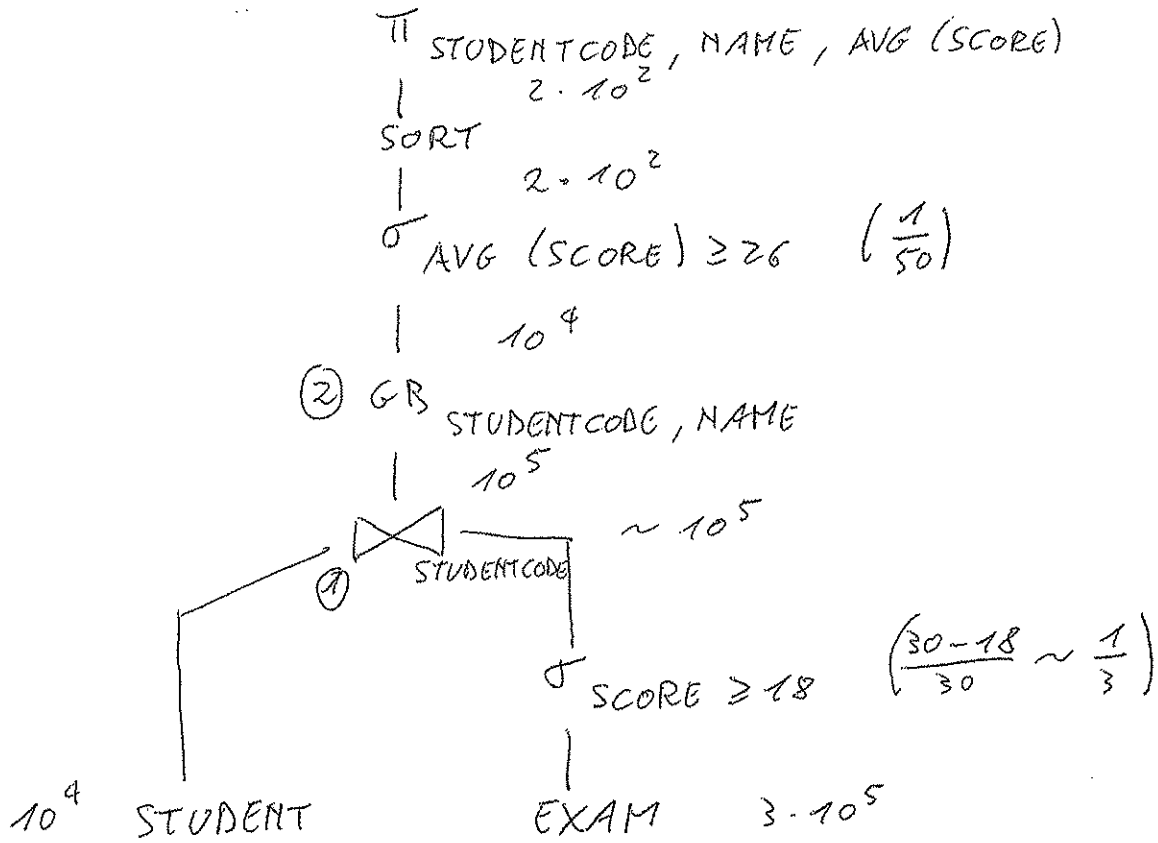


QUERY 1 - STUDENT - EXAM EXERCISE



ACCESS PATH

STUDENT : TABLE ACCESS FULL  
 EXAM : TABLE ACCESS FULL + FILTER

(1) NL : INNER = STUDENT  
 OUTER = EXAM

$\Rightarrow$  NO TABLES TOO BIG ( $> 10^3$ )

MJ : YES BECAUSE HELPS GB AND SORT OPERATIONS

I HAVE TO SORT THE TABLES BEFORE

NO TABLES TOO BIG ( $> 10^3$ )

HT : YES BECAUSE BOTH TABLES ARE BIG ( $> 10^3$ )  
 HELPS GB

(2) GB NO HASH IF (1) IS HT

## INDEX

STUDENT : PRIMARY ON STUDENTCODE  
⇒ YES NATURAL ORDER OF DATA

SECONDARY B<sup>+</sup>TREE ON STUDENT CODE

⇒ YES IF I USE NL IN ①  
AND STUDENT IS THE INNER TABLE

⇒ NO THE SELECTIVITY IS LOW

SECONDARY B<sup>+</sup>TREE ON (STUDENTCODE, NAME)

