

LAPORAN PRAKTIKUM DATA MINING
WEKA
(Waikato Environment for Knowledge Analysis)



Disusun oleh:

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NPM :1808107010093

JURUSAN INFORMATIKA
FAKULTAS MIPA
UNIVERSITAS SYIAH KUALA

2020

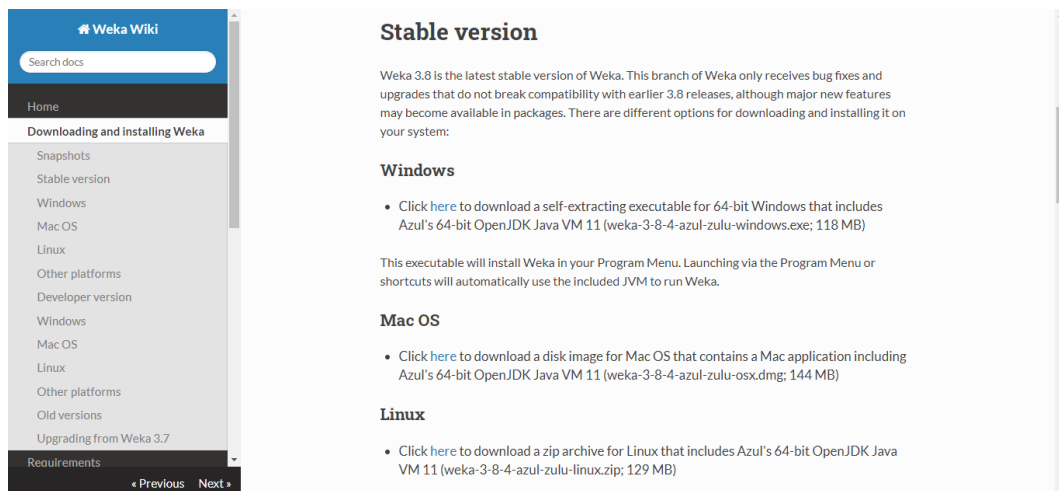
Mengubah abalone dan wdbc ke format ARFF

1. Mengunduh aplikasi WEKA 3.8

<https://www.cs.waikato.ac.nz/ml/weka/>




- Klik “Download”



- Pilih stable version disesuaikan dengan sistem operasi yang ada di laptop
- WEKA 3.8 berhasil diunduh


2. Mengunduh datasets

<http://archive.ics.uci.edu/ml/index.php>



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Latest News:

09-24-2018: Welcome to the new Repository admins Dheeru Dua and Efi Karra Taniskidou!

04-04-2013: Welcome to the new Repository admins Kevin Bache and Moshe Lichman!

03-01-2010: Note from donor regarding Netflix data

10-16-2009: Two new data sets have been added.

09-14-2009: Several data sets have been added.

03-24-2008: New data sets have been added!

06-25-2007: Two new data sets have been added: UJI Pen Characters, MAGIC Gamma Telescope

Featured Data Set: [Gisette](#)

Task: Classification
Data Type: Multivariate

Newest Data Sets:

07-22-2020:  [Facebook Large Page-Page Network](#)

07-17-2020:  [Amphibians](#)

07-12-2020:  [Early stage diabetes risk prediction dataset](#)

06-28-2020:  [Taiwanese Bankruptcy Prediction](#)

06-20-2020:  [South German Credit \(UPDATE\)](#)

Most Popular Data Sets (hits since 2007):

3571516:  [Iris](#)


1940102:  [Adult](#)

1496684:  [Wine](#)

1338117:  [Breast Cancer Wisconsin \(Diagnostic\)](#)


1322740:  [Heart Disease](#)

- Pilih *Breast Cance Wisconsin (Diagnostic)* dan *Abalone*



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- Pilih "Data Folder"

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- [unformatted-data](#)
- [wdbc.data](#)
- [wdbc.names](#)
- [wdbc.data](#)
- [wdbc.names](#)

Apache/2.4.6 (CentOS) OpenSSL/1.0.2k-fips SVN/1.7.14 Phusion_Passenger/4.0.53 mod_perl/2.0.11 Perl/v5.16.3 Server at archive.ics.uci.edu Port 80

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Apache/2.4.6 (CentOS) OpenSSL/1.0.2k-fips SVN/1.7.14 Phusion_Passenger/4.0.53 mod_perl/2.0.11 Perl/v5.16.3 Server at archive.ics.uci.edu Port 80

- Pilih "wdbc.data" dan "abalone.data" untuk mengunduh



Name	Date modified	Type	Size
<input type="checkbox"/> abalone.data	08/10/2020 15:14	DATA File	188 KB
<input type="checkbox"/> wdbc.data	08/10/2020 15:14	DATA File	122 KB

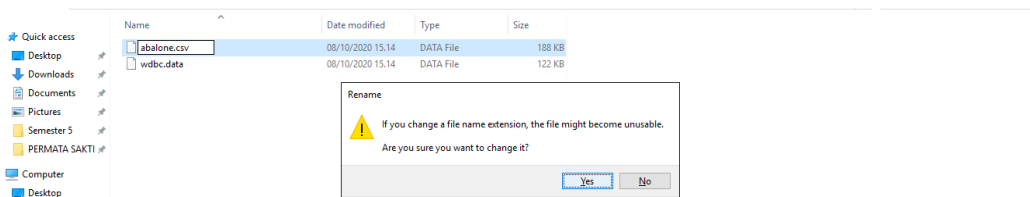
3. Mengubah ke format .csv

- rename file dengan format .csv



Name	Date modified	Type	Size
<input type="checkbox"/> abalone.csv	08/10/2020 15:14	DATA File	188 KB
<input type="checkbox"/> wdbc.data	08/10/2020 15:14	DATA File	122 KB

