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1.DFS Listing

First we find all frequent items and delete all infrequent items from the database

item	count
A	1
C	2
D	1
E	4
K	5
M	3
N	2
O	3
U	1
Y	3

So $F = \{E, K, M, O, Y\}$

we start with the database and \emptyset

so the new database is

TID	items
1	M,O,K,E,Y
2	O,K,E,Y
3	M,K,E
4	M,K,Y
5	O,K,E

and we have a total order $E < K < M < O < Y$

we take E and remove it from the database with every element that is smaller than it and we add E to the frequent list

the projected database is

TID	items
1	M,O,K,Y
2	O,K,Y
3	M,K
5	O,K

and $F = \{E\}$

we can see that M and Y are not frequent in the projected database so we delete them then we take k and add EK to the frequent list

TID	items
1	O
2	O
5	O

Now $F = \{E, EK\}$

then we add EKO to the frequent list and no more databases can be projected so we backtrack to E

Now $F = \{E, EK, EKO\}$

Only O is frequent so we add EO to the frequent list and delete O and all items smaller than it from the database so the projected database is

TID	items
1	M,Y
2	Y

and $F = \{E, EK, EO, EKO\}$

in the previous projected database there are no frequent items so we backtrack to the first database because there are no other possibilities for E so we take another element

Now we take K and remove it with all items smaller than it from the database and add it to the frequent list

so $F = \{E, K, EK, EO, EKO\}$

and the new database is

TID	items
1	M,O,Y
2	O,Y
3	M
4	M,Y
5	O

We take M and add KM to F so $F = \{E, K, EK, EO, KM, EKO\}$

and the projected database is

TID	items
1	O,Y
4	Y

None of the items is frequent so we backtrack to K

Now We take O and add KO to F so $F = \{E, K, EK, EO, KM, KO, EKO\}$

and the projected database is

TID	items
1	Y
2	Y

None of the items is frequent so we backtrack to K

and then we take Y and add KY to F so $F = \{E, K, EK, EO, KM, KO, KY, EKO\}$

and the projected database is empty so we backtrack to K and then backtrack again to take another item which is M and we add M to F so $F = \{E, K, M, EK, EO, KM, KO, KY, EKO\}$

and the projected database is

TID	items
1	O,Y
4	Y

None of the items is frequent so we backtrack to the first database and take O and add it to F

so $F = \{E,K,M,O, EK, EO, KM,KO,KY, EKO\}$

and the projected database is

TID	items
1	Y
2	Y

None of the items is frequent so we backtrack to the first database and take Y and add to F so $F = \{E,K,M,O,Y, EK, EO, KM,KO,KY, EKO\}$

and as Y is the biggest item the projected database will be empty and the algorithm stops with $F = \{E,K,M,O,Y, EK, EO, KM,KO,KY, EKO\}$