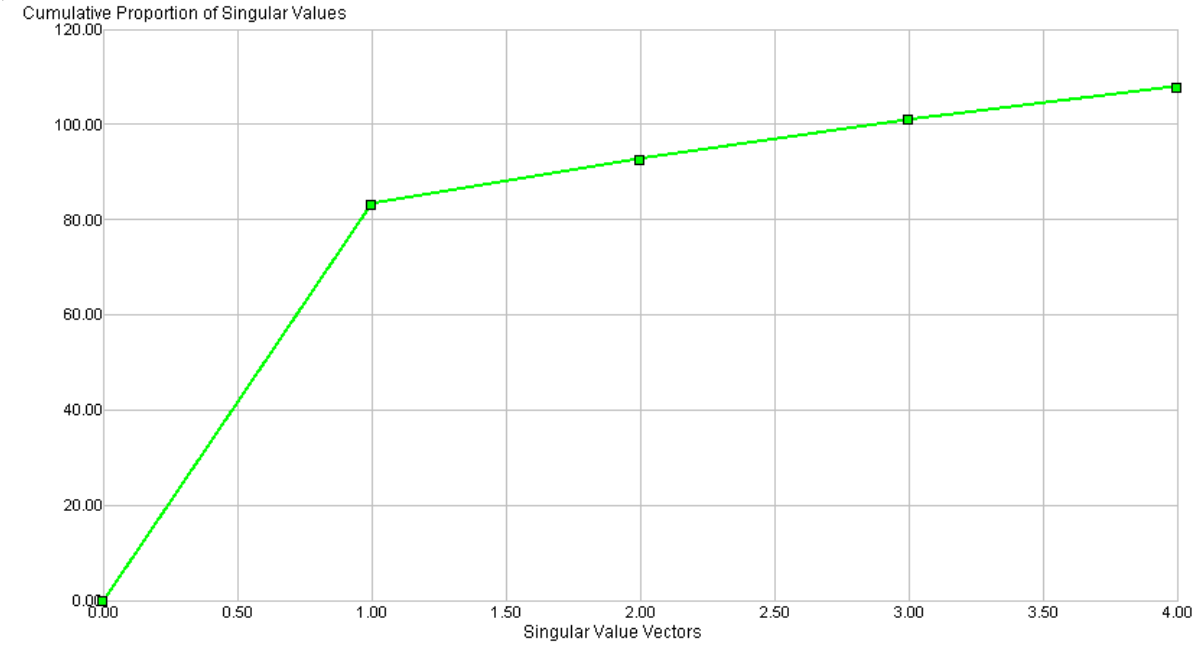
2. With the provisions of cluster = 4 the result are:
   a. SVD
      - Eigenvalue

Component	Singular Value	Proportion of Singular V...	Cumulative Singular Val...	Cumulative Proportion o...
SVD 1	83.381	0.772	83.381	0.772
SVD 2	9.370	0.087	92.751	0.859
SVD 3	8.470	0.078	101.221	0.937
SVD 4	6.807	0.063	108.028	1.000

