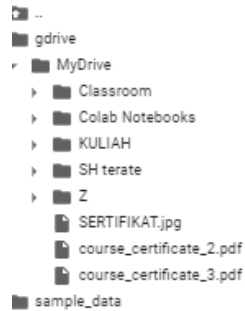1.

+ Kode   + Teks

Applying Apriori

```
[23] freq_items = apriori(ohe_data, min_support= 0.03, use_colnames=True)
```

- ohe_data adalah data yang akan dianalisa asosiasinya yang sudah di-encode
- min_support adalah minimum support yang akan ditentukan

```
[24] freq_items
```

	support	itemsets
0	0.170933	(french fries)
1	0.049467	(herb & pepper)
2	0.043067	(fresh bread)
3	0.058533	(whole wheat rice)
4	0.065733	(olive oil)
5	0.046800	(champagne)
6	0.063200	(frozen smoothie)
7	0.047333	(honey)
8	0.132000	(green tea)
9	0.076400	(low fat yogurt)
10	0.033200	(avocado)
11	0.079333	(escalope)
12	0.095333	(frozen vegetables)
13	0.031733	(cottage cheese)
14	0.238267	(mineral water)
15	0.030133	(butter)
31	0.030267	(tomato juice)
32	0.129600	(milk)
33	0.033733	(brownies)
34	0.087200	(burgers)
35	0.179733	(eggs)
36	0.033733	(mineral water, french fries)
37	0.034400	(french fries, chocolate)
38	0.036400	(french fries, eggs)
39	0.030933	(green tea, mineral water)
40	0.035733	(mineral water, frozen vegetables)
41	0.059733	(mineral water, spaghetti)
42	0.040933	(mineral water, ground beef)
43	0.052667	(mineral water, chocolate)
44	0.033733	(mineral water, pancakes)
45	0.048000	(milk, mineral water)
46	0.050933	(mineral water, eggs)
47	0.039200	(spaghetti, ground beef)
48	0.039200	(spaghetti, chocolate)
49	0.035467	(milk, spaghetti)
50	0.036533	(spaghetti, eggs)
51	0.032133	(milk, chocolate)
52	0.033200	(chocolate, eggs)
53	0.030800	(milk, eggs)

2. Apa saja rule nya jika minimum support 2% dan minimum confidence 30%

Applying Apriori

```
freq_items = apriori(ohe_data, min_support= 0.02, use_colnames=True)
```

- ohe_data adalah data yang akan dianalisa asosiasinya yang sudah di-encode
- min_support adalah minimum support yang akan ditentukan

[38] freq_items

	support	itemsets
0	0.024133	(muffins)
1	0.170933	(french fries)
2	0.049467	(herb & pepper)
3	0.043067	(fresh bread)
4	0.027200	(light mayo)
...	...	...
99	0.032133	(milk, chocolate)
100	0.033200	(chocolate, eggs)
101	0.021733	(pancakes, eggs)
102	0.030800	(milk, eggs)
103	0.028800	(burgers, eggs)

104 rows × 2 columns

[39] rules = association_rules(freq_items, metric="confidence", min_threshold=0.3)

- min_threshold menentukan minimum confidence yang akan dicari asosiasinya
- min_support ditentukan/diatur di freq_item yang ditentukan di atas

