

Step 1) Set the path of the csv files in import.pl

```

import:-  

1   csv_read_file('/Users/mirage/Desktop/CSI2120_Comprehensive_Prolog_Assignment_MergeCluster/partition65.csv', Data65, [functor(partition)]),maplist(assert, Data65),  

2   csv_read_file('/Users/mirage/Desktop/CSI2120_Comprehensive_Prolog_Assignment_MergeCluster/partition74.csv', Data74, [functor(partition)]),maplist(assert, Data74),  

3   csv_read_file('/Users/mirage/Desktop/CSI2120_Comprehensive_Prolog_Assignment_MergeCluster/partition75.csv', Data75, [functor(partition)]),maplist(assert, Data75),  

4   csv_read_file('/Users/mirage/Desktop/CSI2120_Comprehensive_Prolog_Assignment_MergeCluster/partition76.csv', Data76, [functor(partition)]),maplist(assert, Data76),  

5   csv_read_file('/Users/mirage/Desktop/CSI2120_Comprehensive_Prolog_Assignment_MergeCluster/partition84.csv', Data84, [functor(partition)]),maplist(assert, Data84),  

6   csv_read_file('/Users/mirage/Desktop/CSI2120_Comprehensive_Prolog_Assignment_MergeCluster/partition85.csv', Data85, [functor(partition)]),maplist(assert, Data85),  

7   csv_read_file('/Users/mirage/Desktop/CSI2120_Comprehensive_Prolog_Assignment_MergeCluster/partition86.csv', Data86, [functor(partition)]),maplist(assert, Data86),listing(partition)
8

```

Step 2) Open Prolog and run the following predicates

Prolog Assignment Command

Commands

```

consult("/Users/mirage/Desktop/CSI2120_Comprehensive_Prolog_Assignment_MergeCluster/import.pl").  

import.  

consult("/Users/mirage/Desktop/CSI2120_Comprehensive_Prolog_Assignment_MergeCluster/runClusters.pl").  

mergeClusters(L),open('/Users/mirage/Desktop/CSI2120_Comprehensive_Prolog_Assignment_MergeCluster/clusters.txt',write,F),write(F,L),close(F).

```

```

consult("/Users/mirage/Desktop/CSI2120_Comprehensive_Prolog_Assignment_MergeCluster/import.pl").  

import.  

consult("/Users/mirage/Desktop/CSI2120_Comprehensive_Prolog_Assignment_MergeCluster/runClusters.pl").  

mergeClusters(L),open('/Users/mirage/Desktop/CSI2120_Comprehensive_Prolog_Assignment_MergeCluster/clusters.txt',write,F),write(F,L),close(F).