- SVD Vectors

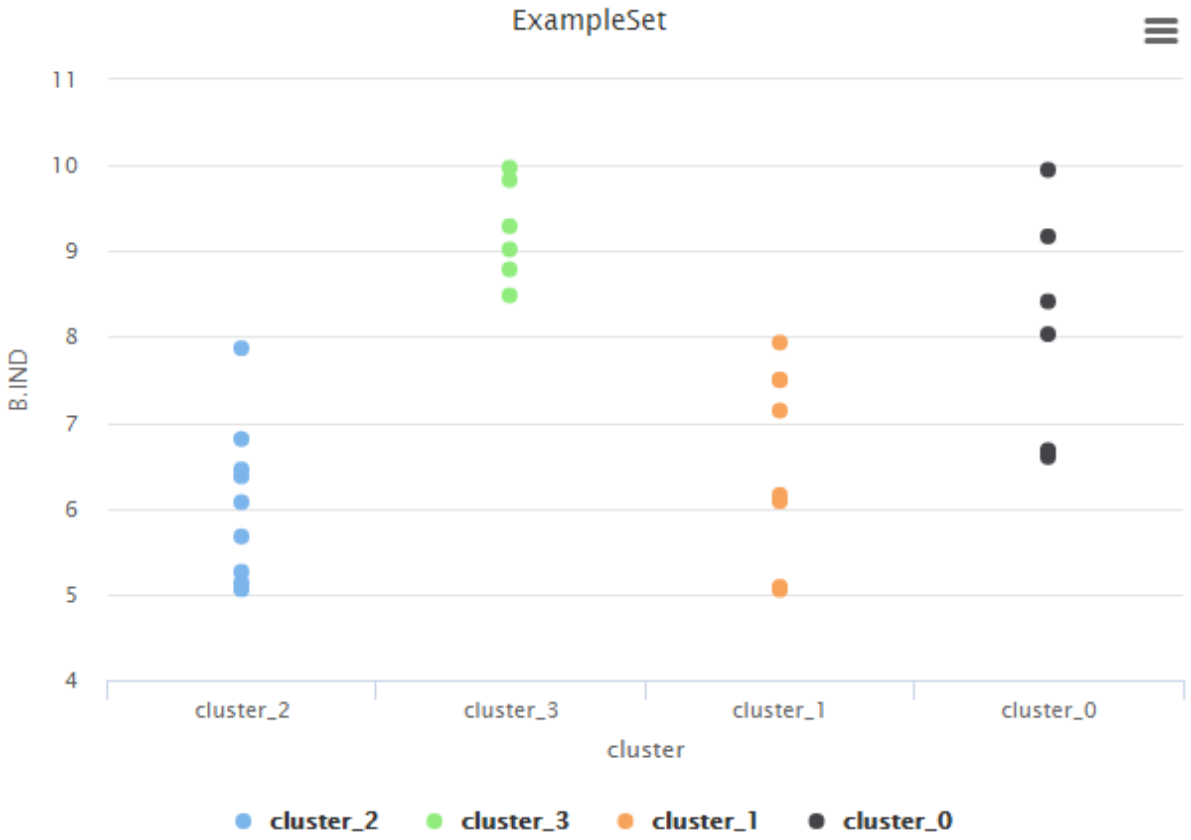
Attribute	SVD Vector 1	SVD Vector 2	SVD Vector 3
B.IND	0.480	-0.329	0.813
B.ING	0.490	-0.662	-0.552
MKT	0.537	0.404	-0.177
IPA	0.491	0.539	-0.050

