MySQL - RDBMS

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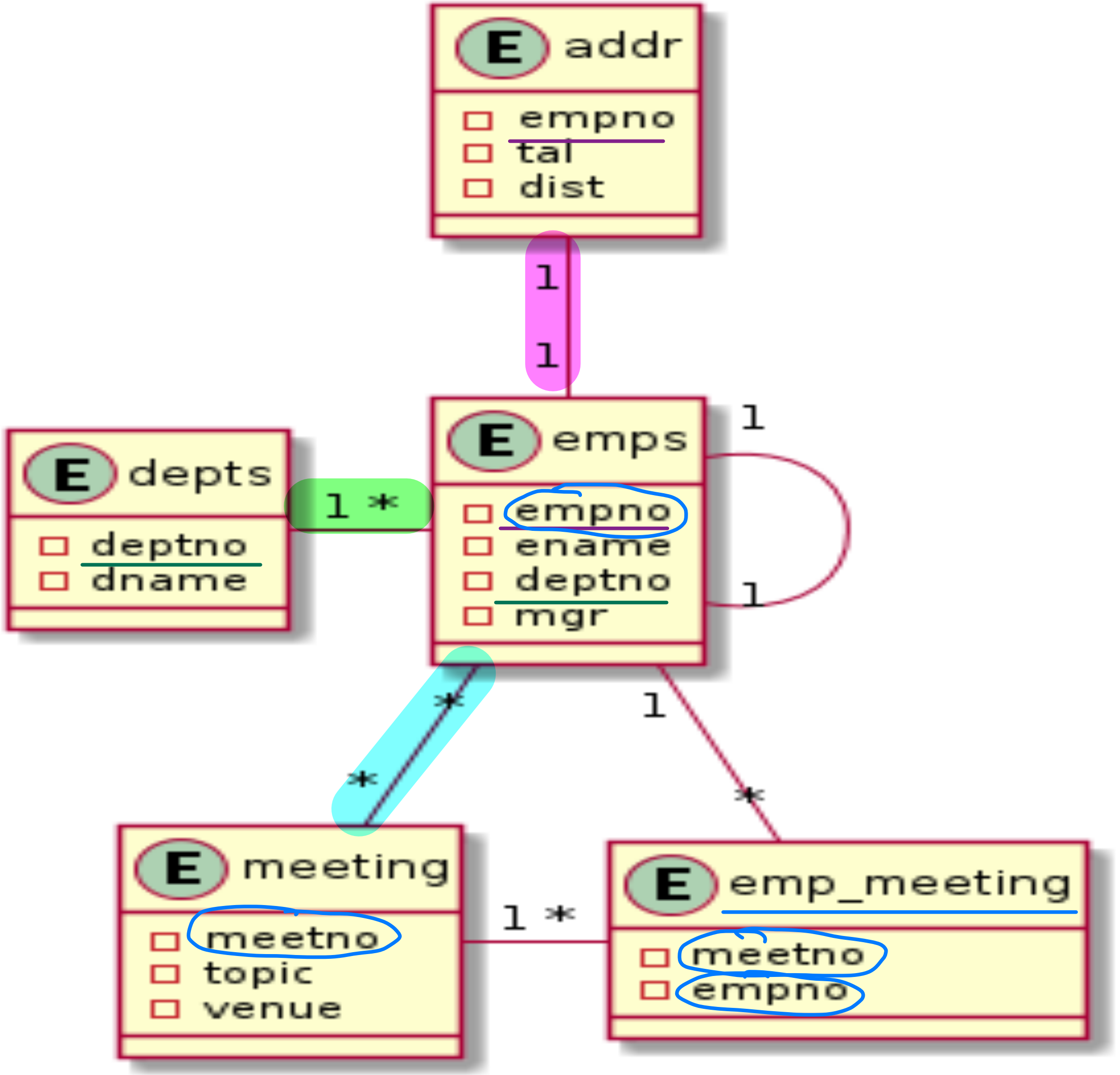
HAVING clause

- HAVING clause cannot be used without GROUP BY clause.
- HAVING clause is used to specify condition on aggregate values.
- Examples:
  - SELECT deptno, SUM(sal) FROM EMP GROUP BY deptno HAVING SUM(sal) > 9000;
- Syntactical Characteristics: individual row. WHERE clause can be used on any column in the table.
  - WHERE clause executed for each record; while HAVING is executed for each group.
  - HAVING clause can be used to specify condition on group fn or grouped columns.
  - However using HAVING to specify condition of group col reduce the performance. Use WHERE clause for the same.
- Examples:
  - SELECT deptno, SUM(sal) FROM EMP GROUP BY deptno HAVING deptno = 20;
  - SELECT deptno, SUM(sal) FROM EMP WHERE deptno = 20 GROUP BY deptno;
- We may use GROUP BY with WHERE, ORDER BY & LIMIT.

