**Higher National Diploma in Information Technology**

**Database Management Systems**

**Year 1 Semester 2 – 2020**

**Tutorial 03 –Structural Constraints using Min Max Notation**

Write the (min, max) values for the following scenarios.

(1,n)

Mother

Children

Has

a)

(1,1)

b)

Person

Vehicle

Has

(1, 1)

(0,n)

c)

(0, n)

(1, n)

Doctor

Patient

treat

d)

(1,n)

(1,1)

manage

CEO

company

Draw the ER diagram and write the (min,max) notation for following scenarios.

1. A book is identified by bookID. Title and published year are also stored about a book. A book is written by one or more authors. An author can write many books. All books are written by some author. All authors have written at least one book. Author ID, name and country are stored about an author. Author ID is the primary key.

Book

Author

writeBy

(1,n)

(1,n)

1. A member can borrow many books. Some members may not have borrowed any books. Book can be borrowed by many members. Some books may never be borrowed by a member. MemberID is the primary key of member.

Book

Member

borrowBy

(0,n)

(0,n)

1. A vehicle is identified using RegistrationNumber. A customer is identife using NIC. A customer can hire one or more vehicles. All customers have hired at least one vehicle. A vehicle can be hired by many customers at different times. Some vehicles may never be hired.

sam

Customer

Vehicle

hire

(1,n)

(0,n)

nimal