- klik "yes"



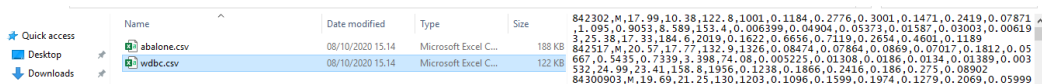
Name	Date modified	Type	Size
<input type="checkbox"/> abalone.csv	08/10/2020 15:14	DATA File	188 KB
<input type="checkbox"/> wdbc.data	08/10/2020 15:14	DATA File	122 KB

Rename

If you change a file name extension, the file might become unusable.

Are you sure you want to change it?

- file akan berubah menjadi seperti tampilan di bawah



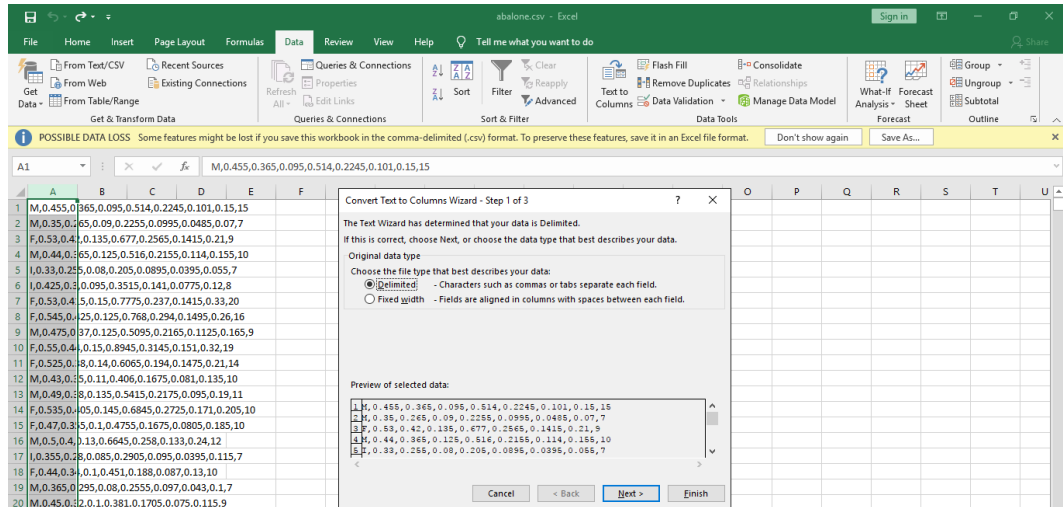
Name	Date modified	Type	Size
<input type="checkbox"/> abalone.csv	08/10/2020 15:14	Microsoft Excel C...	188 KB
<input type="checkbox"/> wdbc.csv	08/10/2020 15:14	Microsoft Excel C...	122 KB