- Cumulative Variance

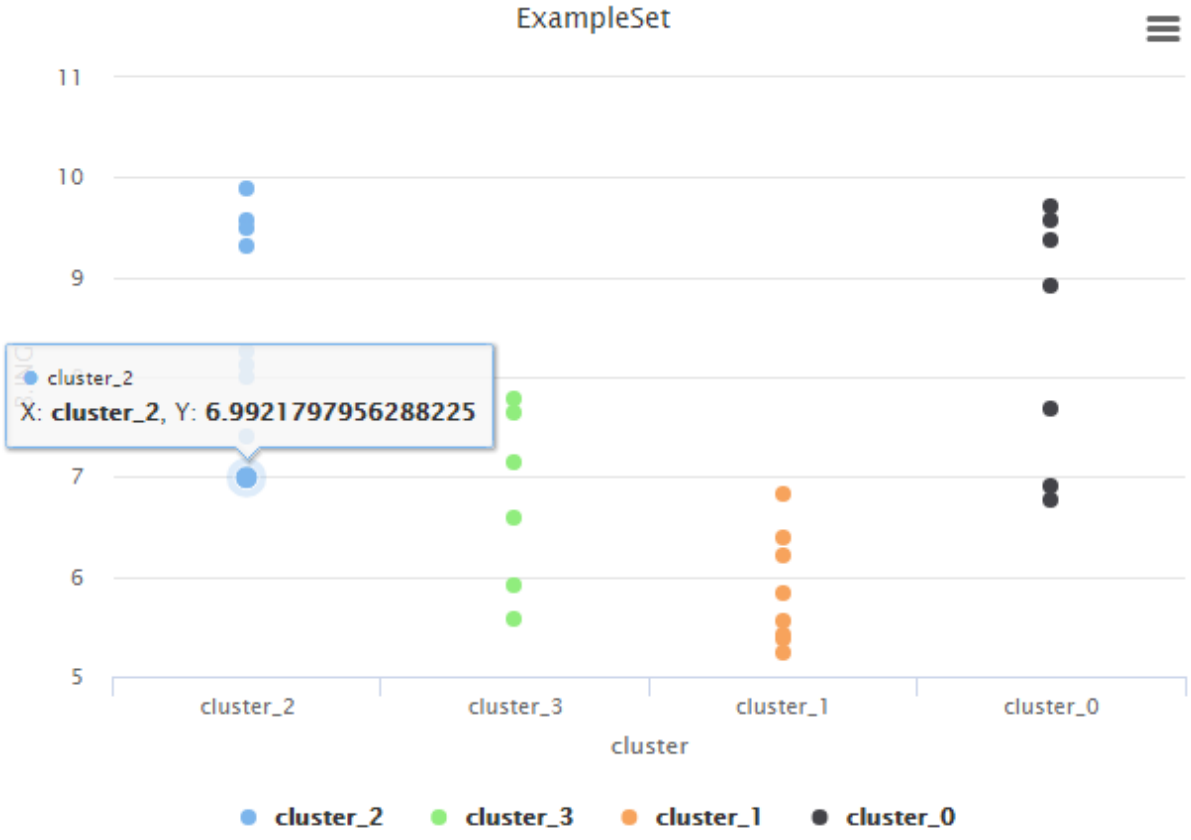


b. Exampleset (k-Means)

