Function Operator

F
AN ADDITION to RELATIONAL ALGEBRA

- Supports GROUPING by field value
- and AGGREGATE operations:
  - MAX, MIN, SUM, COUNT, AVG
- Ex: Find the average salary for each department.
  - Average salary is an Aggregate Value
  - ‘For each Dept’ is Grouping
2 Aggregate Values plus Grouping

To find the number of employees and their average salary per department.
### Function Operator

Result has one field for each grouping and aggregate operator.
Grouping

- Conceptually: Make subsets of tuples in the table according to the grouping on the left.
- Then calculate the aggregates for each operation on the right.
NOTES

• Only columns attached to $\mathcal{F}$ appear in result

• Without the Group-by columns, $\mathcal{F}$ returns a 1-row table
  – just aggregates, no grouping

• Ignore book’s subscripts on param of aggregate operations
  $\mathcal{F} \text{ COUNT}_{SSN}$

• Ignore $\rho$ renaming operator.