4. Edit file format .csv

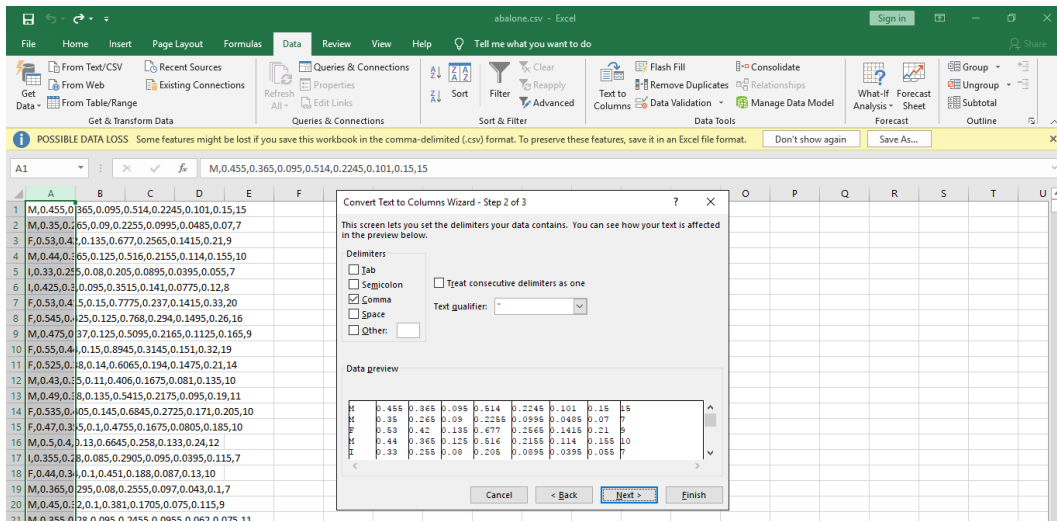
- buka file abalone.csv dan wdbc.csv

- Blok seluruh kolom

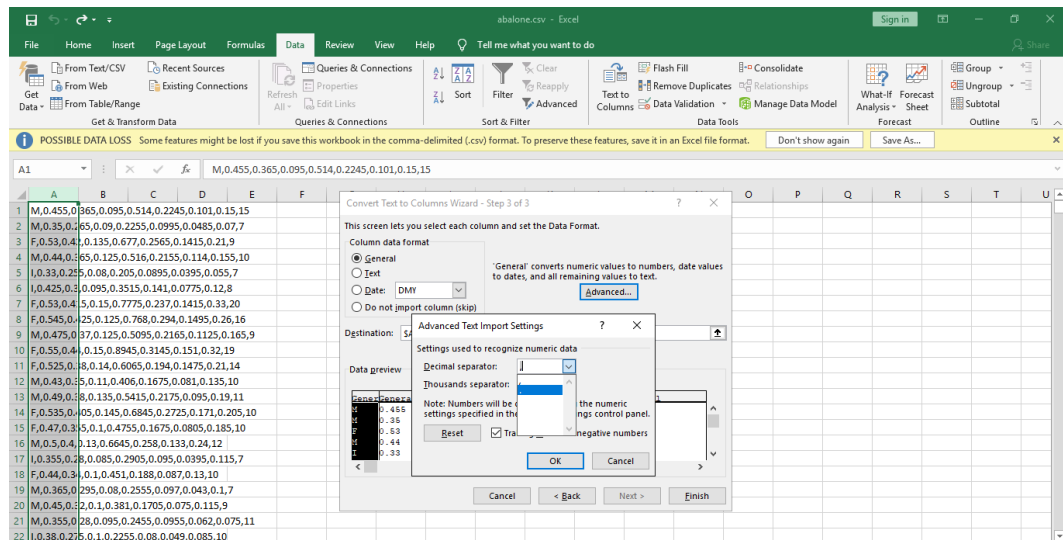
- Klik Data>Text to Column



- Klik next, pilih “comma”, klik next



- Tampilan akan seperti di bawah ini, kemudian klik advance, pilih decimal separate tanda “.”, klik oke, dan finish



- Hasilnya akan seperti tampilan di bawah

[illegible]

5. Mengedit kolom berdasarkan soal

a. WDBC

Secara garis besar, dataset WSDL terdiri atas 569 sampel. Setiap sampel memiliki 32 atribut (ID, diagnosis, 30 fitur nilai real). Atribut **Diagnosis** adalah class label dari dataset WDBC dengan nilai (M = malignant, B = benign). Sepuluh atribut pertama (kolom 3 sd 12) merupakan nilai "mean" dari setiap pengamatan pada sel nucleus, sepuluh atribut yang kedua (kolom 13 sd 22) merupakan nilai "standard error" (SE) dari setiap pengamatan pada sel nucleus, dan sepuluh atribut yang terakhir (kolom 23 sd 32) merupakan nilai "worth" dari setiap pengamatan pada sel nucleus.

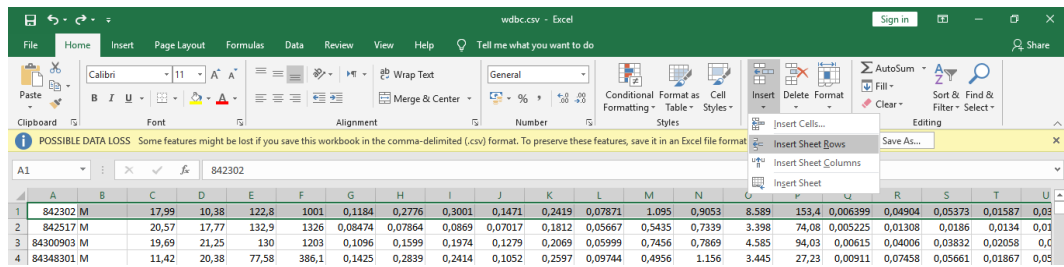
Dataset WDBC

- Hilangkan atribut ID sehingga tidak menjadi atribut dalam file ARFF (dalam dataset asli berada pada kolom 1).
- Letakkan class label (M atau B) pada kolom terakhir.
- Susun atribut dalam file ARFF sesuai urutan atribut pada data asli, hanya saja dalam file ARFF atribut ID dihilangkan dan atribut class label berada pada kolom terakhir.