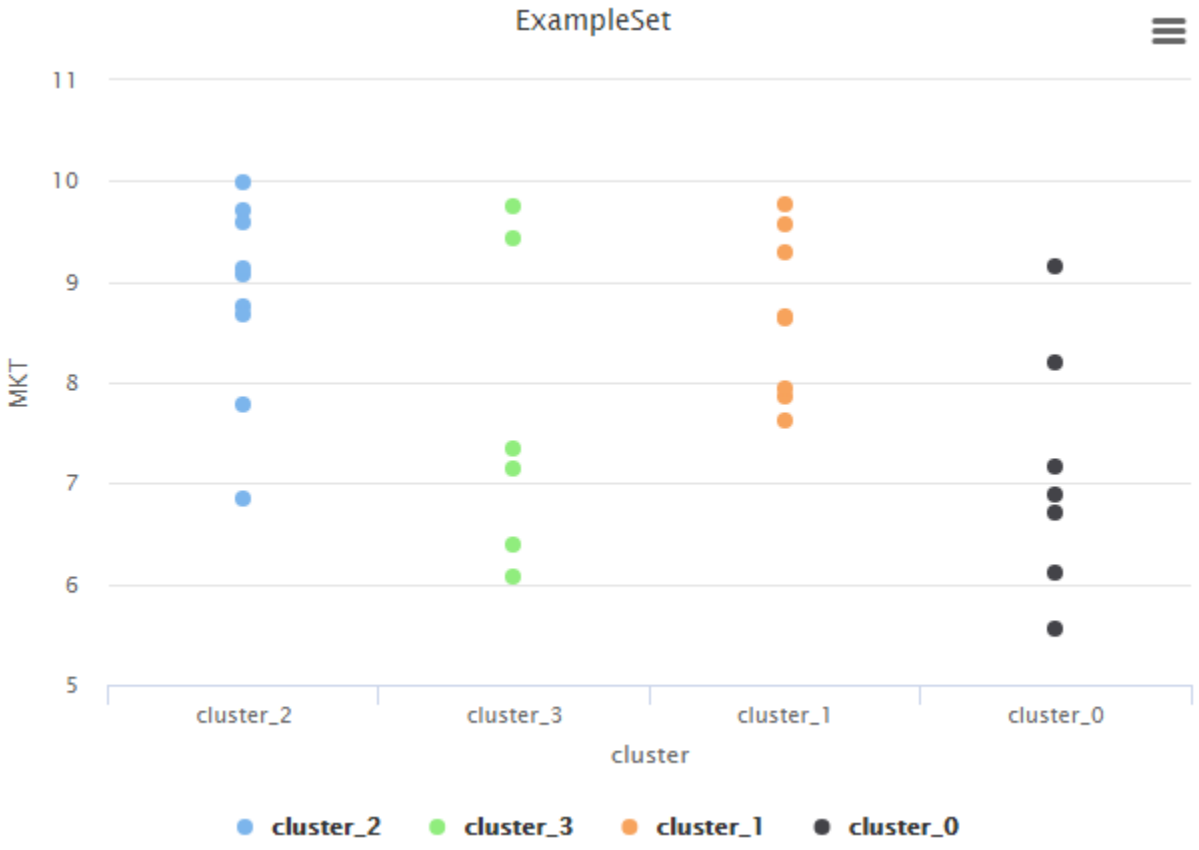
- Plot View B. Indonesia



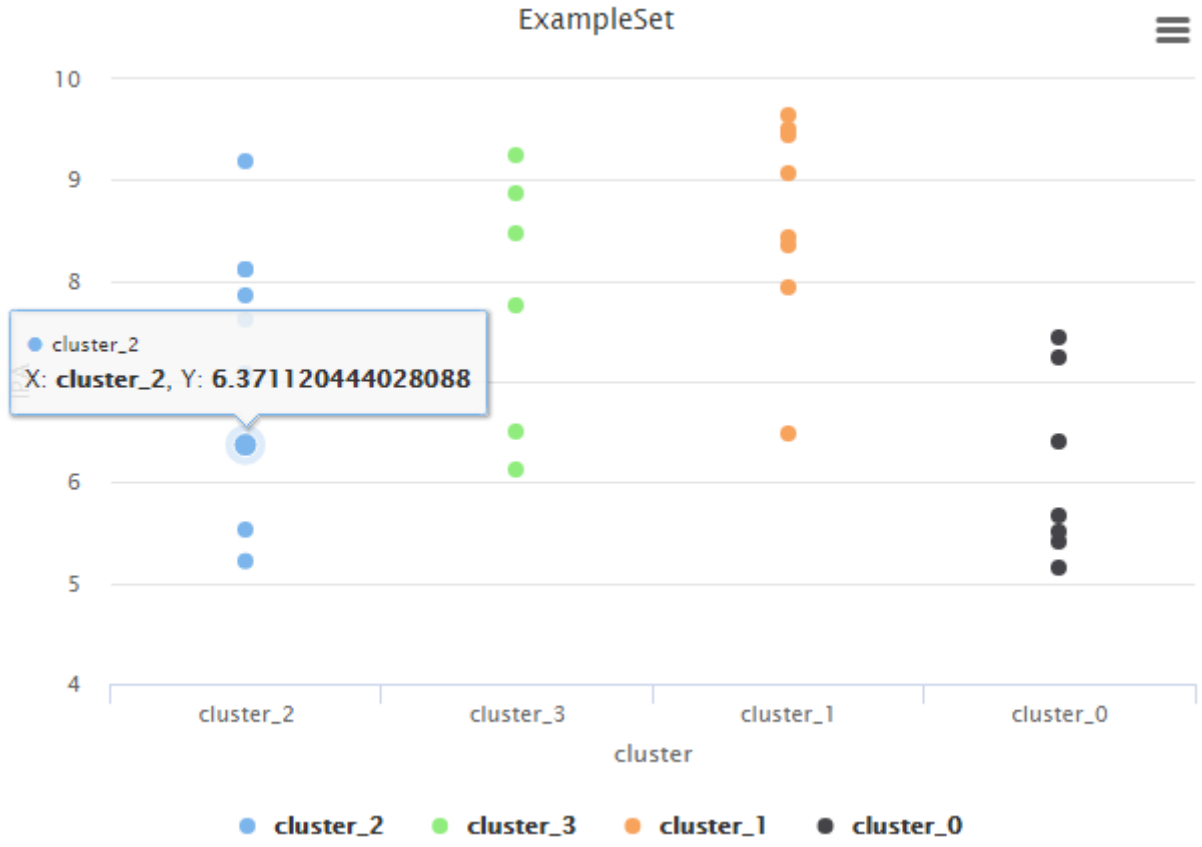
- Plot View B. Inggris



- Plot View MTK



- Plot View IPA



c. Exampleset (SVD)

Row No.	NAMA	cluster	svd_1
8	YANTO	cluster_0	0.190
16	BAYU	cluster_0	0.181
20	RATIH	cluster_0	0.171
24	RAMA	cluster_0	0.190
27	NANA	cluster_0	0.164
28	FEBRI	cluster_0	0.160
29	DENI	cluster_0	0.182
5	WATI	cluster_1	0.168
7	EKO	cluster_1	0.194
12	SANTI	cluster_1	0.183
17	RISA	cluster_1	0.192
18	RANI	cluster_1	0.159
19	YANI	cluster_1	0.186

Row No.	NAMA	cluster	svd_1
22	JONO	cluster_1	0.185
26	HADI	cluster_1	0.164
1	JOKO	cluster_2	0.174
9	WAWAN	cluster_2	0.196
10	MAHMUD	cluster_2	0.192
13	DIAN	cluster_2	0.183
14	DANI	cluster_2	0.183
15	AHMAD	cluster_2	0.184
23	SARAH	cluster_2	0.182
25	BAMBANG	cluster_2	0.206
30	TONI	cluster_2	0.163
2	AGUS	cluster_3	0.180
3	SUSI	cluster_3	0.185