```

Output of Prolog commands

Step 3) Run import predicate

```
?- consult("/Users/mirage/Desktop/CSI2120_Comprehensive_Prolog_Assignment_MergeCluster/import.pl").
true.

?- import.
:- meta_predicate apply:partition(1,+,-,-).

apply:partition(Pred, List, Included, Excluded) :- 
    partition_(List, Pred, Included, Excluded).

:- meta_predicate apply:partition(2,+,-,-,-).

apply:partition(Pred, List, Less, Equal, Greater) :- 
    partition_(List, Pred, Less, Equal, Greater).

:- dynamic partition/5.

partition(65, 1345, 40.750304, -73.952031, 65000001).
partition(65, 6017, 40.760146, -73.957873, 65000002).
partition(65, 17457, 40.760213, -73.955471, 65000003).
partition(65, 18582, 40.750299, -73.952027, 65000001).
partition(65, 20050, 40.750365, -73.952127, 65000001).
partition(65, 25351, 40.760153, -73.955467, 65000003).
partition(65, 34767, 40.758621, -73.957704, 65000004).
partition(65, 36487, 40.758621, -73.957704, 65000004).
partition(65, 45869, 40.758621, -73.955471, 65000003).
partition(65, 57660, 40.760213, -73.955471, 65000003).
partition(65, 59426, 40.758621, -73.957704, 65000004).
partition(65, 62646, 40.758621, -73.957704, 65000004).
partition(65, 72026, 40.760213, -73.955471, 65000003).
partition(65, 81600, 40.758623, -73.957706, 65000004).
partition(65, 96975, 40.760213, -73.955471, 65000003).
partition(65, 98703, 40.758621, -73.957704, 65000004).
partition(65, 106539, 40.758621, -73.951998, 65000001).
partition(65, 110517, 40.758621, -73.957704, 65000004).
partition(65, 118199, 40.76027, -73.958243, 65000002).
partition(65, 120090, 40.760213, -73.955471, 65000003).
partition(65, 129867, 40.760287, -73.958005, 65000002).
partition(65, 132229, 40.760195, -73.958036, 65000002).
partition(65, 136126, 40.759516, -73.958036, 65000002).
partition(65, 140763, 40.758621, -73.957706, 65000004).
partition(65, 140763, 40.750301, -73.951998, 65000001).
partition(65, 146427, 40.760243, -73.958027, 65000002).
partition(65, 156573, 40.760144, -73.958017, 65000002).
partition(65, 164407, 40.758621, -73.957704, 65000004).
partition(65, 166384, 40.758623, -73.957706, 65000004).
partition(65, 166538, 40.758623, -73.957706, 65000004).
partition(65, 168525, 40.760283, -73.958295, 65000002).
partition(65, 173487, 40.758623, -73.957706, 65000004).
partition(65, 175085, 40.760213, -73.955471, 65000003).
partition(65, 189425, 40.758629, -73.952151, 65000001).
partition(65, 190220, 40.760213, -73.955471, 65000003).
partition(65, 193009, 40.758621, -73.957704, 65000004).
partition(65, 198847, 40.760213, -73.955471, 65000003).
partition(65, 201426, 40.758621, -73.957704, 65000004).
partition(65, 201525, 40.758623, -73.957706, 65000004).
partition(65, 211277, 40.758623, -73.957706, 65000004).
partition(65, 218717, 40.760213, -73.955471, 65000003).
partition(65, 224339, 40.758621, -73.957704, 65000004).
partition(65, 225855, 40.760213, -73.955471, 65000003).
partition(65, 228909, 40.758621, -73.957704, 65000004).
partition(74, 3245, 40.74501, -73.949245, 74000001).
partition(74, 3868, 40.744845, -73.948922, 74000001).
partition(74, 5894, 40.744709, -73.946638, 74000002).
partition(74, 6855, 40.744919, -73.948974, 74000001).
partition(74, 7030, 40.749987, -73.94406, 74000003).
partition(74, 8976, 40.749987, -73.94406, 74000003).
partition(74, 14169, 40.744499, -73.948995, 74000001).
partition(74, 15101, 40.749987, -73.94406, 74000003).
partition(74, 22106, 40.74581, -73.949245, 74000001).
partition(74, 33954, 40.749987, -73.94406, 74000003).
partition(74, 42439, 40.744647, -73.945915, 74000001).
partition(74, 42439, 40.744647, -73.945915, 74000002).
partition(74, 47427, 40.744934, -73.94874, 74000001).
partition(74, 50871, 40.74493, -73.94889, 74000001).
partition(74, 51019, 40.744392, -73.948919, 74000001).
partition(74, 52795, 40.749987, -73.94406, 74000003).
partition(74, 52913, 40.744919, -73.948974, 74000001).
```