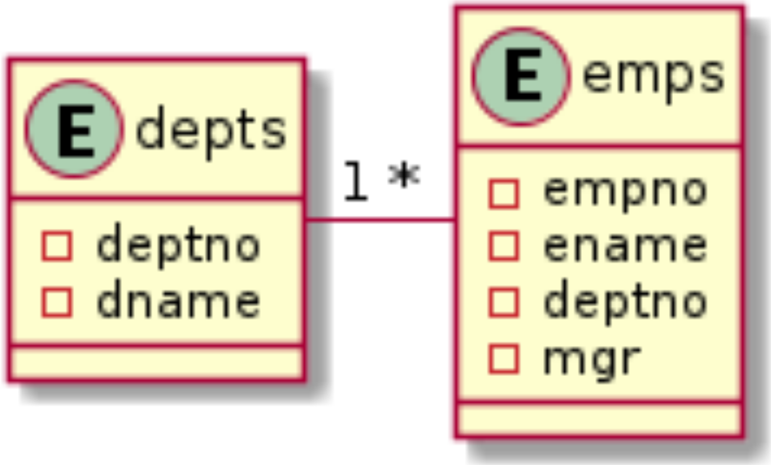
Entity Relations

- To avoid redundancy of the data, data should be organized into multiple tables so that tables are related to each other.
- The relations can be one of the following
  - One to One
  - One to Many
  - Many to One
  - Many to Many
- Entity relations is outcome of Normalization process.



SQL Joins

- Join statements are used to SELECT data from multiple tables using single query.
- Typical RDBMS supports following types of joins:
  - Cross Join
  - Inner Join
  - Left Outer Join
  - Right Outer Join
  - Full Outer Join
  - Self join



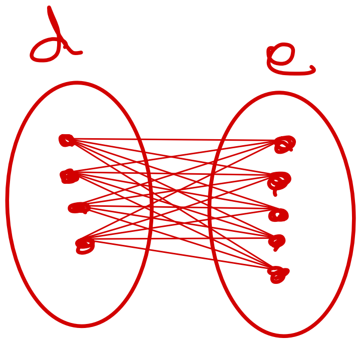
Cross Join

dept List

deptno	dname
10	DEV
20	QA
30	OPS
40	ACC

empList

empno	ename
1	Amit
2	Rahul
3	Nilesh
4	Nitin
5	Sarang



- Compares each row of Table1 with every row of Table2.
- Yields all possible combinations of Table1 and Table2.
- In MySQL, The larger table is referred as "Driving Table", while smaller table is referred as "Driven Table". Each row of Driving table is combined with every row of Driven table.
- Cross join is the fastest join, because there is no condition check involved.

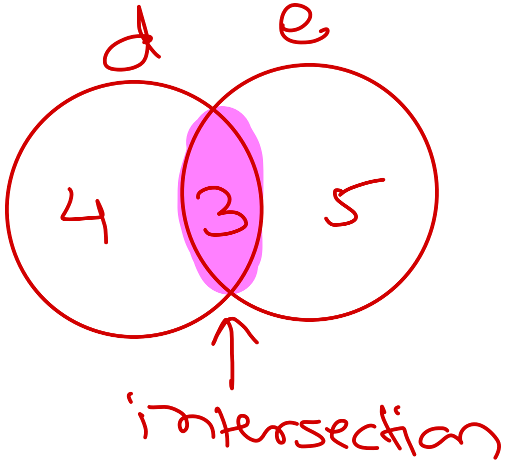
outer loop

inner loop

Inner Join

deptno	dname
10	DEV
20	QA
30	OPS
40	ACC

empno	ename	deptno
1	Amit	10
2	Rahul	10
3	Nilesh	20
4	Nitin	50
5	Sarang	50

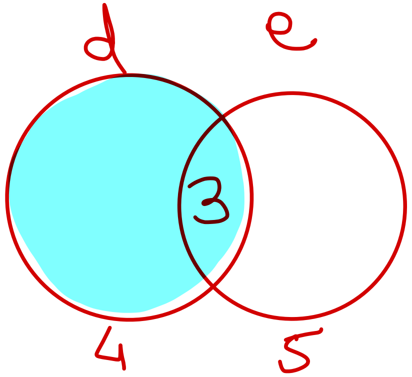


- The inner JOIN is used to return rows from both tables that satisfy the join condition.
- Non-matching rows from both tables are skipped.
- If join condition contains equality check, it is referred as equi-join; otherwise it is non-equi-join.

Left Outer Join

deptno	dname
10	DEV
20	QA
30	OPS
40	ACC

empno	ename	deptno
1	Amit	10
2	Rahul	10
3	Nilesh	20
4	Nitin	50
5	Sarang	50

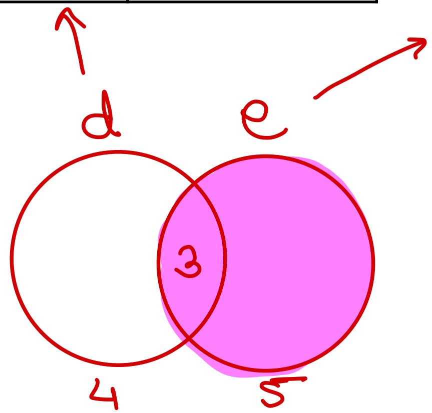


- Left outer join is used to return matching rows from both tables along with additional rows in left table.
- Corresponding to additional rows in left table, right table values are taken as NULL.
- OUTER keyword is optional.

Right Outer Join

deptno	dname
10	DEV
20	QA
30	OPS
40	ACC

empno	ename	deptno
1	Amit	10
2	Rahul	10
3	Nilesh	20
4	Nitin	50
5	Sarang	50



- Right outer join is used to return matching rows from both tables along with additional rows in right table.
- Corresponding to additional rows in right table, left table values are taken as NULL.
- OUTER keyword is optional.

Thank you!

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