



- For maintenance we have a block that can hold 100 types, and we have 1000 blocks, so 100,000 types

- Using clustering index on  $planeId = 100$ , we can estimate selected number of types to be  $100,000 / 100 = 1000$

$\hookrightarrow$  since we assume there are 100 planes and the maintenances are spread out uniformly across all planes.

↳ since index is clustered these 1000 tuples appear consecutively and therefore the cost is

$$= 10 \text{ block I/Os} + 2 \text{ I/Os} = 12 \text{ I/Os}$$

↳ 2 for fully sorted block via index

- the blocks are kept in main memory, no cost required in sorting the blocks obtained from the selection.

- Employees has 50 blocks of 120 tuples

↳ a file scan will cost 50 I/Os of employees + the scan and pipeline which we can estimate the size of the new pipeline at 25 blocks ; if we assume the ratings are uniformly distributed,

$$50 + 25 = \underline{75 \text{ I/Os}}$$

↳ since the sort will then be

$2 \times 25$  for the sort. we don't  
have to create a temporary table since  
the sort is pipelined,  
 $= 50$  I/Os

• The Join cost

$$\rightarrow = \underline{25 \text{ I/Os}},$$

• Total I/Os

$$= 12 + 25 + 50 + 25$$

$$\boxed{= 112 \text{ I/Os}}$$