DATABASE MIDTERM PREPARATION

1) What is Database Management System? Why it is a general purpose system?

A database management system (DBMS) is a software tool that makes it possible to organize data in a database. The ultimate purpose of a database management system is to store and transform data into information to support making decisions.

2) Give a brief and clear definition of 'redundancy'.

If you store the same data item more than once in a database, that is data redundancy. In theory you should only store the same item once for maximum efficiency.

3) Primary, candidate and foreign keys: what are they? Can you provide an example?

Primary Key: A primary key is a special relational database table column designated to uniquely identify all table records. A primary key's main features are: It must contain a unique value for each row of data. It cannot contain null values.

Candidate Key: A candidate key is a combination of attributes that can be uniquely used to identify a database record without referring to any other data. Each table may have one or more candidate. One of these candidate keys is selected as the table primary key.

Foreign Key: A key that is used to establish and enforce a relation between data in different tables. Also, it is a primary key for another table.

4) Give a brief and clear definition of 'weak entity' and 'partial key'. Can you make an example?

Weak Entity: In a relational database, a weak entity is an entity that cannot be uniquely identified by its attributes alone. An entity that is dependent on another entity.

Partial Key: Specifies a key that that is only partially unique. Used for weak entities. And it is part of a key - some proper subset of the key attributes.

Example: A weak entity type is one whose primary key includes some attribute(s) that reference another entity. In other words a foreign key is a subset of the primary key. Therefore the entity cannot exist without its parent.