Step 4) Run runCluster.pl file

```
partition(86, 112764, 40.759808, -73.936956, 86000001).
partition(86, 118428, 40.759786, -73.936848, 86000001).
partition(86, 155865, 40.759827, -73.93685, 86000001).

true.

?- consult("/Users/mirage/Desktop/CSI2120_Comprehensive_Prolog_Assignment_MergeCluster/runClusters.pl").
true.

?- mergeClusters(L,open('/Users/mirage/Desktop/CSI2120_Comprehensive_Prolog_Assignment_MergeCluster/clusters.txt',write,F),write(F),close(F)).
L = [[74834, 40.759792, -73.936975, 86000001], [83222, 40.759875, -73.936926, 86000001], [112764, 40.759808, -73.936956, 86000001], [118428, 40.759786, -73.93683|...], [35578, 40.759826|...], [31340|...], [...|...]|...],
F = <stream>(0x600000e58700) |
```

Step 5) Finally, a cluster.txt file is created, consisting of the generated data of the DBSCAN algorithm



clusters.txt

Other:

Running Import Predicate

```
?- consult("/Users/mirage/Desktop/CSI2120_Comprehensive_Prolog_Assignment_MergeCluster/import.pl").  
true.
```

```
?- import.  
:- meta_predicate apply:partition(1,+,-,-).  
  
apply:partition(Pred, List, Included, Excluded) :-  
    partition_(List, Pred, Included, Excluded).  
  
:- meta_predicate apply:partition(2,+,-,-,-).  
  
apply:partition(Pred, List, Less, Equal, Greater) :-  
    partition_(List, Pred, Less, Equal, Greater).  
  
:- dynamic partition/5.  
  
partition(65, 1345, 40.750304, -73.952031, 65000001).  
partition(65, 6017, 40.760146, -73.957873, 65000002).  
partition(65, 17457, 40.760213, -73.955471, 65000003).  
partition(65, 18582, 40.750299, -73.952027, 65000001).  
partition(65, 20050, 40.750365, -73.952127, 65000001).  
partition(65, 25351, 40.760153, -73.955467, 65000003).  
partition(65, 34767, 40.758621, -73.957704, 65000004).  
partition(65, 36487, 40.758621, -73.957704, 65000004).  
partition(65, 45516, 40.760213, -73.955471, 65000003).  
partition(65, 47568, 40.760213, -73.955471, 65000003).  
partition(65, 54926, 40.758621, -73.957704, 65000004).  
partition(65, 62646, 40.758621, -73.957704, 65000004).  
partition(65, 72026, 40.760213, -73.955471, 65000003).  
partition(65, 81600, 40.758623, -73.957706, 65000004).  
partition(65, 96975, 40.760213, -73.955471, 65000003).  
partition(65, 98703, 40.758621, -73.957704, 65000004).  
partition(65, 106539, 40.750301, -73.951998, 65000001).  
partition(65, 110517, 40.758621, -73.957704, 65000004).  
partition(65, 118199, 40.76027, -73.958243, 65000002).  
partition(65, 120090, 40.760213, -73.955471, 65000003).  
partition(65, 129867, 40.760287, -73.958005, 65000002).  
partition(65, 132229, 40.760195, -73.958036, 65000002).  
partition(65, 136126, 40.759916, -73.958131, 65000002).  
partition(65, 138214, 40.758623, -73.957706, 65000004).  
partition(65, 140763, 40.750301, -73.951998, 65000001).  
partition(65, 146427, 40.760243, -73.958027, 65000002).  
partition(65, 156573, 40.760144, -73.958017, 65000002).  
partition(65, 164407, 40.758621, -73.957704, 65000004).  
partition(65, 166384, 40.758623, -73.957706, 65000004).  
partition(65, 166538, 40.758623, -73.957706, 65000004).  
partition(65, 168525, 40.760283, -73.958295, 65000002).  
partition(65, 173487, 40.758623, -73.957706, 65000004).  
partition(65, 175085, 40.760213, -73.955471, 65000003).  
