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Problem 1: Implement a dynamic pricing scheme

Data Preprocessing and Selection:
From the given transactions data, the following parts are selected: the hour of transaction, the student segment, and the ID number of the item bought. The hour of transaction is calculated based on the time when ANC starts, ranging from 16 to 26. The student segment is calculated from the first 2 characters of the student's ID number. The ID number of the item bought is merely selected from the data.

Data Mining Technique:
We modelled this problem as one of mining appropriate association rules. The association rules we look for are of the form ("hour number", "student segment" ➔ "item ID"). A rule of the form (H, S ➔ N) is interpreted as follows: when a student belonging to a segment S comes to ANC at hour number H, he/she will likely buy item number N. Thus, our profit maximising strategy is that we will increase the price of item number N for student segment S at hour number H. We applied Aprori algorithm for mining such association rules.

Interpretation / Evaluation:
We applied Apriori algorithm for different combinations of minimum support and minimum confidence for such associations as explained before. When an association is observed (corresponding to a minsup and minconf), it is considered a candidate for dynamic pricing. We find all such (item, segment, hour) combinations and apply dynamic pricing on such objects.

We mined association rules from the transactions of all months - August to November, and tested our dynamic pricing scheme on the month of December. The increase in price of products was automated - we choose a

min_support and min_confidence, and the rules we obtain from this analysis are automatically used to update the prices of the concerned objects. See *Problem 1: detail* and the code files for the exact algorithm used.