⇒ YES : IS COVERING → FAST FULL SCAN

⇒ NO : MAINTENANCE COST HIGH

EXAM : SECONDARY ON SCORE

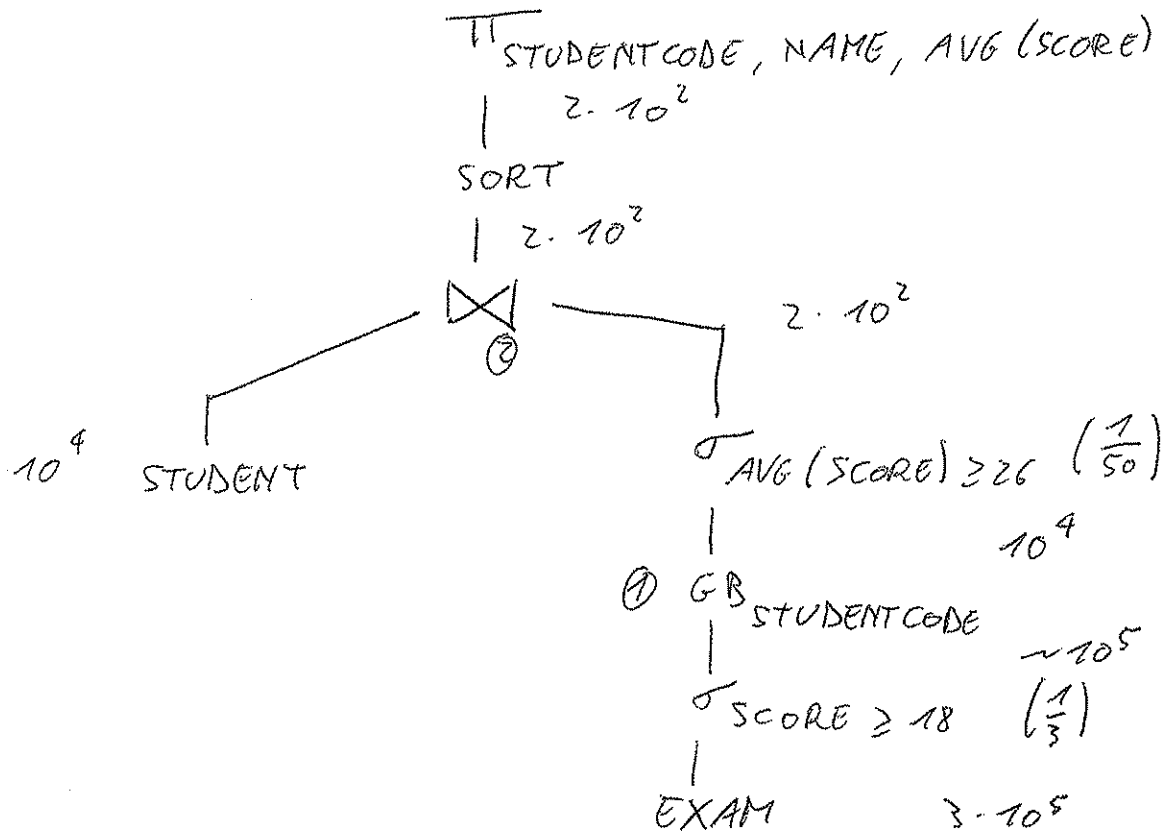
⇒ NO SELECTIVITY IS LOW ( $\frac{1}{3}$ )

