

OLAP Operation Types

Consider a fact table `DataPoints(D1,D2,D3,x)`, and the following three queries:

Q1: `Select D1,D2,D3,Sum(x) From DataPoints Group By D1,D2,D3`

Q2: `Select D1,D2,D3,Sum(x) From DataPoints Group By D1,D2,D3 WITH CUBE`

Q3: `Select D1,D2,D3,Sum(x) From DataPoints Group By D1,D2,D3 WITH ROLLUP`

Suppose attributes `D1`, `D2`, and `D3` have n_1 , n_2 , and n_3 different values respectively, and assume that each possible combination of values appears at least once in the table `DataPoints`. The number of tuples in the result of each of the three queries above can be specified as an arithmetic formula involving n_1 , n_2 , and n_3 . Pick the one tuple (a,b,c,d,e,f) in the list below such that when $n_1=a$, $n_2=b$, and $n_3=c$, then the result sizes of queries Q1, Q2, and Q3 are d , e , and f respectively.