

1. A database has five transactions. Let $\text{min_support_count}=2$, find all frequent itemsets using the **FP-Growth** algorithm. Show all intermediate conditional FP-DBs and FP-trees.

TID	Items bought
T100	{K, A, D, B, G}
T200	{D, A, C, E, B}
T300	{C, A, B, E, F}
T400	{B, A, D, H}
T500	{C, B, D, E}

2. Suppose that a large store has a transaction database that is distributed among four locations. Transactions in each component database have the same format, namely, $T_j : \{i_1, \dots, i_m\}$, where T_j is a transaction identifier, and i_k ($1 \leq k \leq m$) is the identifier of an item purchased in the transaction. Propose an efficient algorithm to mine association rules. You may present your algorithm in the form of an outline. Your algorithm should not require shipping all of the data to one site and should not cause excessive network communication overhead.