partition(65, 189425, 40.750329, -73.952151, 65000001).  
partition(65, 190220, 40.760213, -73.955471, 65000003).  
partition(65, 193009, 40.758621, -73.957704, 65000004).  
partition(65, 198847, 40.760213, -73.955471, 65000003).  
partition(65, 201426, 40.758621, -73.957704, 65000004).  
partition(65, 203222, 40.758621, -73.957704, 65000004).  
partition(65, 211127, 40.758623, -73.957706, 65000004).  
partition(65, 218717, 40.760213, -73.955471, 65000003).  
partition(65, 224339, 40.758621, -73.957704, 65000004).  
partition(65, 225855, 40.760213, -73.955471, 65000003).  
partition(65, 228909, 40.758621, -73.957704, 65000004).  
partition(74, 3245, 40.74501, -73.949245, 74000001).  
partition(74, 3868, 40.744845, -73.948922, 74000001).  
partition(74, 5894, 40.744709, -73.946638, 74000002).  
partition(74, 6855, 40.744919, -73.948974, 74000001).  
partition(74, 7030, 40.749987, -73.94406, 74000003).  
partition(74, 8976, 40.749987, -73.94406, 74000003).  
partition(74, 14169, 40.744499, -73.948995, 74000001).  
partition(74, 15101, 40.749987, -73.94406, 74000003).  
partition(74, 22106, 40.74501, -73.949245, 74000001).  
partition(74, 33954, 40.749987, -73.94406, 74000003).  
partition(74, 41303, 40.74501, -73.949245, 74000001).  
partition(74, 42438, 40.744647, -73.94681, 74000002).  
partition(74, 47427, 40.744934, -73.948774, 74000001).  
partition(74, 50871, 40.74493, -73.94889, 74000001).  
partition(74, 51019, 40.744392, -73.948919, 74000001).  
partition(74, 52795, 40.749987, -73.94406, 74000003).  
partition(74, 52913, 40.744919, -73.948974, 74000001).
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partition(74, 55910, 40.74502, -73.949245, 74000001).
partition(74, 54925, 40.745012, -73.949247, 74000001).
partition(74, 55749, 40.74471, -73.94883, 74000001).
partition(74, 56191, 40.749987, -73.94406, 74000003).
partition(74, 62022, 40.745012, -73.949247, 74000001).
partition(74, 63398, 40.749987, -73.94406, 74000003).
partition(74, 63433, 40.749987, -73.94406, 74000003).
partition(74, 68620, 40.744657, -73.946757, 74000002).
partition(74, 77581, 40.74501, -73.949245, 74000001).
partition(74, 79259, 40.744617, -73.94679, 74000002).
partition(74, 84599, 40.749987, -73.94406, 74000003).
partition(74, 85661, 40.744698, -73.948707, 74000001).
partition(74, 85837, 40.749987, -73.94406, 74000003).
partition(74, 93113, 40.74502, -73.949245, 74000001).
partition(74, 99056, 40.749987, -73.94406, 74000003).
partition(74, 126318, 40.74501, -73.949245, 74000001).
partition(74, 126540, 40.750168, -73.944085, 74000003).
partition(74, 127428, 40.749987, -73.94406, 74000003).
partition(74, 128839, 40.744617, -73.94679, 74000002).
partition(74, 130509, 40.749987, -73.94406, 74000003).
partition(74, 131084, 40.74468, -73.948955, 74000001).
partition(74, 138689, 40.749987, -73.94406, 74000003).
partition(74, 144526, 40.749987, -73.94406, 74000003).
partition(74, 154470, 40.745017, -73.949247, 74000001).
partition(74, 164203, 40.749987, -73.94406, 74000003).
partition(74, 164610, 40.745012, -73.949247, 74000001).
partition(74, 165869, 40.749987, -73.94406, 74000003).
partition(74, 167109, 40.744914, -73.94898, 74000001).
partition(74, 169366, 40.749987, -73.94406, 74000003).
partition(74, 171917, 40.745012, -73.949247, 74000001).
