NPTEL (Data Mining) (week 1)

① The earliest step in the data mining process is usually?

Ans → Preprocessing.

② Which of the following is an example of continuous attribute?

Ans → Height of the person is real number

③ Friendship structure of users in a social networking site can be considered as an example of:

Ans:→ Friendship is an edge in a graph with users as nodes.

④ Name of a person, can be considered as an attribute of type?

Ans:- Nomial (there is no rank, position, order)

⑤ A store sells 15 items. Maximum possible number of candidate 2-itemset is

Ans ← $^{15}C_2 = 105$

⑥ if a record data matrix has reduced number of rows after a transformation, the transformation has performed.

Ans:- Data Sampling (sample is the subset of the population. the process of selecting a sample is known as sampling)

⑦ to ⑩ from table

Customer ID	Transaction ID	Items Bought
1	1	{a, d, e}
1	2	{a, b, c, e}
2	3	{a, b, d, e}
2	4	{a, c, d, e}
3	5	{b, c, e}
3	6	{b, d, e}
4	7	{c, d}
4	8	{a, b, c}
5	9	{a, d, e}
5	10	{a, b, e}

⑦ Taking transaction ID as a market basket, support for each itemset {e}, {b, d}, and {b, d, e} is:

Ex. $\{e\} = \frac{8}{10} = 0.8$, $\{b, d\} = \frac{2}{10} = 0.2$

$\{b, d, e\} = \frac{2}{10} = 0.2$

⑧ Based on the result in (7), confidence of association rules {b, d} → {e} and {e} → {b, d} are:

Ex. $\{b, d\} \rightarrow \{e\}$ $\{e\} \rightarrow \{b, d\}$

$= \frac{2}{2} \Rightarrow 1 = \frac{2}{8} = 0.25$

⑨ Repeat ⑦ by taking customer ID as market basket. An item is treated as 1 if it appears in at least one transaction done by the customer, 0 otherwise. Support of itemset {e}, {b d}, {b, d, e} are

Ex. 0.8, 1, 0.8 (next box)

Exp: Treating each customer id as a market basket

Customer ID	Items Bought
1	{a,d,e}, {a,b,c,e}
2	{a,b,d,e}, {a,c,d,e}
3	{b,c,e}, {b,d,e}
4	{c,d}, {a,b,c}
5	{a,d,e}, {a,b,e}

support ({e}) = 4/5 = 0.8 , support({b,d}) = 5/5 = 1

support ({b,d,e}) = 4/5 = 0.8

Ans 0.8, 1, 0.8.

(10) Based on the result in (9), confidence of association rules {b,d} → {e} and {e} → {b,d} are:

Soln {b,d} → {e} {e} → {b,d}

= 0.8/1 = 0.8 0.8/0.8 = 1