- Blok baris pertama

	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1	0.9053	8.589	153,4	0.006399	0.04904	0.05373	0.01587	0.03003	0.006193	25.38	17.33	184,6	2019	0.1622	0.6656	0.7119	0.2654	0.4601	0.1189		
2	0.7339	3.398	74.08	0.005225	0.01308	0.0186	0.0134	0.01389	0.003532	24.99	23.41	158,8	1956	0.1238	0.1866	0.2416	0.186	0.275	0.08902		
3	0.7869	4.585	94.03	0.00615	0.04006	0.03832	0.02058	0.0225	0.004571	23.57	25.53	152,5	1709	0.1444	0.4245	0.4504	0.243	0.3613	0.08758		
4	1.156	3.445	27.23	0.00911	0.07458	0.05661	0.01867	0.05963	0.009208	14.91	26.5	98,87	567,7	0.2098	0.8663	0.6869	0.2575	0.6638	0.173		
5	0.7813	5.438	94.44	0.01149	0.02461	0.05688	0.01885	0.01756	0.005115	22.54	16.67	152,2	1575	0.1374	0.205	0.4	0.1625	0.2364	0.07678		
6	0.8902	2.217	27.19	0.00751	0.03345	0.03672	0.01137	0.02165	0.005082	15.47	23.75	103,4	741,6	0.1791	0.5249	0.5355	0.1741	0.3985	0.1244		
7	0.7732	3.18	53.91	0.004314	0.01382	0.02254	0.01039	0.01369	0.002179	22.88	27.66	153,2	1606	0.1442	0.2576	0.3784	0.1932	0.3063	0.08368		
8	1.377	3.856	50.96	0.008805	0.03029	0.02488	0.01448	0.01486	0.005412	17.06	28.14	110,6	897	0.1654	0.3682	0.2678	0.1556	0.3196	0.1151		
9	1.002	2.406	24.32	0.005731	0.03502	0.03553	0.01226	0.02143	0.003749	15.49	30.73	106,2	739,3	0.1703	0.5401	0.539	0.206	0.4378	0.1072		
10	1.599	2.039	23.94	0.007149	0.07217	0.07743	0.01432	0.01789	0.01008	15.09	40.68	97,65	711,4	0.1853	1.058	1.105	0.221	0.4366	0.2075		
11	1.187	2.466	40.51	0.004029	0.009269	0.01101	0.007591	0.0146	0.003042	19.19	33.88	123,8	1150	0.1181	0.1551	0.1459	0.09975	0.2948	0.08452		
12	0.9849	3.564	54.16	0.005771	0.04061	0.02791	0.01282	0.02008	0.004144	20.42	27.28	136,5	1299	0.1396	0.5609	0.3965	0.181	0.3792	0.1048		
13	3.568	11.07	116,2	0.003139	0.08297	0.0889	0.0409	0.04484	0.01284	20.96	29.94	151,7	1332	0.1037	0.3903	0.3639	0.1767	0.3176	0.1023		
14	1.078	2.903	36.58	0.009769	0.03126	0.05051	0.01992	0.02981	0.003002	16.84	27.66	112	876,5	0.1131	0.1924	0.2322	0.1119	0.2809	0.06287		
15	1.169	2.061	19.21	0.006429	0.05936	0.05501	0.01628	0.01961	0.008093	15.03	32.01	108,8	697,7	0.1651	0.7725	0.6943	0.2208	0.3596	0.1431		
16	1.033	2.879	32.55	0.005607	0.0424	0.04741	0.0109	0.01857	0.005466	17.46	37.13	124,1	943,2	0.1678	0.6577	0.7026	0.1712	0.4218	0.1341		
17	1.24	3.195	45.4	0.005718	0.01162	0.01998	0.01109	0.0141	0.002085	19.07	30.88	123,4	1138	0.1464	0.1871	0.2914	0.1609	0.3029	0.08216		
18	1.073	3.854	54.18	0.007026	0.02501	0.03188	0.01297	0.01689	0.004142	20.96	31.48	136,8	1315	0.1789	0.4233	0.4784	0.2073	0.3706	0.1142		
19	1.017	5.865	112,4	0.006494	0.01893	0.03391	0.01521	0.01356	0.001997	27.32	30.88	186,8	2398	0.1512	0.315	0.5372	0.2388	0.2768	0.07615		
20	0.7886	2.058	23.56	0.008462	0.0146	0.02387	0.01315	0.0198	0.0023	15.11	19.26	99,7	711,2	0.144	0.1773	0.239	0.1288	0.2977	0.07259		
21	0.7477	1.383	14.67	0.004097	0.01898	0.01698	0.00649	0.01678	0.002425	14.5	20.49	96,09	630,5	0.1312	0.2776	0.189	0.07283	0.3184	0.08183		
22	0.9768	1.909	15.7	0.009606	0.01432	0.01985	0.01421	0.02027	0.002968	10.23	15.66	65,13	314,9	0.1324	0.1148	0.08867	0.06227	0.245	0.07773		

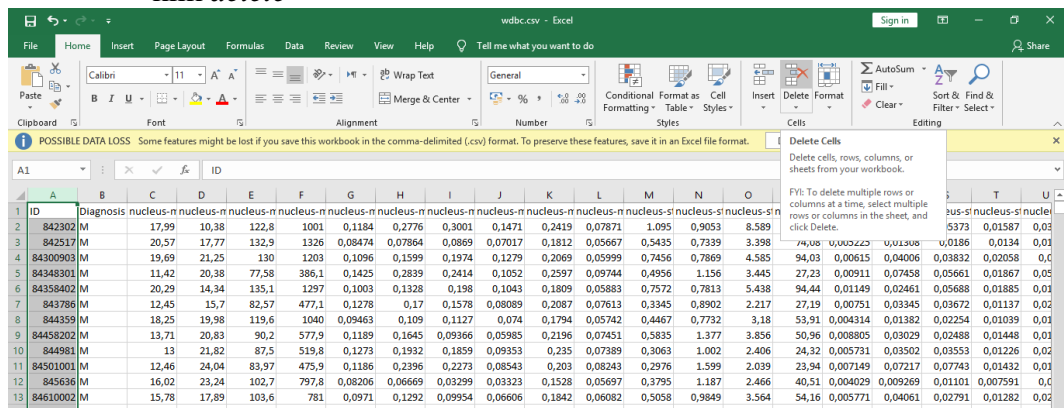
- Klik *Insert Sheet Rows*



- Isi baris pertama sesuai nama setiap kolom

ID	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	Diagnosis	nucleus-n	nucleus-n	nucleus-n	nucleus-n	nucleus-n	nucleus-n	nucleus-n	nucleus-n	nucleus-n	nucleus-n	nucleus-n	nucleus-n	nucleus-n	nucleus-n	nucleus-s	nucleus-s	nucleus-s	nucleus-s	nucleus-s	nucleus-s
2	842302	M	17,99	10,38	122,8	1001	0,1184	0,2776	0,3001	0,1471	0,2419	0,07871	1,095	0,9053	8,589	153,4	0,006399	0,04904	0,05373	0,01587	0,03

