

**EX.No: 08**

**Date :**

**DATA SEGMENTATION BY COBWEB –  
HIERARCHIAL CLUSTERING**

**ALGORITHM USING WEKA TOOL**

**CLUSTERING ( HierarchicalClusterer)**

**=== Run information ===**

**Scheme:**

**weka.clusterers.HierarchicalClusterer -N 2 -L  
SINGLE -P -A "weka.core.EuclideanDistance -R  
first-last"**

**Relation: Mall\_Customers**

**Instances: 200**

**Attributes: 5**

**CustomerID**

**Genre**

**Age**



Annual Income (k\$)

Spending Score (1-100)

Test mode: evaluate on training data

=== Clustering model (full training set) ===

Cluster 0

(39.0:0.29324,((((((((((((((((81.0:0.08611,79.0:0.08611):0.00908,73.0:0.09519):0.02092,(73.0:0.10305,82.0:0.10305):0.01306):0.00781,66.0:0.12392):0.02413,61.0:0.14805):0.02311,60.0:0.17116):0.01006,(92.0:0.12888,92.0:0.12888):0.05234):0.02914,(29.0:0.20679,((((((36.0:0.09119,41.0:0.09119):0.03891,46.0:0.1301):0.02287,(60.0:0.13815,((46.0:0.1062,(56.0:0.05687,55.0:0.05687):0.04933):0.02882,(51.0:0.11192,(47.0:0.06367,51.0:0.06367):0.04825):0.02309):0.00314):0.01482):0.01008,(41.0:0.15264,(59.0:0.09091,(43.0:0.06409,(48.0:0.0454,52.0:0.0454):0.01869):0.02682):0.06173):0.01041):0.00953,((48.0:0.08358,55.0:0.08358):0.07674,(((



46.0:0.06777,49.0:0.06777):0.01019,42.0:0.07  
796):0.01887,56.0:0.09683):0.03467,46.0:0.13  
151):0.02881):0.01226):0.02957,((((35.0:0.147  
88,36.0:0.14788):0.00824,26.0:0.15612):0.009  
97,(9.0:0.16116,(((17.0:0.10987,(20.0:0.08398,  
(13.0:0.0834,10.0:0.0834):0.00058):0.02589):0.  
03263,(1.0:0.05856,1.0:0.05856):0.08393):0.01  
454,15.0:0.15703):0.00413):0.00492):0.03518,  
(15.0:0.04748,14.0:0.04748):0.15378):0.00088)  
:0.00465):0.00356):0.00433,((55.0:0.05204,(59.  
0:0.02444,59.0:0.02444):0.02761):0.1041,(54.0:  
0.12006,(41.0:0.10014,(((52.0:0.06558,55.0:0.0  
6558):0.02001,(49.0:0.08283,46.0:0.08283):0.0  
0276):0.01163,56.0:0.09722):0.00292):0.0199  
2):0.03608):0.05854):0.00342,(((5.0:0.05869,1  
0.0:0.05869):0.06478,12.0:0.12347):0.0195,5.0:  
0.14297):0.07514):0.00337,((((91.0:0.05204,95.  
0:0.05204):0.10063,((((93.0:0.0681,90.0:0.068  
1):0.02277,97.0:0.09086):0.00795,88.0:0.0988  
1):0.04912,((92.0:0.06414,90.0:0.06414):0.068  
81,97.0:0.13295):0.01498):0.00474):0.01526,((  
75.0:0.0217,75.0:0.0217):0.10326,73.0:0.1249  
6):0.04298):0.04557,(63.0:0.12115,((75.0:0.07  
138,69.0:0.07138):0.04843,68.0:0.11981):0.00  
134):0.09235):0.00798):0.01041,11.0:0.23189):



0.00088,(74.0:0.1347,83.0:0.1347):0.09807):0.  
01067,(8.0:0.22448,18.0:0.22448):0.01896):0.0  
2619,(13.0:0.23208,35.0:0.23208):0.03755):0.0  
0807,((3.0:0.1266,14.0:0.1266):0.03579,(4.0:0.  
13721,4.0:0.13721):0.02519):0.1153):0.01555)

