SAVEETHA SCHOOL OF ENGINEERING

SAVEETHA INSTITUTE OF MEDICAL AND TECHNICAL SCIENCES

Engineer to Excel

Course Code: CSA1614

Course Title: Data Warehousing and Data Mining for Healthcare

SET 1

1. Write a R program for the intervals and corresponding frequencies are as follows. age frequency

1-5. 300
5-15 550
15-20 500
20-50 1500
50-80 800
80-110 74

Compute an approximate median value for the data

2. Write a R program to calculate co variance and corelation Children of three ages are asked to indicate their preference for three photographs of adults. Do the data suggest that there is a significant relationship between age and photograph preference? What is wrong with this study?

	Photograph:		
Age of child	A	B	C
5-6 years:	18	22	20
7-8 years:	2	28	40
9-10 years:	20	10	40

1. Use cov() to calculate the sample covariance between B and C.
2. Use another call to cov() to calculate the sample covariance matrix for the preferences.
3. Use cor() to calculate the sample correlation between B and C.
4. Use another call to cor() to calculate the sample correlation matrix for the preferences.

3. Implement using WEKA for the given the data set and perform the Apriori Algorithm and FP algorithm support:3 and confidence=50%

Customer ID	Transaction ID	Items Bought
1	0001	$\{a, d, e\}$
1	0024	$\{a, b, c, e\}$
2	0012	$\{a, b, d, e\}$
2	0031	$\{a, c, d, e\}$
3	0015	$\{b, c, e\}$
3	0022	$\{b, d, e\}$
4	0029	$\{c, d\}$
4	0040	$\{a, b, c\}$
5	0033	$\{a, d, e\}$
5	0038	$\{a, b, e\}$

4.Implement using WEKA for the given the data set and perform Bayes classification and descion tree (using training and test data)

RID	*age*	*income*	*student*	*credit_rating*	*Class: buys_computer*
1	<=30	high	no	fair	no
2	<=30	high	no	excellent	no
3	31 . . . 40	high	no	fair	yes
4	>40	medium	no	fair	yes
5	>40	low	yes	fair	yes
6	>40	low	yes	excellent	no
7	31 . . . 40	low	yes	excellent	yes
8	<=30	medium	no	fair	no
9	<=30	low	yes	fair	yes
10	>40	medium	yes	fair	yes
11	<=30	medium	yes	excellent	yes
12	31 . . . 40	medium	no	excellent	yes
13	31 . . . 40	high	yes	fair	yes
14	>40	medium	no	excellent	no

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SET 2

1. Write a R program for the data to analysis the attribute age. The age values for the data tuples are (in increasing order) 13, 15, 16, 16, 19, 20, 20, 21, 22, 22, 25, 25, 25, 25, 30, 33, 33, 35, 35, 35, 35, 36, 40, 45, 46, 52, 70.

(a) What is the mean of the data? What is the median?

(b) What is the mode of the data? Comment on the data's modality (i.e., bimodal, trimodal, etc.).

(c) What is the midrange of the data?

(d) Can you find (roughly) the first quartile (Q1) and the third quartile (Q3) of the data?

2. Write a R program for the data that you have selected data from the All Electronics data warehouse for analysis. The data set will be huge! The following data are a list of All Electronics prices for commonly sold items (rounded to the nearest dollar). The numbers have been sorted:

1, 1, 5, 5, 5, 5, 5, 8, 8, 10, 10, 10, 10, 12, 14, 14, 14, 15, 15, 15, 15, 15, 15, 18, 18, 18, 18, 18, 18, 18, 18, 20, 20, 20, 20, 20, 20, 20, 21, 21, 21, 21, 25, 25, 25, 25, 25, 28, 28, 30, 30, 30.

(i)dataset using an equal-frequency partitioning method with bin equal to 3

(ii) apply data smoothing using bin means and bin boundary.

(iii) Plot Histogram for the above frequency division

3. Implement using WEKA for the given the data set and perform the Apriori Algorithm and FP algorithm support:3 and confidence=50%

Consider the market basket transactions shown in the above table.

(a) What is the maximum number of association rules that can be extracted from this data (including rules that have zero support)?