- Hilangkan atribut ID sehingga tidak menjadi atribut dalam file ARFF (dalam dataset asli berada pada kolom 1). Dengan cara blok kolom ID klik *delete*

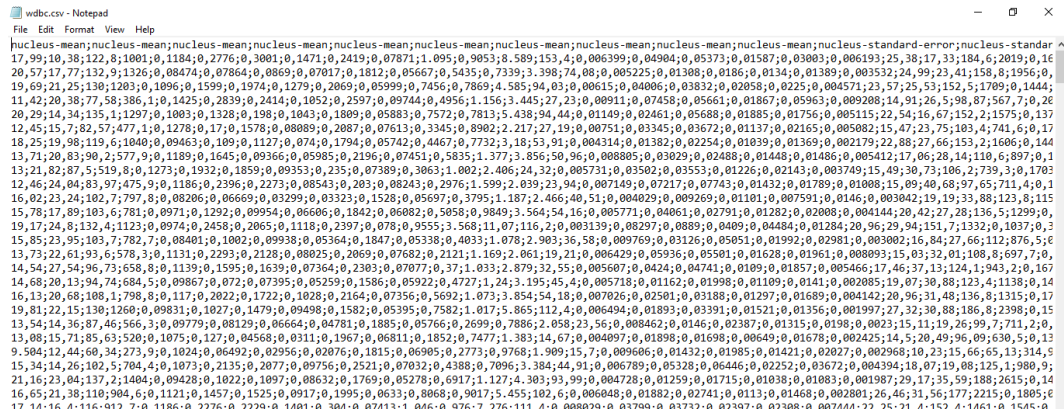


- Letakkan class label (M atau B) pada kolom terakhir.

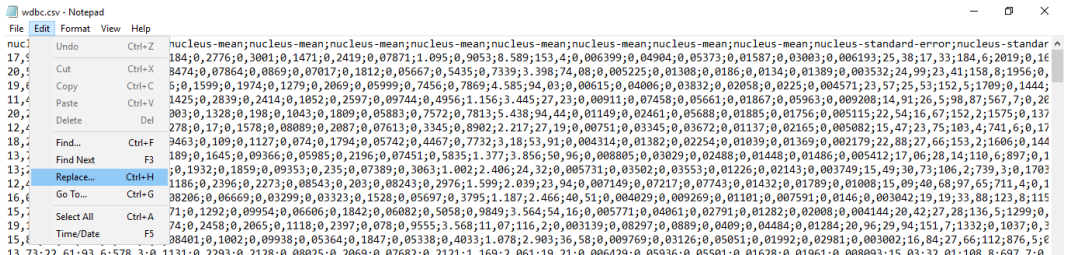
N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1	nucleus-s	nucleus-s	nucleus-s	nucleus-s	nucleus-s	nucleus-s	nucleus-s	nucleus-s	nucleus-s	nucleus-s	nucleus-s	nucleus-s	nucleus-s	nucleus-s	nucleus-s	nucleus-s	nucleus-s	nucleus-s	nucleus-s	Diagnosis
2	153,4	0,006399	0,04904	0,05373	0,01587	0,03003	0,006193	25,38	17,33	184,6	2019	0,1622	0,6656	0,7119	0,2654	0,4601	0,1189	M		
3	74,08	0,005225	0,01308	0,0186	0,0134	0,01389	0,003532	24,99	23,41	158,8	1956	0,1238	0,1866	0,2416	0,186	0,275	0,08902	M		
4	94,03	0,00615	0,04006	0,03832	0,02058	0,03225	0,004571	23,57	25,53	152,5	1709	0,1444	0,4245	0,4504	0,243	0,3613	0,08758	M		
5	27,23	0,00911	0,07458	0,05661	0,01867	0,05963	0,009208	14,91	26,5	98,87	567,7	0,2098	0,8663	0,6869	0,2575	0,6638	0,173	M		
6	94,44	0,01149	0,02461	0,05688	0,01885	0,01756	0,005115	25,44	16,67	152,2	1575	0,1374	0,205	0,4	0,1625	0,2364	0,07678	M		
7	27,19	0,00751	0,03345	0,03672	0,01137	0,02165	0,005082	15,47	23,75	103,4	741,6	0,1791	0,5249	0,5355	0,1741	0,3985	0,1244	M		
8	53,91	0,004314	0,01382	0,02254	0,01039	0,01369	0,002179	22,88	27,66	153,2	1606	0,1442	0,2576	0,3784	0,1932	0,3063	0,08368	M		
9	50,96	0,008805	0,03029	0,02488	0,01448	0,01486	0,005412	17,06	28,14	110,6	897	0,1654	0,3682	0,2678	0,1556	0,3196	0,1151	M		