partition(74, 172529, 40.74501, -73.949245, 74000001).
partition(74, 174373, 40.744873, -73.948913, 74000001).
partition(74, 184217, 40.745061, -73.948786, 74000001).
partition(74, 187138, 40.744617, -73.94679, 74000002).
partition(74, 188242, 40.74501, -73.949245, 74000001).
partition(74, 190356, 40.744931, -73.948895, 74000001).
partition(74, 191803, 40.749987, -73.94406, 74000003).
partition(74, 193214, 40.74501, -73.949245, 74000001).
partition(74, 196925, 40.745012, -73.949247, 74000001).
partition(74, 199960, 40.749987, -73.94406, 74000003).
partition(74, 202947, 40.74501, -73.949245, 74000001).
partition(74, 208234, 40.749987, -73.94406, 74000003).
partition(74, 211266, 40.74502, -73.949245, 74000001).
partition(74, 216901, 40.745017, -73.949247, 74000001).
partition(74, 219151, 40.749987, -73.94406, 74000003).
partition(74, 220761, 40.749987, -73.94406, 74000003).
partition(74, 224006, 40.74501, -73.949245, 74000001).
partition(74, 226877, 40.749987, -73.94406, 74000003).
partition(74, 230390, 40.749987, -73.94406, 74000003).
partition(75, 7030, 40.749987, -73.94406, 75000001).
partition(75, 8459, 40.7528, -73.950483, 75000002).
partition(75, 8976, 40.749987, -73.94406, 75000001).
partition(75, 15101, 40.749987, -73.94406, 75000001).
partition(75, 31217, 40.750393, -73.943973, 75000001).
partition(75, 33954, 40.749987, -73.94406, 75000001).
partition(75, 52795, 40.749987, -73.94406, 75000001).
partition(75, 56191, 40.749987, -73.94406, 75000001).
partition(75, 63398, 40.749987, -73.94406, 75000001).
partition(75, 63433, 40.749987, -73.94406, 75000001).
partition(75, 65507, 40.752872, -73.950578, 75000002).
partition(75, 79772, 40.752711, -73.950531, 75000002).
partition(75, 81778, 40.752711, -73.950531, 75000002).
partition(75, 81813, 40.752531, -73.950412, 75000002).
partition(75, 84599, 40.749987, -73.94406, 75000001).
partition(75, 85053, 40.752603, -73.950483, 75000002).
partition(75, 85837, 40.749987, -73.94406, 75000001).
partition(75, 99056, 40.749987, -73.94406, 75000001).
partition(75, 119072, 40.752603, -73.950483, 75000002).
partition(75, 126540, 40.750168, -73.944085, 75000001).
partition(75, 127428, 40.749987, -73.94406, 75000001).
partition(75, 130509, 40.749987, -73.94406, 75000001).
partition(75, 137428, 40.752711, -73.950531, 75000002).
partition(75, 138689, 40.749987, -73.94406, 75000001).
partition(75, 144327, 40.752711, -73.950531, 75000002).
partition(75, 144526, 40.749987, -73.94406, 75000001).
partition(75, 148011, 40.752603, -73.950483, 75000002).
partition(75, 156187, 40.7528, -73.950483, 75000002).

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partition(75, 164203, 40.749987, -73.94406, 75000001).
partition(75, 164742, 40.7528, -73.950483, 75000002).
partition(75, 165869, 40.749987, -73.94406, 75000001).
partition(75, 169366, 40.749987, -73.94406, 75000001).
partition(75, 174074, 40.752711, -73.950531, 75000002).
partition(75, 183447, 40.752782, -73.950507, 75000002).
partition(75, 186348, 40.752711, -73.950531, 75000002).
partition(75, 191803, 40.749987, -73.94406, 75000001).
partition(75, 193756, 40.752711, -73.950531, 75000002).
partition(75, 199960, 40.749987, -73.94406, 75000001).
partition(75, 208234, 40.749987, -73.94406, 75000001).