(b) What is the maximum size of frequent itemsets that can be extracted (assuming minsup > 0)?

Transaction ID	Items Bought
1	{Milk, Beer, Diapers}
2	{Bread, Butter, Milk}
3	{Milk, Diapers, Cookies}
4	{Bread, Butter, Cookies}
5	{Beer, Cookies, Diapers}
6	{Milk, Diapers, Bread, Butter}
7	{Bread, Butter, Diapers}
8	{Beer, Diapers}
9	{Milk, Diapers, Bread, Butter}
10	{Beer, Cookies}

4.Create the following dataset using CSV file format. To perform cluster analysis using K-Means in WEKA. To change the cluster size and plot the graph and illustrate the visualization of cluster.

EmployeID	Gender	Age	Salary	Credit
111	Male	28	150000	39
222	Male	25	150000	27
333	Female	26	160000	42
444	Female	25	160000	40
555	Female	30	170000	64
666	Male	29	200000	72

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SET 3

1.Write a R program for the data, Use the two methods below to normalize the following group of data: 200, 300, 400, 600, 1000 (a) min-max normalization by setting min = 0 and max = 1 (b) z-score normalization

2. Write a R program for Two Maths teachers are comparing how their Year 9 classes performed in the end of year exams. Their results are as follows:
Class A: 76, 35, 47, 64, 95, 66, 89, 36, 8476,35,47,64,95,66,89,36,84
Class B: 51, 56, 84, 60, 59, 70, 63, 66, 5051,56,84,60,59,70,63,66,50
(i) Find which class had scored higher mean, median and range.
(ii) Plot above in boxplot and give the inferences

3. Implement using WEKA for the given Suppose a database has five transactions. Let min sup= 50%(2) and min con f = 80%.

Transactions	**Items**
T1	(M, O, N, K, E, Y)
T2	(D, O, N, K, E, Y)
T3	(M, A, K, E)
T4	(M, U, C, K, Y)
T5	(C,O, O, K, I ,E)

Find all frequent item sets using Apriori algorithm

4. Write a R program for the following list of persons with vegetarian or not details given in the table. How will you find out how many of them are vegetarian and how many of them are non-vegetarian? Which type of the person total count is greater value?

Person	Gopu	Babu	Baby	Gopal	Krishna	Jai	Dev	Malini	Hema	Anu
Vegetarian	yes	yes	yes	no	yes	no	no	yes	yes	yes

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SET 4

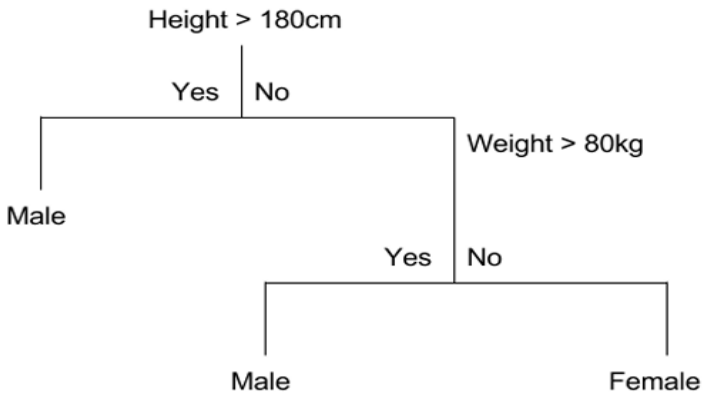
1. Write a R program for the Data:11,13,13,15,15,16,19,20,20,20,21,21,22,23,24,30,40,45,45,45,71, 72,73,75 and find

a) Smoothing by bin mean
b) Smoothing by bin median
c) Smoothing by bin boundaries

2. Write a R program to calculate the minimum and maximum values for the feature F are $50,000 and $100,000 correspondingly. It needs to range *F* from 0 to 1. In accordance with min-max normalization, *v* = $80,

3. Prediction of Categorical Data using Rule base classification and decision tree classification through WEKA using any datasets. Compare the accuracy using two algorithm and plot the graph

4. Consider this Decision tree :
a)create the data set for the below tree using ARFF format and calculate accuracy and decision for the same
b) Using this decision tree generate the rules based on rule based induction.
c) Compare both the algorithms and plot the confusion matrix.



