

MOHANBABU UNIVERSITY

Sree Sainath Nagar, Tirupati 517102

**(22CS102005) Database Management Systems**

**Assignment Tasks**

1. Design and analyze an ER Model for the following use case.
2. Insurance Management System Database
3. Online job portal database
4. Online examination system database
5. Online quiz management database
6. Advertising Agency Database System
7. All-in-one Online Reservation System
8. Implement Data Definition Language commands -Create, Alter, Drop, Truncate and Rename.
9. Implement Data Manipulation Language commands - Insert, Select, Update, and Delete.
10. Implement Single Row functions - Character, Numeric and Date functions.
11. Implement various types of integrity constraints - NOT NULL constraint, DEFAULT constraint, UNIQUE constraint, PRIMARY key, FOREIGN key, CHECK constraint.
12. Construct PL/SQL block for the following:
    1. To determine whether a number is palindrome
    2. To determine whether a number is an Armstrong number
    3. To find greatest of three numbers
    4. To display Fibonacci series
    5. To print Sum of n numbers
13. Normalize the following schema, with given constraints, to 4NF.

Books (accessionno, isbn, title, author, publisher)

Users (userid, name, deptid, deptname)

accessionno → isbn

isbn → title

isbn → publisher

isbn →→ author

userid → name

userid → deptid

deptid → deptname

1. Consider the following set F of functional dependencies on the relation schema (A, B, C, D, E, G): A → BCD

BC → DE

B → D

D → A

Compute B+.

Prove (using Armstrong’s axioms) that AG is a superkey.

Give a 3NF decomposition of the given schema

Give a BCNF decomposition

1. Suppose that we decompose the schema R = (A, B, C, D, E) into

(A, B, C)

(A, D, E).

Show that this decomposition is a lossless decomposition if the following set F of functional dependencies holds:

A → BC

CD → E

B → D

E → A

1. Give a lossless decomposition into BCNF of schema R of Exercise 3.
2. Consider the following set F of functional dependencies on the relation schema (A, B, C, D, E, G): A → B

BC → E

ED → A

a. List all keys of R

b. Is R in 3NF?

c. Is R in BCNF?