- Simpan file yang sudah diubah

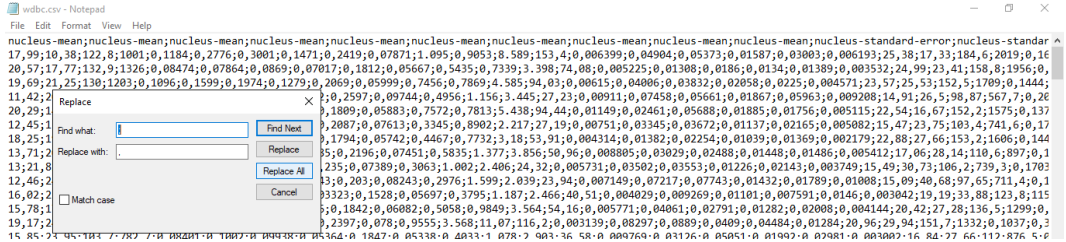
- Kemudian buka dengan aplikasi *notepad*



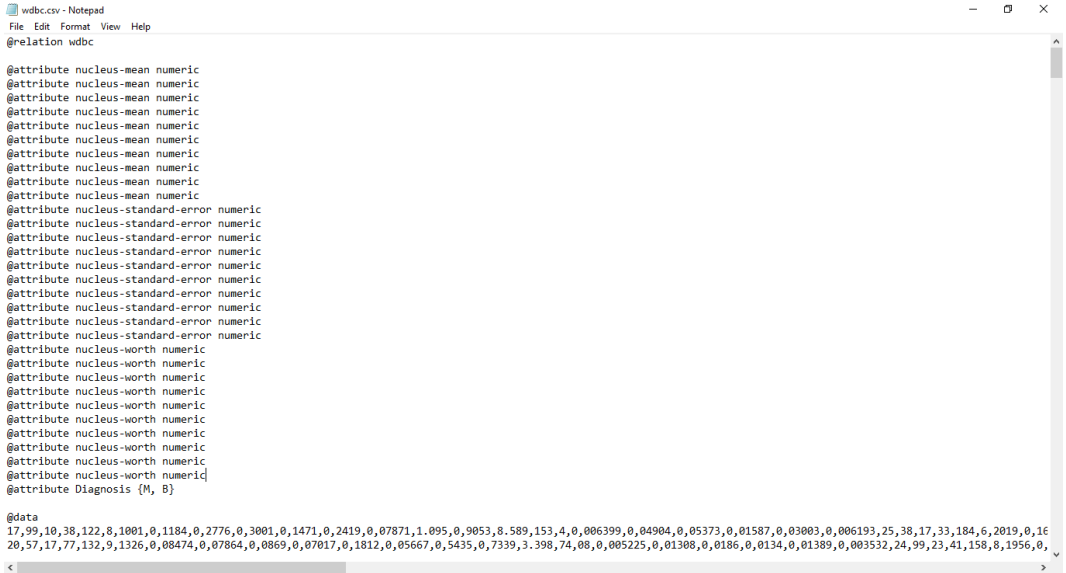
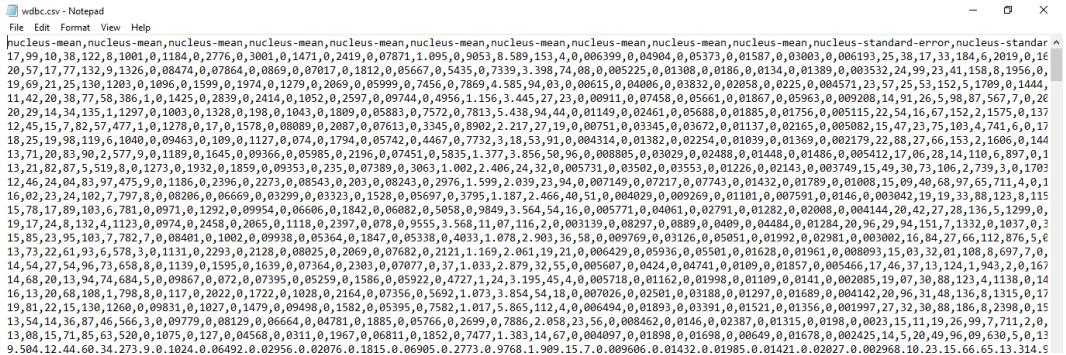
- klik edit>replace



- ketik di find what: (;) dan replace with: (,)>Replace All



- hasil akhirnya akan terlihat seperti tampilan di bawah ini



b. Abalone

Dataset Abalone memiliki 4177 sampel dan terdiri dari 8 atribut. Tidak ditemukan "missing value" pada dataset ini. Detail tentang dataset ini juga dapat dilihat pada tautan

Data Set Description.

- Letakkan atribut nominal (jenis kelamin) pada kolom terakhir.
- Selanjutnya, susun atribut dalam file ARFF dalam urutan sebagai berikut: Diameter, Rings, Height, Length, Shell weight, Shucked weight, Whole weight, Viscera weight.

- Blok baris pertama

	A	B	C	D	E	F	G	H	I
1	M	0,455	0,365	0,095	0,514	0,2245	0,101	0,15	15
2	M	0,35	0,265	0,09	0,2255	0,0995	0,0485	0,07	7
3	F	0,53	0,42	0,135	0,677	0,2565	0,1415	0,21	9
4	M	0,44	0,365	0,125	0,516	0,2155	0,114	0,155	10
5	I	0,33	0,255	0,08	0,205	0,0895	0,0395	0,055	7
6	I	0,425	0,3	0,095	0,3515	0,141	0,0775	0,12	8

- Klik *Insert Sheet Rows*

	A	B	C	D	E	F	G	H	I
1	M	0,455	0,365	0,095	0,514	0,2245	0,101	0,15	15
2	M	0,35	0,265	0,09	0,2255	0,0995	0,0485	0,07	7
3	F	0,53	0,42	0,135	0,677	0,2565	0,1415	0,21	9
4	M	0,44	0,365	0,125	0,516	0,2155	0,114	0,155	10
5	I	0,33	0,255	0,08	0,205	0,0895	0,0395	0,055	7

- Isi baris pertama sesuai nama setiap kolom

	A	B	C	D	E	F	G	H	I
1	sex	length	diameter	height	whole-we	shucked-v	viscera-w	shell-we	rings
2	M	0,455	0,365	0,095	0,514	0,2245	0,101	0,15	15
3	M	0,35	0,265	0,09	0,2255	0,0995	0,0485	0,07	7

- Letakkan atribut nominal (jenis kelamin) pada kolom terakhir.

