Week 8 Notes

Note | w.r.t = with respect to

Normal Forms

- 1st normal form | 1NF
- 2nd normal form | 2NF
- 3rd normal form | 3NF
- Boyce-Codd normal form | BCNF The higher the normal form the less redundancies

1st Normal Form

A relation is in normal form if all attributes are atomic Usually every table will be in 1st normal form 1NF

> Every relation generated from ERD will be in first normal form

Non-Key Attributes

- Any attributes of relation R which are not part of **any** candidate key of R

Partial Dependency

- X->Y is a partial dependency if X is a subset of some candidate key

> We can then say that Y is partially dependent on the candidate key

2NF

A relation is in 2NF if there is no non-key attribute in R which is partially dependant on a candidate key of R

Transitive Dependency

Let X -> Y be an FD that holds for relation R. We say that X->Y if X->Y is not a partial dependency and X is not a super key

3NF

A relation is in 3NF if the relation is in 2NF and there iff for every non-trivial FD -> X-Y either X is a superkey of R or Y is a set of key attributes

Normalising to 2NF

B->D Partial Dependency

- Create a new relation (B,D)
- Create a new relation with B and all remaining attributes R1.B is a foreign key to R2.B
- Reinstate FD's on the new relations

Normalising to 3NF

Normalise the tables to 2NF If there is a non trivial FD X->Y that violates the definition of the normal form, then decompose the table into two One contains X,Y , the other contains X and all other attributes

Step by Step Approach to Table Normalisation

1NF -> 2NF | Remove Partial Dependencies 2NF -> 3NF | Remove transitive Dependencies 3NF -> BCNF | Remove functional dependencies where LHS is not a SK