partition(75, 219151, 40.749987, -73.94406, 75000001).
partition(75, 220761, 40.749987, -73.94406, 75000001).
partition(75, 226877, 40.749987, -73.94406, 75000001).
partition(75, 230390, 40.749987, -73.94406, 75000001).
partition(76, 15689, 40.770193, -73.951154, 76000001).
partition(76, 19607, 40.770132, -73.951132, 76000001).
partition(76, 19836, 40.769738, -73.950683, 76000001).
partition(76, 30997, 40.769752, -73.951255, 76000001).
partition(76, 33025, 40.769979, -73.951293, 76000001).
partition(76, 34887, 40.769672, -73.950902, 76000001).
partition(76, 39383, 40.769594, -73.950861, 76000001).
partition(76, 41652, 40.769777, -73.950802, 76000001).
partition(76, 47002, 40.768872, -73.949765, 76000002).
partition(76, 48864, 40.76994, -73.950783, 76000001).
partition(76, 55304, 40.770248, -73.951275, 76000001).
partition(76, 57133, 40.769743, -73.950818, 76000001).
partition(76, 58828, 40.76398, -73.947577, 76000004).
partition(76, 61559, 40.768513, -73.949755, 76000002).
partition(76, 66652, 40.769501, -73.950909, 76000001).
partition(76, 72371, 40.768623, -73.949802, 76000002).
partition(76, 74829, 40.769528, -73.950827, 76000001).
partition(76, 83314, 40.767781, -73.949848, 76000003).
partition(76, 87023, 40.770149, -73.951269, 76000001).
partition(76, 89864, 40.770128, -73.9513, 76000001).
partition(76, 91731, 40.768828, -73.95007, 76000002).
partition(76, 96095, 40.767781, -73.949848, 76000003).
partition(76, 100332, 40.769641, -73.950809, 76000001).
partition(76, 100771, 40.76998, -73.951072, 76000001).
partition(76, 106900, 40.763972, -73.947502, 76000004).
partition(76, 115914, 40.769722, -73.950886, 76000001).
partition(76, 116721, 40.770279, -73.951199, 76000001).
partition(76, 126088, 40.769999, -73.951297, 76000001).
partition(76, 134210, 40.76994, -73.951277, 76000001).
partition(76, 136493, 40.77027, -73.9513, 76000001).
partition(76, 137809, 40.770157, -73.951283, 76000001).
partition(76, 151260, 40.768818, -73.950283, 76000002).
partition(76, 159288, 40.769972, -73.950673, 76000001).
partition(76, 164215, 40.769923, -73.950558, 76000001).
partition(76, 166041, 40.764107, -73.947575, 76000004).
partition(76, 168512, 40.769693, -73.950817, 76000001).
partition(76, 169527, 40.770132, -73.951132, 76000001).
partition(76, 174919, 40.770051, -73.951266, 76000001).
partition(76, 176562, 40.768468, -73.949447, 76000002).
partition(76, 176760, 40.770287, -73.951253, 76000001).
partition(76, 177029, 40.769732, -73.951202, 76000001).
partition(76, 177712, 40.768665, -73.949928, 76000002).
partition(76, 177746, 40.767703, -73.949894, 76000003).
partition(76, 180258, 40.768584, -73.949936, 76000002).
partition(76, 184745, 40.767781, -73.949848, 76000003).
partition(76, 186953, 40.768716, -73.949579, 76000002).
partition(76, 188604, 40.768502, -73.949802, 76000002).
partition(76, 188678, 40.770022, -73.951145, 76000001).
partition(76, 201813, 40.769858, -73.950787, 76000001).
partition(76, 202540, 40.764083, -73.947688, 76000004).
partition(76, 202825, 40.769745, -73.950935, 76000001).
partition(76, 208551, 40.767781, -73.949848, 76000003).
partition(76, 210556, 40.76863, -73.949765, 76000002).
partition(76, 211135, 40.77001, -73.951228, 76000001).
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