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SET 5

1. Write a R program for the hospital data tested the age and body fat data for 18 randomly selected adults with the following results:

age	23	23	27	27	39	41	47	49	50
%fat	9.5	26.5	7.8	17.8	31.4	25.9	27.4	27.2	31.2
age	52	54	54	56	57	58	58	60	61
%fat	34.6	42.5	28.8	33.4	30.2	34.1	32.9	41.2	35.7

(a) Calculate the mean, median, and standard deviation of age and %fat.
(b) Draw the boxplots for age and %fat.
(c) Draw a scatter plot and a q-q plot based on these two variables.

2. Write a R program Use the below methods to normalize the following group of data: 200, 300, 400, 600, 1000
(a) min-max normalization by setting min = 0 and max = 1
(b) z-score normalization

3.Create the dataset using ARFF file format:

Transaction ID	Items
T1	Hot Dogs, Buns, Ketchup
T2	Hot Dogs, Buns
T3	Hot Dogs, Coke, Chips
T4	Chips, Coke
T5	Chips, Ketchup
T6	Hot Dogs, Coke, Chips

a.Find the **frequent itemsets** and generate **association rules** on this. Assume that minimum support threshold (s = 33.33%) and minimum confident threshold (c = 60%).
b.List the various rule generated by apriori and FP tree algorthim ,mention wheather accepted or rejcted.

4. Implement of the R script using marks scored by a student in his model exam has been sorted as follows: 55, 60, 71, 63, 55, 65, 50, 55,58,59,61,63,65,67,71,72,75. Partition them into three bins by each of the following methods. Plot the data points using histogram.

(a) equal-frequency (equi-depth) partitioning
(b) equal-width partitioning
(c) clustering

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SET 6

1.Suppose that a hospital tested the age and body fat data for 18 randomly selected adults with the following results:

age	23	23	27	27	39	41	47	49	50
%fat	9.5	26.5	7.8	17.8	31.4	25.9	27.4	27.2	31.2
age	52	54	54	56	57	58	58	60	61
%fat	34.6	42.5	28.8	33.4	30.2	34.1	32.9	41.2	35.7

(i) Use min-max normalization to transform the value 35 for age onto the range [0.0, 1.0].
(ii) Use z-score normalization to transform the value 35 for age, where the standard deviation of age is 12.94 years.
(iii) Use normalization by decimal scaling to transform the value 35 for age. Perform the above functions using R – tool

2. Perform the below two methods using R – tool to normalize the following group of data: 200, 300, 400, 600, 1000

(a) min-max normalization by setting min = 0 and max = 1
(b) z-score normalization

3. Implement using WEKA the Bayes classification and descion tree (using training and test data)

RID	*age*	*income*	*student*	*credit_rating*	*Class: buys_computer*
1	<=30	high	no	fair	no
2	<=30	high	no	excellent	no
3	31 . . . 40	high	no	fair	yes
4	>40	medium	no	fair	yes
5	>40	low	yes	fair	yes
6	>40	low	yes	excellent	no
7	31 . . . 40	low	yes	excellent	yes
8	<=30	medium	no	fair	no
9	<=30	low	yes	fair	yes
10	>40	medium	yes	fair	yes
11	<=30	medium	yes	excellent	yes
12	31 . . . 40	medium	no	excellent	yes
13	31 . . . 40	high	yes	fair	yes
14	>40	medium	no	excellent	no

4. The given are the strike-rates scored by a batsman in season 1 in different tournaments. 100, 70, 60, 90, 90 . Perform the above functions using R – tool

(a) min-max normalization by setting min = 0 and max = 1
(b) z-score normalization
(c) z-score normalization using the mean absolute deviation instead of standard deviation

SET 7

Course Code: CSA1614

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1. Write a R program for the following values are the number of pencils available in the different boxes. Create a vector and find out the mean, median and mode values of set of pencils in the given data.