## Cluster 1

(6.0:0.28963,((((((((((((((((((((77.0:0.02534,76.0:  
0.02534):0.03634,77.0:0.06168):0.06634,72.0:  
0.12802):0.01303,(((87.0:0.08492,(73.0:0.0754  
6,(81.0:0.07481,75.0:0.07481):0.00065):0.0094  
6):0.04739,65.0:0.13232):0.00871,(73.0:0.1339  
9,(((61.0:0.09068,54.0:0.09068):0.0008,((47.0:  
0.06409,(42.0:0.03879,42.0:0.03879):0.0253):0.  
02041,51.0:0.0845):0.00698):0.02784,47.0:0.1  
1931):0.01467):0.00704):0.00002):0.00186,(((  
52.0:0.0629,(57.0:0.04023,55.0:0.04023):0.022  
68):0.05948,(50.0:0.12185,((41.0:0.04706,42.0:  
0.04706):0.05156,(54.0:0.04836,(48.0:0.02849,  
50.0:0.02849):0.01987):0.05026):0.02322):0.0  
0054):0.00464,42.0:0.12703):0.01588):0.0073  
3,((((((((((55.0:0.04449,52.0:0.04449):0.01095,5  
0.0:0.05544):0.00061,45.0:0.05605):0.06059,5



9.0:0.11664):0.00161,(((50.0:0.08579,53.0:0.08579):0.01441,((42.0:0.0691,(42.0:0.06441,44.0:0.06441):0.00469):0.00597,(46.0:0.07028,(47.0:0.04983,48.0:0.04983):0.02044):0.0048):0.02513):0.01407,43.0:0.11428):0.00397):0.01359,((49.0:0.07161,56.0:0.07161):0.05963,58.0:0.13123):0.0006):0.00478,(59.0:0.034,57.0:0.034):0.10262):0.00453,(40.0:0.10994,(42.0:0.05538,40.0:0.05538):0.05456):0.03121):0.00781,(52.0:0.05229,48.0:0.05229):0.09667):0.00128):0.00931,94.0:0.15954):0.00352,(55.0:0.1078,(50.0:0.10595,43.0:0.10595):0.00186):0.05526):0.01257,60.0:0.17564):0.00259,58.0:0.17823):0.00203,((29.0:0.07725,34.0:0.07725):0.02608,40.0:0.10333):0.07693):0.0043,(((40.0:0.11503,35.0:0.11503):0.02226,((32.0:0.09756,31.0:0.09756):0.02632,26.0:0.12388):0.01341):0.01256,(((15.0:0.11814,(14.0:0.11598,14.0:0.11598):0.00217):0.02052,17.0:0.13866):0.00169,5.0:0.14035):0.00949):0.00473,28.0:0.15458):0.02998):0.01199,((((((((77.0:0.07506,71.0:0.07506):0.00979,((72.0:0.07724,(74.0:0.07271,((78.0:0.052,73.0:0.052):0.00669,83.0:0.05869):0.01402):0.00453):0.00153,89.0:0.07877):0.00608):0.01417,(93.0:0.06308,95.0:0.06308):0.03593):0.



00596,(76.0:0.09226,75.0:0.09226):0.01271):0.  
00319,((86.0:0.08849,(86.0:0.06255,88.0:0.062  
55):0.02594):0.01179,85.0:0.10028):0.00788):  
0.00297,91.0:0.11113):0.00447,(88.0:0.07519,  
87.0:0.07519):0.04041):0.03176,79.0:0.14736):  
0.0334,69.0:0.18076):0.01579):0.01805,35.0:0.  
2146):0.00501,((((7.0:0.14705,(20.0:0.07138,1  
6.0:0.07138):0.07567):0.01727,13.0:0.16432):  
0.00617,24.0:0.1705):0.02393,(((22.0:0.14009,  
((27.0:0.11545,(32.0:0.10813,39.0:0.10813):0.  
00732):0.01381,23.0:0.12925):0.01084):0.008  
14,17.0:0.14823):0.03547,(16.0:0.13781,28.0:0.  
13781):0.04588):0.01073):0.02518):0.01408,6.  
0:0.23369):0.00112,5.0:0.23481):0.00253,(99.0:  
0.05287,98.0:0.05287):0.18447):0.01499,35.0:  
0.25232):0.0373)

Time taken to build model (full training data) :  
0.05 seconds



=== Model and evaluation on training set ===

## Clustered Instances

0     88 ( 44%)

1     112 ( 56%)

## cluster visualisation

