

Objectives

1. Relational Databases
2. Converting ER Diagram to Relational Schema
3. HSQLDB : Database Management System
4. SQL : Data Definition Language : DDL

Practical Work

Part 1:

A **Relational Database** is a collection of **Tables** for storing data. Tables have a relationship between others using either: **Attributes. Tables**

Examples of Relational **Database Management System(RDBMS)**: Access, MySQL, MSQL, HSQLDB

Relational Schema Example:

Persons(personid , name, lastname, email)
 Phones (phoneid , personid, phone)
 Countries(countryid , name, code)
 LivesRel(Livesrelid , personid, countyid)

name, lastname, are **Attributes**

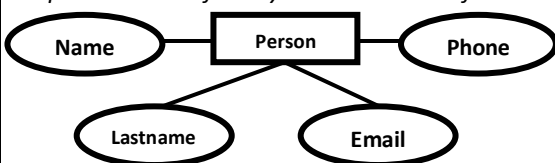
personid, phoneid... are **Primary keys**

Persons, Phones, Countries are **Tables**

Part 2:

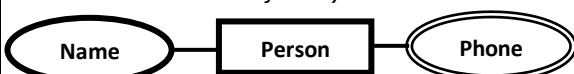
Entity of ER diagram → **Table**

Simple Attribute of Entity → **Attribute** of a table

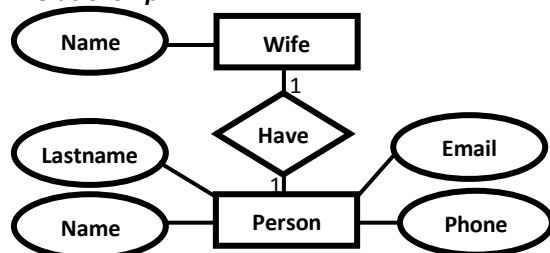


Persons(personid , name, lastname, email)

Multivalued Attribute of Entity → **Table**



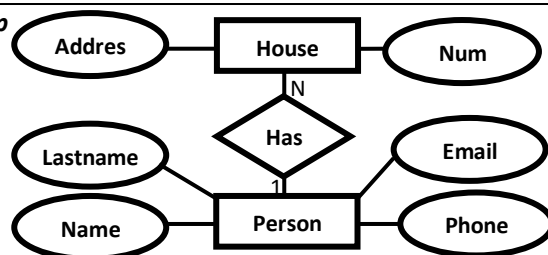
Persons(personid , name, lastname, email)
 Phones (phoneid , **personid**, phone)

1:1 Relationship

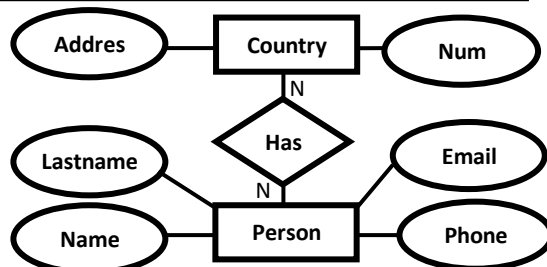
OR

Persons(personid , name, lastname, email)
 Wife (wifeid , name , **personid**)

Persons(personid , name, lastname, email , **personid**)
 Wife (wifeid , name)

1:N Relationship

Persons(personid , name, lastname, email)
 House(houseid , address, num , **personid**)

N:N Relationship

Persons(personid , name, lastname, email)
 Countries(countryid , name, code)
 LivesRel(Livesrelid , **personid**, countyid)

Part 3:

Download the HSQLDB from the address below:

<http://www.learnadb.com/down/hsqldb.jar>

Part 4:

SQL : Structured Query Language

DDL Data Definition Language for Creating and updating tables.

The main command is : CREATE

1. Open HSQLDB
2. Execute the following SQL command

```
CREATE TABLE Person(
  personid int,
  name varchar(20),
  email varchar(20),
  primary key(personid)
);
```

Homework

For the ER Diagrams of TP 3

1. Write down the Relational Schemas (Hospital, University, Voting System...)

Questions

Explain the following Terms:

1. VARCHAR(100)
2. CHAR(100)
3. AUTO_INCREMENT
4. PRIMARY KEY