



# OLAP Implementation (Cont.)

- Early OLAP systems precomputed *all* possible aggregates in order to provide online response
  - Space and time requirements for doing so can be very high
    - $2^n$  combinations of **group by**
  - It suffices to precompute some aggregates, and compute others on demand from one of the precomputed aggregates
    - Can compute aggregate on (*item\_name*, *color*) from an aggregate on (*item\_name*, *color*, *size*)
      - For all but a few “non-decomposable” aggregates such as *median*
      - is cheaper than computing it from scratch
- Several optimizations available for computing multiple aggregates
  - Can compute aggregate on (*item\_name*, *color*) from an aggregate on (*item\_name*, *color*, *size*)
  - Can compute aggregates on (*item\_name*, *color*, *size*), (*item\_name*, *color*) and (*item\_name*) using a single sorting of the base data