rules

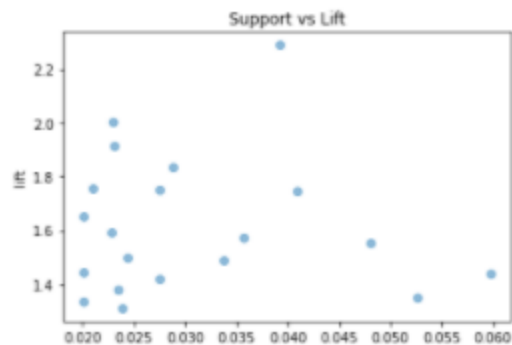|	antecedents	consequents	antecedent support	consequent support	support	confidence	lift	leverage	conviction
0	(whole wheat rice)	(mineral water)	0.058533	0.238267	0.020133	0.343964	1.443608	0.006187	1.161114
1	(olive oil)	(mineral water)	0.065733	0.238267	0.027467	0.417850	1.753707	0.011805	1.308483
2	(olive oil)	(spaghetti)	0.065733	0.174133	0.022933	0.348884	2.003547	0.011487	1.268387
3	(frozen smoothie)	(mineral water)	0.063200	0.238267	0.020133	0.318565	1.337012	0.005075	1.117838
4	(low fat yogurt)	(mineral water)	0.076400	0.238267	0.023867	0.312391	1.311098	0.005663	1.107800
5	(frozen vegetables)	(mineral water)	0.095333	0.238267	0.035733	0.374825	1.573133	0.013019	1.218433
6	(spaghetti)	(mineral water)	0.174133	0.238267	0.059733	0.343032	1.439698	0.018243	1.159468
7	(tomatoes)	(mineral water)	0.068400	0.238267	0.024400	0.356725	1.497168	0.008103	1.184149
8	(cooking oil)	(mineral water)	0.051067	0.238267	0.020133	0.394256	1.654683	0.007966	1.257517
9	(ground beef)	(mineral water)	0.098267	0.238267	0.040933	0.416554	1.748266	0.017520	1.305576
10	(shrimp)	(mineral water)	0.071333	0.238267	0.023467	0.328972	1.380688	0.006470	1.135174
11	(soup)	(mineral water)	0.050533	0.238267	0.023067	0.456464	1.915771	0.011026	1.401441
12	(chicken)	(mineral water)	0.060000	0.238267	0.022800	0.380000	1.594852	0.008504	1.228602
13	(cake)	(mineral water)	0.081067	0.238267	0.027467	0.338816	1.422002	0.008151	1.152074
14	(chocolate)	(mineral water)	0.163867	0.238267	0.052667	0.321400	1.348907	0.013623	1.122506
15	(pancakes)	(mineral water)	0.095067	0.238267	0.033733	0.354839	1.489250	0.011082	1.180687
16	(milk)	(mineral water)	0.129600	0.238267	0.048000	0.370370	1.554436	0.017121	1.209812
17	(tomatoes)	(spaghetti)	0.068400	0.174133	0.020933	0.306043	1.757520	0.009023	1.190083
18	(ground beef)	(spaghetti)	0.098267	0.174133	0.039200	0.398915	2.290857	0.022088	1.373959
19	(burgers)	(eggs)	0.087200	0.179733	0.028800	0.330275	1.837585	0.013127	1.224782

[41] #support vs confidence
```python
plt.scatter(rules['support'], rules['confidence'], alpha=0.5)
plt.xlabel('support')
plt.ylabel('confidence')
plt.title('Support vs Confidence')
plt.show()
```


Support vs Confidence
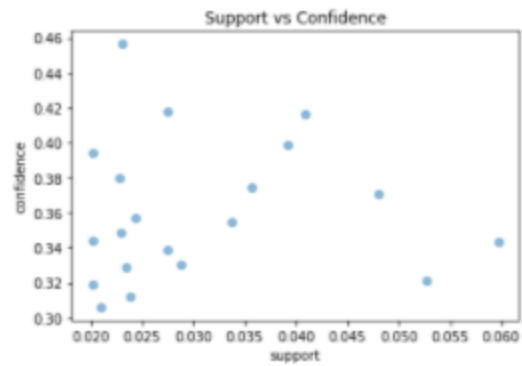
[42] #support vs lift
```python
plt.scatter(rules['support'], rules['lift'], alpha=0.5)
plt.xlabel('support')
plt.ylabel('lift')
plt.title('Support vs Lift')
plt.show()
```


Support vs Lift

+ Kode   + Teks

[42]

0.020 0.025 0.030 0.035 0.040 0.045 0.050 0.055 0.060
support

```
#lift vs confidence
fit = np.polyfit(rules['lift'], rules['confidence'], 1)
fit_fn = np.poly1d(fit)
plt.plot(rules['lift'], rules['confidence'], 'yo', rules['lift'],
 fit_fn(rules['lift']))
```

[<matplotlib.lines.Line2D at 0x7f91cb5ab6d0>,
 <matplotlib.lines.Line2D at 0x7f91cb5ab790>]