**Solution for Problem3 of Module 3 Assignment**

The finest grain present in this problem is the combination of individual supplier, individual product, and date.

Sparsity estimate = 1 - (fact table size / product of dimensions)

**Calculating fact tale size – (per year)**

ServicePurchase rows - 100000

SpecialEvents Worksheet rows – 300 \* 200

Contains rows – 450000

Fact table size = ServicePurchase rows + SpecialEvents Worksheet

rows + Contains rows.

Therefore, fact table size = 610000.

**Calculating Product Dimension**

Franchise rows – 300

ProductService rows – 21 as (ServiceCategory-20,Special Event-1)

Member rows – 80000 as(Memer rows – 50000 + 150 \* 200)

Merchandise rows – 500

Calender rows - 365

* Days per year: 365, Total = 365
* 50000 Member Rows, 150 Member Rows\*200 Franchises , 10 MemberType ,500 Member Zip Codes Rows ,Total = 50000 + 150\*200 = 80000
* 500 Merchandise Rows, Total= 500

Sparsity = (1 - (610000 / (350\*21\*500\*365\*80000) ).

Therefore, Sparsity = 0.99999999431 which means given data cube is have less than 1% non-zero cells.