	A	B	C	D	E	F	G	H	I
1	length	diameter	height	whole-we	shucked-v	viscera-w	shell-we	rings	sex
2	0,455	0,365	0,095	0,514	0,2245	0,101	0,15	15	M
3	0,35	0,265	0,09	0,2255	0,0995	0,0485	0,07	7	M
4	0,53	0,42	0,135	0,677	0,2565	0,1415	0,21	9	F
5	0,44	0,365	0,125	0,516	0,2155	0,114	0,155	10	M
6	0,33	0,255	0,08	0,205	0,0895	0,0395	0,055	7	I
7	0,425	0,3	0,095	0,3515	0,141	0,0775	0,12	8	I
8	0,53	0,415	0,15	0,7775	0,237	0,1415	0,33	20	F
9	0,545	0,425	0,125	0,768	0,294	0,1495	0,26	16	F
10	0,475	0,37	0,125	0,5095	0,2165	0,1125	0,165	9	M
11	0,55	0,44	0,15	0,8945	0,3145	0,151	0,32	19	F
12	0,525	0,38	0,14	0,6065	0,194	0,1475	0,21	14	F
13	0,43	0,35	0,11	0,406	0,1675	0,081	0,135	10	M
14	0,49	0,38	0,135	0,5415	0,2175	0,095	0,19	11	M
15	0,535	0,405	0,145	0,6845	0,2725	0,171	0,205	10	F
16	0,47	0,355	0,1	0,4755	0,1675	0,0805	0,185	10	F
17	0,5	0,4	0,13	0,6645	0,258	0,133	0,24	12	M
18	0,355	0,28	0,085	0,2905	0,095	0,0395	0,115	7	I
19	0,44	0,34	0,1	0,451	0,188	0,087	0,13	10	F
20	0,365	0,295	0,08	0,2555	0,097	0,043	0,1	7	M
21	0,45	0,32	0,1	0,381	0,1705	0,075	0,115	9	M
22	0,355	0,28	0,095	0,2455	0,0955	0,062	0,075	11	M

- Susun atribut dalam file ARFF dalam urutan sebagai berikut: Diameter, Rings, Height, Length, Shell weight, Shucked weight, Whole weight, Viscera weight.

	A	B	C	D	E	F	G	H	I
	diameter	rings	height	length	shell-weight	shucked-weight	whole-weight	viscera-weight	sex
1	0,365	15	0,095	0,455	0,15	0,2245	0,514	0,101	M
2	0,265	7	0,09	0,35	0,07	0,0995	0,2255	0,0485	M
3	0,42	9	0,135	0,53	0,21	0,2565	0,677	0,1415	F
4	0,365	10	0,125	0,44	0,155	0,2155	0,516	0,114	M
5	0,255	7	0,08	0,33	0,055	0,0895	0,205	0,0395	I
6	0,3	8	0,095	0,425	0,12	0,141	0,3515	0,0775	I
7	0,415	20	0,15	0,53	0,33	0,237	0,7775	0,1415	F
8	0,425	16	0,125	0,545	0,26	0,294	0,768	0,1495	F