SECONDARY ON STUDENTCODE

⇒ YES HELPS ① IF IS NL

⇒ NO I HAVE TO ACCESS BY ROWID  
TO EVALUATE THE CONDITION  
ON SCORE

# GB ANTICIPATION

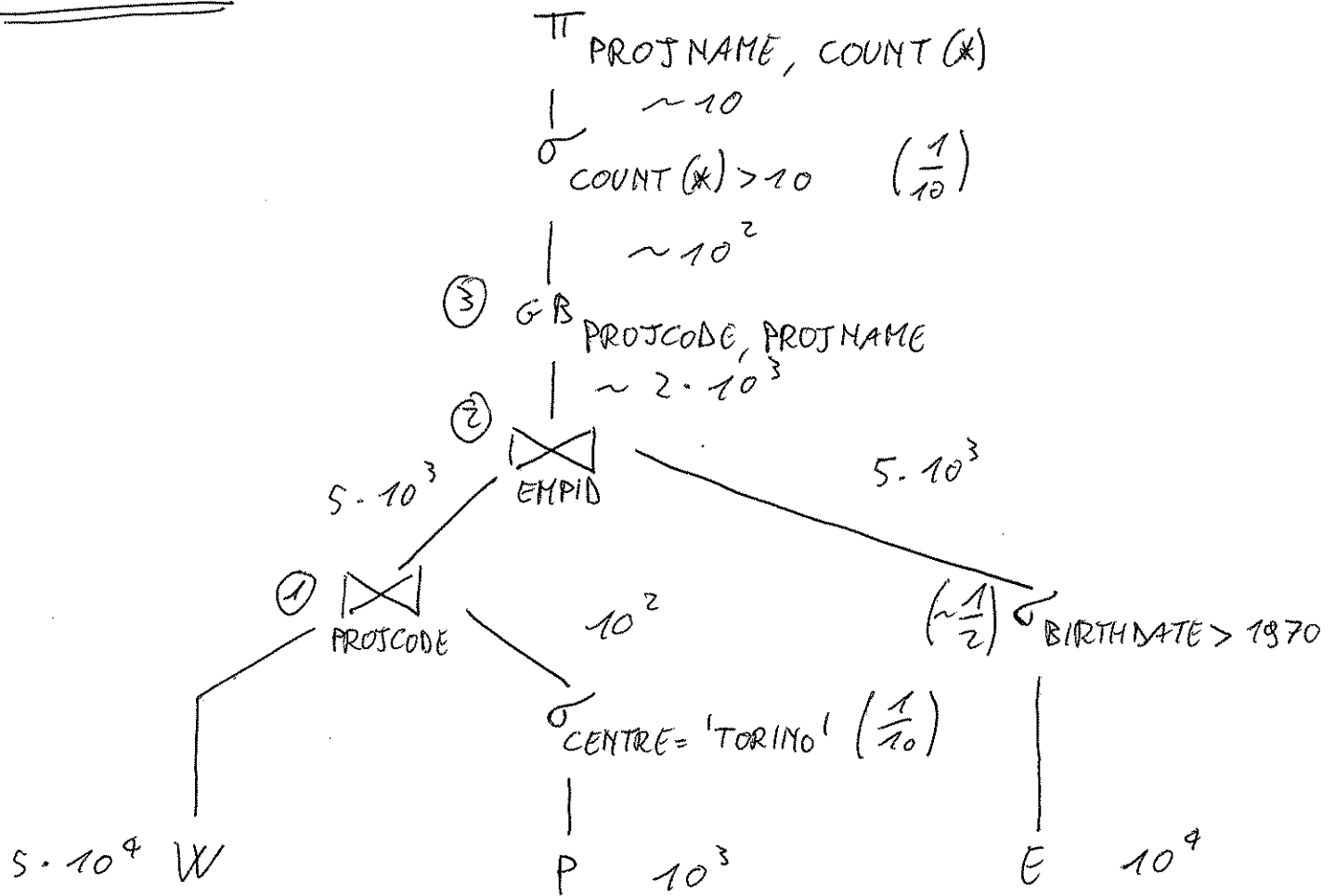


① GB HASH

② NL : INNER = EXAM  
 OUTER = STUDENT

# QUERY 1 - PROJECT EXERCISE

## SOLUTION 1



### ACCESS PATH

W : TABLE ACCESS FULL  
 P : TABLE ACCESS FULL + FILTER  
 E : TABLE ACCESS FULL + FILTER

### JOINS + GB

① NL : INNER = P  
 OUTER = W

② HT

③ GB HASH

### INDEXES

P : ~~SECONDARY~~ HASH INDEX ON CENTRE  
 $\Rightarrow$  INDEX SCAN + ACCESS BY ROWID

### GB ANTICIPATION

IT IS NOT POSSIBLE

# SOLUTION 2

$\Pi$  PROJNAME, COUNT(\*)

|  $\sim 10$

$\sigma$  COUNT(\*) > 10  $(\frac{1}{10})$

|  $\sim 10^2$

③ GB  
PROJCODE, PROJNAME

|  $\sim 2 \cdot 10^3$

②  
PROJCODE

$\sim 2 \cdot 10^4$

$10^2$

①  
EMPID

$5 \cdot 10^3$

$(\frac{1}{10})$   $\sigma$  CENTRE = 'TORINO'

