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Advanced Databases Hw-9

1) a) While we are doing the join, we need to lookup for join column so join column must be the key. Therefore, B is the key for hash ripple join.

b) Tuples that satisfy the join condition are

- From R
  - (10, 1)
  - (20, 1)
- From S
  - (1, 30)

When we multiply and sum values (10*30 + 20*30), we get 900. Therefore, estimation will be multiplication of the sizes of R and S with inverse ratios of tuples that are used from R and S.

Query Result: 900 * (|R|/4) * (|S|/5)

c) New tuples will be put into R in the order of hash key so content of R will be

- (10, 1)
- (20, 1)
- (10, 4)
- (2, 10)
- (4, 11)

However, content of S doesn't change. Result is

(10*30 + 20*30 + 10*15 + 10*10) = 1150 and accordingly estimation will change to 1150 * (|R|/5) * (|S|/5)

d) As before, new tuple will be put into S in the order of hash key so new content is

- (1, 30)
- (2, 20)
- (2, 45)
- (3, 12)
- (4, 15)
- (4, 10)

New tuple brings nothing because it doesn't satisfy the join condition however since we have used one more tuple, estimation will change and the size of table S will be divided by 6 instead of 5. Estimation is 1150 * (|R|/5) * (|S|/6).

2) SELECT k, sum(s) FROM (

SELECT C1.cid as k, sum(1) as s FROM Customer C1, Customer DC1 WHERE C1.nation=DC1.nation GROUP BY C1.cid;

UNION

SELECT DC1.cid as k, sum(1) as s FROM Customer DC1, Customer C1 WHERE DC1.nation=C1.nation GROUP BY DC1.cid;

UNION

SELECT DC1.cid as k, sum(1) as s FROM Customer DC1, Customer DC2 WHERE DC1.nation=DC2.nation GROUP BY DC1.nation;

) GROUP BY k;

3)

time	x	y	AVG(measurements)
1:00	1	1	21
1:00	1	2	98
1:00	1	NULL	59.5
1:00	2	1	19
1:00	2	2	0
1:00	2	NULL	9.5
1:00	NULL	1	20
1:00	NULL	2	49
1:00	NULL	NULL	34.5
2:00	1	1	21
2:00	1	2	80
2:00	1	NULL	50.5
2:00	2	1	60
2:00	2	2	81
2:00	2	NULL	70.5
2:00	NULL	1	40.5
2:00	NULL	2	80.5

2:00	NULL	NULL	60.5
12:00	1	1	75
12:00	1	2	78
12:00	1	NULL	76.5
12:00	2	1	90
12:00	2	2	79
12:00	2	NULL	84.5
12:00	NULL	1	82.5
12:00	NULL	2	78.5
12:00	NULL	NULL	80.5
NULL	1	1	39
NULL	1	2	85.33
NULL	1	NULL	62.17
NULL	2	1	56.33
NULL	2	2	53.33
NULL	2	NULL	54.83
NULL	NULL	1	47.67
NULL	NULL	2	69.33
NULL	NULL	NULL	58.5