- Simpan file yang sudah diubah
- Kemudian buka dengan aplikasi *notepad*

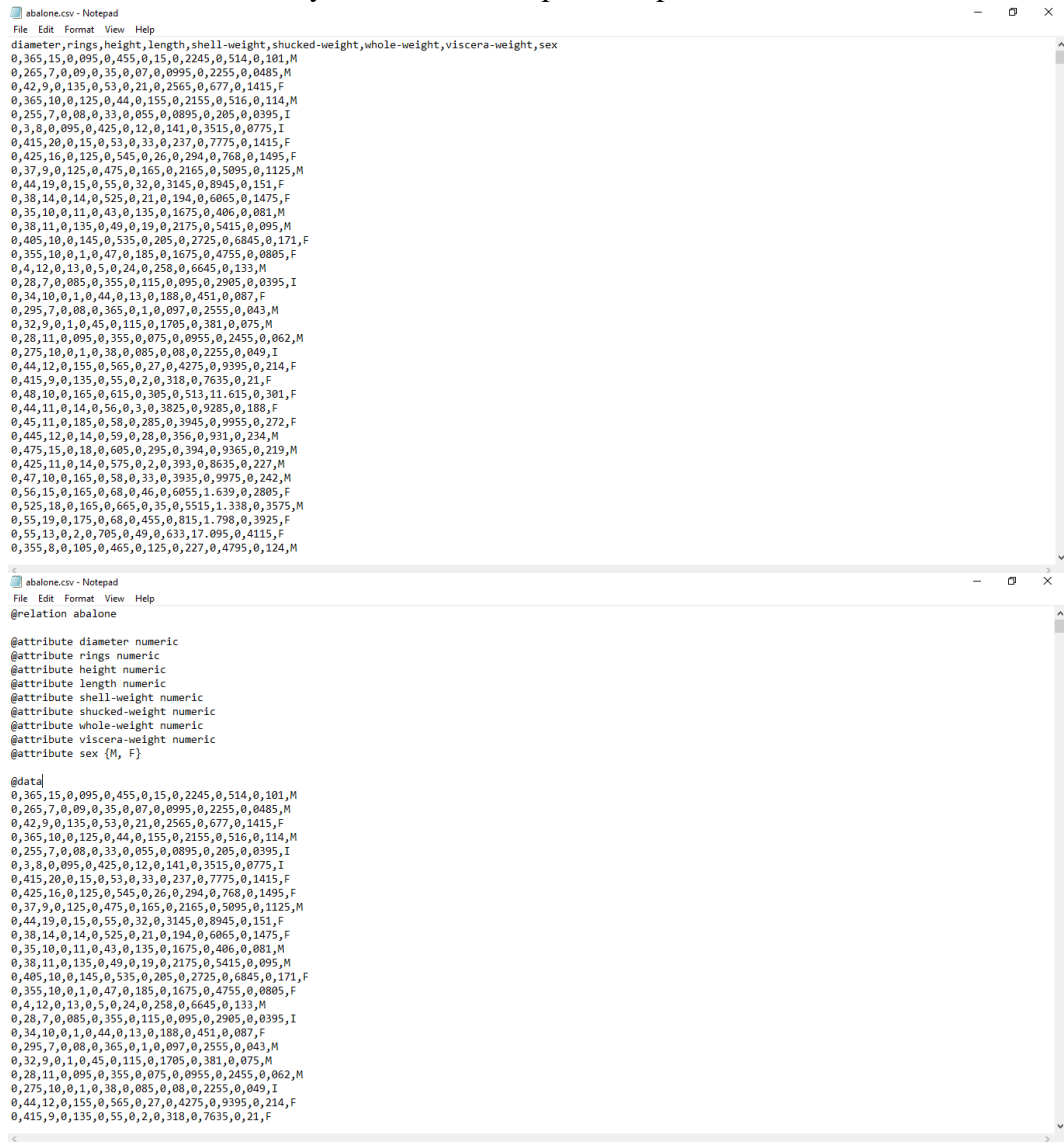
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diameter;rings;height:length:shell-weight:shucked-weight:whole-weight;viscera-weight;sex
0,365;15;0,095;0,455;0,15;0,2245;0,514;0,101;M
0,265;7;0,09;0,35;0,07;0,0995;0,2255;0,0485;M
0,42;9;0,135;0,53;0,21;0,2565;0,677;0,1415;F
0,365;10;0,125;0,44;0,155;0,2155;0,516;0,114;M
0,255;7;0,08;0,33;0,055;0,0895;0,205;0,0395;I
0,3;8;0,095;0,425;0,12;0,141;0,3515;0,0775;I
0,415;20;0,15;0,53;0,33;0,237;0,7775;0,1415;F
0,425;16;0,125;0,545;0,26;0,294;0,768;0,1495;F
0,37;9;0,125;0,475;0,165;0,2165;0,5895;0,1125;M
0,44;19;0,15;0,55;0,32;0,3145;0,8945;0,151;F
0,38;14;0,14;0,525;0,21;0,194;0,6065;0,1475;F
0,35;10;0,11;0,43;0,135;0,1675;0,406;0,081;M
0,38;11;0,135;0,49;0,19;0,2175;0,5415;0,095;M
0,405;10;0,145;0,535;0,205;0,2725;0,6845;0,171;F
0,355;10;0,13;0,47;0,185;0,1675;0,4755;0,0885;F
0,4;12;0,13;0,5;0,24;0,258;0,6645;0,133;M
0,28;7;0,085;0,355;0,115;0,095;0,2905;0,0395;I
0,34;10;0,1;0,44;0,13;0,188;0,451;0,087;F
0,295;7;0,08;0,365;0,1;0,097;0,2555;0,043;M
0,32;9;0,1;0,45;0,115;0,1705;0,381;0,075;M
0,28;11;0,095;0,355;0,075;0,0955;0,2455;0,062;M
0,275;10;0,1;0,38;0,085;0,08;0,2255;0,049;I
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0,45;11;0,185;0,58;0,285;0,3945;0,9955;0,272;F
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0,56;15;0,165;0,68;0,46;0,6055;1,639;0,2805;F
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0,55;19;0,175;0,68;0,455;0,815;1,798;0,3925;F
0,55;13;0,2;0,705;0,49;0,633;1,7095;0,4115;F
0,355;8;0,105;0,465;0,125;0,227;0,4795;0,124;M
  
```

- Klik edit>replace

- Ketik di *find what:* (;) dan *replace with:* (,)>Replace All

- Hasil akhirnya akan terlihat seperti tampilan di bawah ini



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abalone.csv - Notepad
File Edit Format View Help
diameter,rings,height,length,shell-weight,shucked-weight,whole-weight,viscera-weight,sex
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abalone.csv - Notepad
File Edit Format View Help
@relation abalone

@attribute diameter numeric
@attribute rings numeric
@attribute height numeric
@attribute length numeric
@attribute shell-weight numeric
@attribute shucked-weight numeric
@attribute whole-weight numeric
@attribute viscera-weight numeric
@attribute sex {M, F}

@data
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