

Joins (Pt 3)

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Index nested loop join

- assume index on the relation in inner most loop
 1. have index because user specified
 2. create temp index

Sub in selection on the inner relation

S ~~At~~

$$s.id = "0012" \rightarrow \theta_{t.id = "0012"}$$

Analysis

t tuples in r

lookup using index on S

(assume 1 block for r and 1 block for S)

$\Rightarrow b_r$ ops for reading r
 \nwarrow 1 seek 1 block read

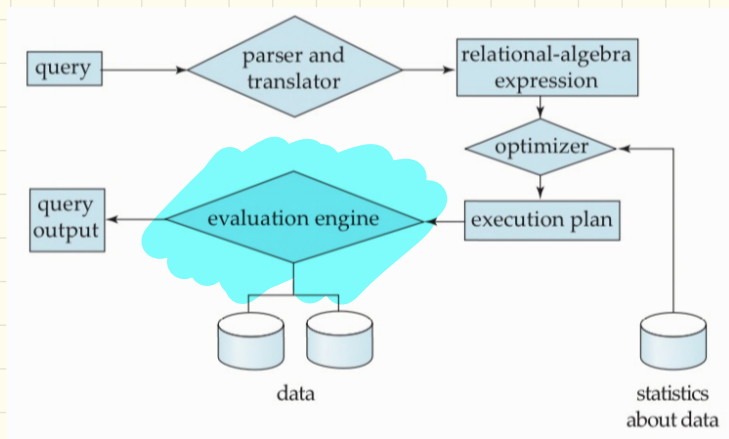
t tuple in r , perform index lookup on S

$$\Rightarrow b_r (t_r + t_s) + n_r \times c$$

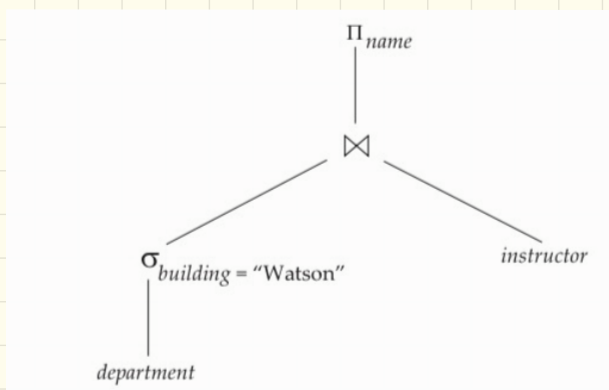
\nearrow
time to
transfer
a block

\nwarrow
time to
scan to
a block

\nwarrow cost of selecting
using join condition
(see table)



$\Pi_{name}(\sigma_{building = \text{"Watson"}}(department) \bowtie instructor)$



Select name
from (select *
from department
where building
= "Watson")
instructor

How to evaluate seq of ops

- materialization!

1. start at the leaves and work up

a. pick algo to evaluate node

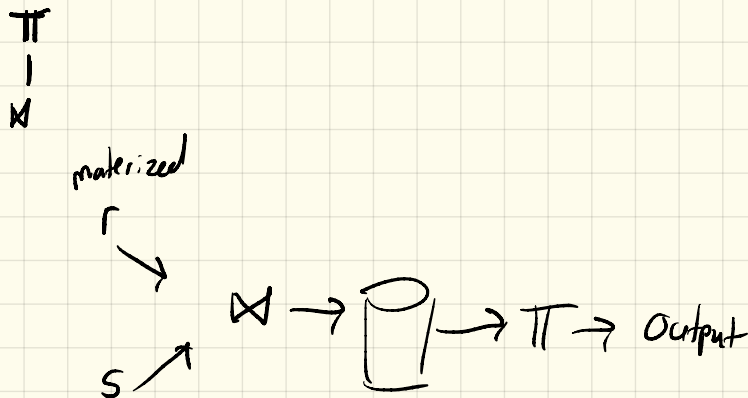
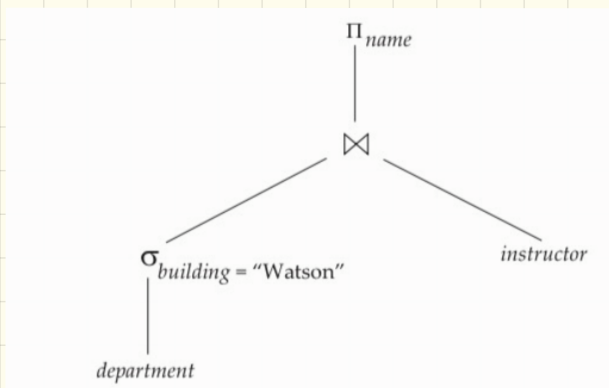
b. output to temp relation

c. recurse up the tree

let fr # of relations
per block

est of # of tuples
output fr
(blocking factor)

Pipeline



pipeline