4	DYAH	cluster_3	0.198
6	IKA	cluster_3	0.215
11	BUDI	cluster_3	0.163
21	INDAH	cluster_3	0.190

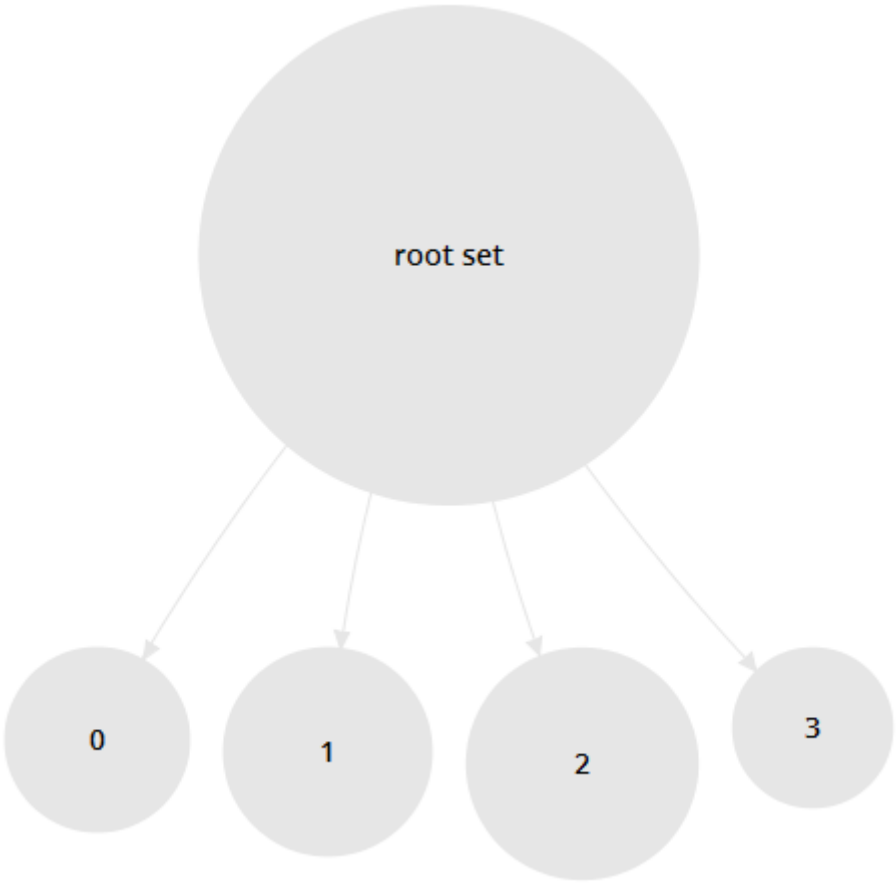
d. Cluster Model (Clustering)

- Description

Cluster Model

```
Cluster 0: 7 items
Cluster 1: 8 items
Cluster 2: 9 items
Cluster 3: 6 items
Total number of items: 30
```

- Graph



3. Each of the Cluster and the name of student that included in the each of the Cluster

Row No.	NAMA	cluster	B.IND	B.ING	MKT	IPA
8	YANTO	cluster_0	9.171	9.375	6.113	7.232
16	BAYU	cluster_0	8.413	6.916	9.146	5.667
20	RATIH	cluster_0	8.032	6.763	8.206	5.405
24	RAMA	cluster_0	9.947	9.560	7.175	5.147
27	NANA	cluster_0	6.654	8.908	5.554	6.401
28	FEBRI	cluster_0	6.601	7.685	6.879	5.500
29	DENI	cluster_0	6.678	9.708	6.699	7.429
5	WATI	cluster_1	6.084	5.547	7.854	8.426
7	EKO	cluster_1	7.933	5.247	9.565	9.496
12	SANTI	cluster_1	7.140	6.219	8.658	8.352
17	RISA	cluster_1	7.495	6.387	8.634	9.439
18	RANI	cluster_1	6.158	5.841	7.939	6.492
19	YANI	cluster_1	5.052	6.825	9.301	9.642
22	JONO	cluster_1	7.502	5.384	9.774	7.936
26	HADI	cluster_1	5.087	5.414	7.618	9.063
1	JOKO	cluster_2	5.262	9.569	7.790	6.371
9	WAWAN	cluster_2	6.455	9.500	8.749	7.855
10	MAHMUD	cluster_2	7.868	7.992	9.071	7.076
13	DIAN	cluster_2	5.134	7.411	9.704	8.108
14	DANI	cluster_2	6.374	9.896	8.676	5.521
15	AHMAD	cluster_2	5.673	8.112	9.140	7.607
23	SARAH	cluster_2	6.073	8.262	6.849	9.192
25	BAMBANG	cluster_2	6.810	9.311	9.984	8.111
30	TONI	cluster_2	5.057	6.992	9.582	5.218
2	AGUS	cluster_3	8.483	7.137	6.065	8.479
3	SUSI	cluster_3	9.289	6.585	7.348	7.763
4	DYAH	cluster_3	9.020	7.776	7.138	9.239
6	IKA	cluster_3	9.972	7.651	9.440	8.865
11	BUDI	cluster_3	8.786	5.919	6.388	6.116
21	INDAH	cluster_3	9.829	5.582	9.744	6.503