$(\frac{1}{2})$   $\sigma$  BIRTHDATE > 1970

$5 \cdot 10^4$  W

E  $10^4$

P  $10^3$

## ACCESS PATH

W : TABLE ACCESS FULL

P : TABLE ACCESS FULL + FILTER

E : TABLE ACCESS FULL + FILTER

## JOINS + GB

① HJ

② NL : INNER = P  
OUTER = ①

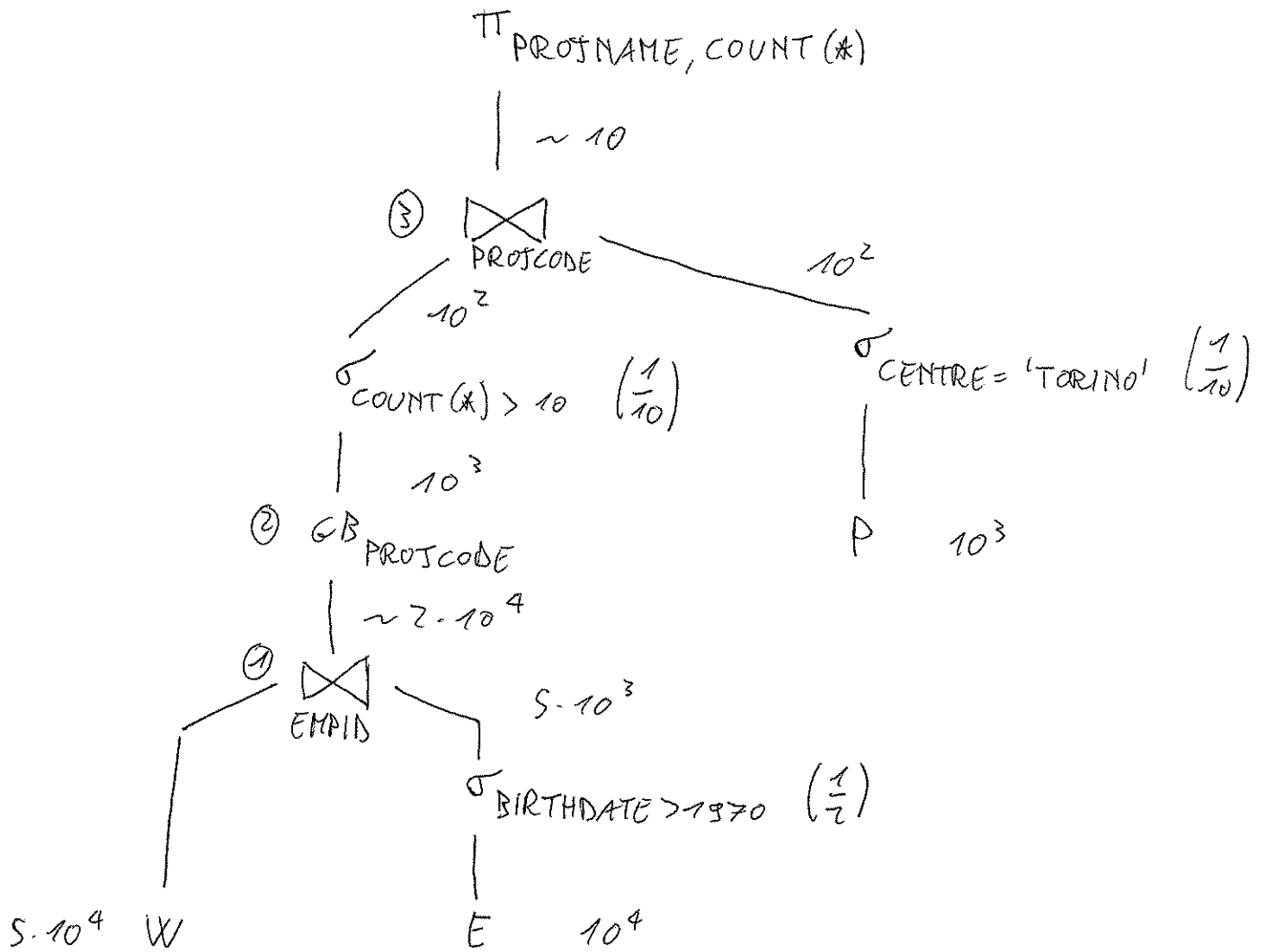
③ GB HASH

## INDEXES

P : SECONDARY HASH INDEX ON CENTRE

$\Rightarrow$  INDEX SCAN + ACCESS BY ROWID

# GB ANTICIPATION



## JOINS + GB

- ① HT
- ② GB HASH
- ③ NL : INNER = ② OR P  
 OUTER = P OR ②