A.I.S.S.M.S
INSTITUTE OF INFORMATION TECHNOLOGY
Kennedy Road, Near R.T.O. Pune - 411001.

f-46

Assignment-4

Q.1 write a short note on

- 1NF

A relation is in 1NF if
- All attributes have atomic (indivisible) values
- There are no repeating groups or arrays

Ex:- (Not in 1NF)

student	courses
John	maths, physics

in 1NF

student	course
John	math
John	physics

- 2NF (second Normal form)

A relation is in 2NF if
- It is already in 1NF.
- No partial dependency exists - i.e. non-key attributes depend on the whole primary key (Relevant for composite keys)

fix:- move the partially dependent attributes to a seperate table.

- 3NF (Third normal form)

- A relation is in 3NF if
- It is already in 2NF

There is no transitive dependency
Remove such dependency by creating new tables

Q. Explain in brief
4nf:-
- A relation is in 4nf if
  - It is in BCNF and
  - It has no multivalued dependencies

multivalued depend:- when one attribute in a table independtly determine multiple values of another attribute.

Ex:- A person can have multiple phone no. and multiple email address independtly.

person	phone	Email
Jayesh	1234567890	jayesh@gmail.com
Jayesh	2135671891	jay@gmail.com.

This lead the unnessary data duplication.

BCNF (Boyce- Normal form)
- A relation is in BCNF if
  - It is in 3NF, and
  - for every functional dependency ($X \rightarrow Y$). X is a super key

main focus: Eliminate anamolies caused by functional dependencies where the determinant is not a super key.
Their is functional dependency issues that BCNF resolved by decomposition.