



Principles of Distributed and Parallel Database Systems

Derived Horizontal Fragmentation

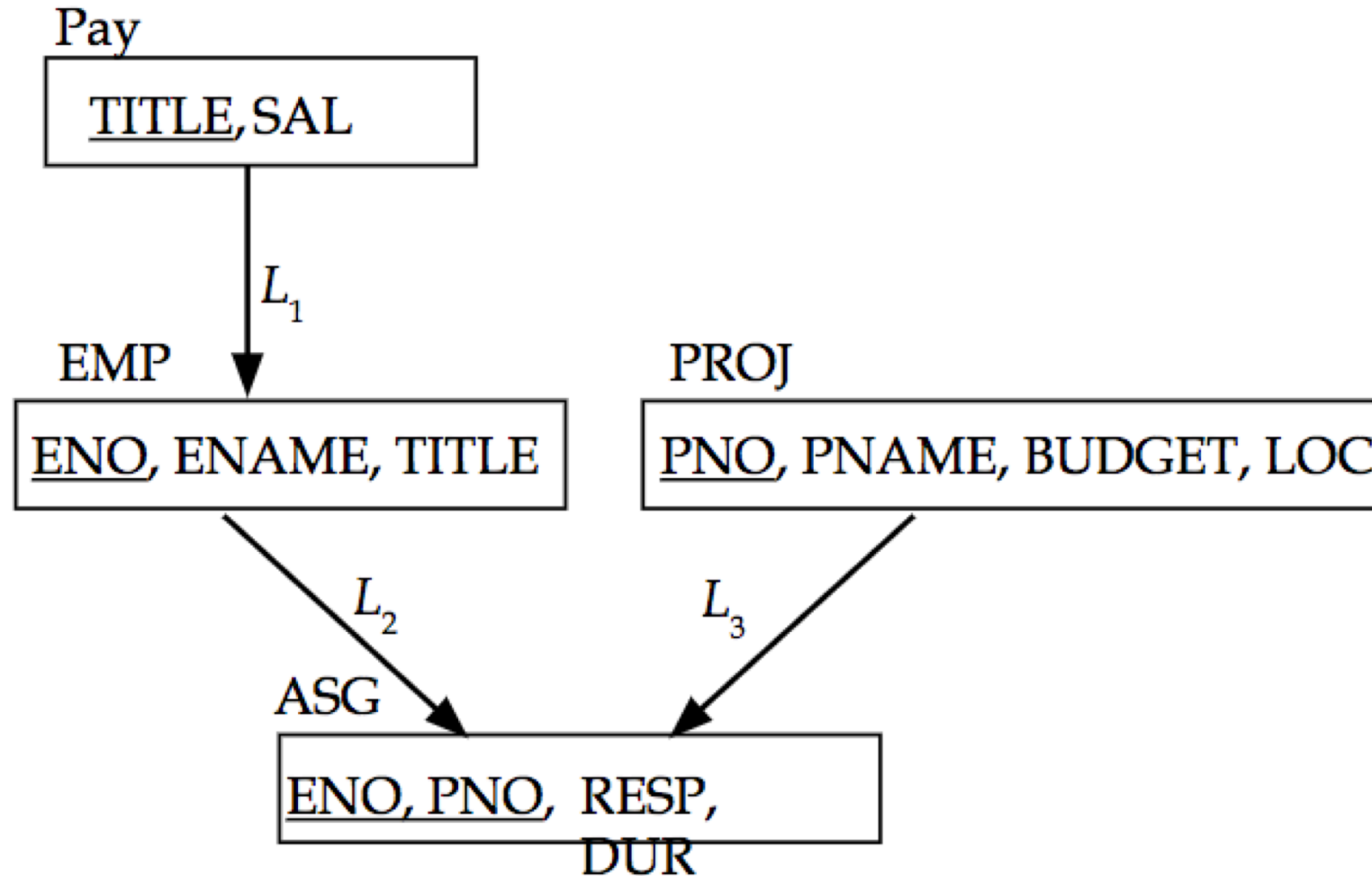
Objectives



Objective

Realize how queries are
processed in distributed
databases

Derived Horizontal Fragmentation (DHF)



Definition

| Given a link L where $owner(L)=S$ and $member(L)=R$, the derived horizontal fragments of R are defined as

$$R_i = R \bowtie_F S_i, 1 \leq i \leq w$$

| where w is the maximum number of fragments that will be defined on R and

$$S_i = \sigma_{F_i}(S)$$

| where F_i is the formula according to which the primary horizontal fragment S_i is defined.

DHF Example

| Given link L_1 where $\text{owner}(L_1)=\text{PAY}$ and $\text{member}(L_1)=\text{EMP}$

- $\text{EMP}_1 = \text{EMP} \bowtie \text{PAY}_1$
- $\text{EMP}_2 = \text{EMP} \bowtie \text{PAY}_2$

| Where

- $\text{PAY}_1 = \sigma_{\text{SAL} \leq 30000}(\text{PAY})$
- $\text{PAY}_2 = \sigma_{\text{SAL} > 30000}(\text{PAY})$

EMP_1

ENO	ENAME	TITLE
E3	A. Lee	Mech. Eng.
E4	J. Miller	Programmer
E7	R. Davis	Mech. Eng.

DHF Example

| Given link L_1 where $\text{owner}(L_1)=\text{PAY}$ and $\text{member}(L_1)=\text{EMP}$

- $\text{EMP}_1 = \text{EMP} \bowtie \text{PAY}_1$
- $\text{EMP}_2 = \text{EMP} \bowtie \text{PAY}_2$

| Where

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- $\text{PAY}_2 = \sigma_{\text{SAL} > 30000}(\text{PAY})$

EMP_2

ENO	ENAME	TITLE
E1	J. Doe	Elect. Eng.
E2	M. Smith	Syst. Anal.
E5	B. Casey	Syst. Anal.
E6	L. Chu	Elect. Eng.
E8	J. Jones	Syst. Anal.