**Problem 3**

Franchises

350 franchises for merchandise sales

200 franchises for special events

Assume that franchises for special events are already included in the franchises with merchandise sales

Goods for sale

Merchandise: 500

Service categories: 20

Event types: 1

Total types of goods/services for sale: 521

Members and customers

Members: 50,000 members in the retail database

Corporate customers: 150 customers \* 200 franchises (30,000)

Total members and customers: 80,000 assuming no overlap

Fact table size

Merchandise purchases: rows in the Contains table (450,000/year)

Service purchases: rows in the ServicePurchase table (100,000/year)

Special events: worksheet rows (300 events \* 200 franchises = 60,000 events per year)

Total rows: 610,000 rows per year

Sparsity estimate:

1 - ( fact table size / product of dimensions )

(1 – ( 610,000 / (350\*521\*365\*80,000) ) = 0.999999885

The data cube has mostly missing cells with slightly more than 1% of cells with non zero values.