Box1	Box2	Box3	Box4	Box5	Box6	Box7	Box8	Box9	Box 10
9	25	23	12	11	6	7	8	9	10

2. Write a R program to the following table would be plotted as (x,y) points, with the first column being the x values as number of mobile phones sold and the second column being the y values as money. To use the scatter plot for how many mobile phones sold.

x :4 1 5 7 10 2 50 25 90 36

y :12 5 13 19 31 7 153 72 275 110

3. Implement using WEKA for the given Suppose a database has five transactions. Let min sup= 50%(2) and min con f = 80%.

Transactions	**Items**
T1	(M, O, N, K, E, Y)
T2	(D, O, N, K, E, Y)
T3	(M, A, K, E)
T4	(M, U, C, K, Y)
T5	(C,O, O, K, I ,E)

Find all frequent item sets using Apriori algorithm and FP-Growth Tree

4. Implement using WEKA and generate rules using FP growth algorithm using the given dataset which has the following transactions with items purchased: Consider the values as support=50% and confidence=75%.

Transaction ID	Items Purchased
1	Bread, Cheese, Egg, Juice
2	Bread, Cheese, Juice
3	Bread, Milk, Yogurt
4	Bread, Juice, Milk
5	Cheese, Juice, Milk

SET 8

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1. Implement of the R script using marks scored by a student in his model exam has been sorted as follows: 55, 60, 71, 63, 55, 65, 50, 55,58,59,61,63,65,67,71,72,75. Partition them into three bins by each of the following methods. Plot the data points using histogram.

(a) equal-frequency (equi-depth) partitioning (b) equal-width partitioning

2. Assume the Tennis coach wants to determine if any of his team players are scoring outliers. To visualize the distribution of points scored by his players, then how can he decide to develop the box plot? Give suitable example using Boxplot visualization technique.

3. Implement using WEKA for the data set and perform the Apriori Algorithm and FP algorithm support:3 and confidence=50%

Customer ID	Transaction ID	Items Bought
1	0001	$\{a, d, e\}$
1	0024	$\{a, b, c, e\}$
2	0012	$\{a, b, d, e\}$
2	0031	$\{a, c, d, e\}$
3	0015	$\{b, c, e\}$
3	0022	$\{b, d, e\}$
4	0029	$\{c, d\}$
4	0040	$\{a, b, c\}$
5	0033	$\{a, d, e\}$
5	0038	$\{a, b, e\}$

4. Prediction of Diabetes Data using Decision tree classifier in WEKA. Compare it with Support Vector Machine classifier. Show the result accuracy and F1 measure calculation. Plot the graph and explain the summary of results

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SET 9

1.Create an ARFF file for the table below and implement for the Apriori Algorithm and FP growth algorithm and compare the rules generated by both the algorithms. Identify the unique rules generated by the above algorithms.

NOTE: Assume Min_sup=2 and confidence= 50%

T.ID	ITEMS
T1	SONY, BPL, LG
T2	BPL, SAMSUNG
T3	BPL, ONIDA
T4	SONY, BPL, SAMSUNG
T5	SONY, ONIDA
T6	BPL, ONIDA
T7	SONY, ONIDA
T8	SONY, BPL, ONIDA, LG
T9	SONY, BPL, ONIDA

2. Implement of the R script using marks scored by a student in his model exam has been sorted as follows: 55, 60, 71, 63, 55, 65, 50, 55,58,59,61,63,65,67,71,72,75. Partition them into three bins by each of the following methods. Plot the data points using histogram.

(a) equal-frequency (equi-depth) partitioning

(b) equal-width partitioning

(c) clustering

3. Generate rules using FP growth algorithm using the given dataset which has the following transactions with items purchased: Consider the values as support=50% and confidence=75%.

Transaction ID	Items Purchased
1	Bread, Cheese, Egg, Juice
2	Bread, Cheese, Juice
3	Bread, Milk, Yogurt
4	Bread, Juice, Milk
5	Cheese, Juice, Milk

4.Suppose some car is tested for the AvgSpeed and TotalTime data for 9 randomly selected car with the following result

AvgSpeed(in kph)	78	81	82	74	83	82	77	80	70
TotalTime(in mins)	39	37	36	42	35	36	40	38	46

a) Calculate the standard deviation of AvgSpeed and TotalTime.

b) Calculate the Variance of AvgSpeed and TotalTime for the above dataset.