**STW104KM Enterprise Information Systems**

**Tutorial Activity – Week 3 / Week 4**

1. Problem Description:

Nepal Army operates a number of search and rescue helicopter bases located across the Nepal. A unique number identifies each search and rescue base. The address and contact number for each base are also recorded. Each base employs at least one or more senior helicopter pilots and each senior helicopter pilot belongs to only one base. A senior helicopter pilot may pilot one or more helicopters or may not pilot any helicopter. Information such as number, name, nationality and contact number are stored for each senior helicopter pilot. Each helicopter has a unique registration code, name and make. A helicopter needs at least one senior pilot to be flown. Whenever a senior pilot flies a helicopter on a rescue mission the date and location of the rescue mission associated with the helicopter flight are also recorded.

**Task 1:** Identify main entities for this problem.

**Task2:** For each entity identify the possible attributes and indicate the identifier for each entity.

**Task3:** Identify the main relationships between the entities and their cardinalities.

**Note** that you can either draw the ERdiagram by hand on paper, using MSWord, or any software package you want to use.

1. As a Database Administrator at Coventry NHS hospital, you were asked to produce an Entity-Relationship Diagram (ERD) for their Hospital Management Database System. The following are the requirements for the system:

* The hospital has many departments,
* Each department has name and set of employees,
* Each employee can belong to many departments,
* Each employee has its own name, position (such as surgeon, physiotherapist, radiologist), skill level and set of job records (such as X-ray, surgery, blood test, etc.),
* Manager is also an employee who manages the department and employees,
* Each department has its own manager,
* Each patient is admitted to the hospital and has its own record,
* Record of each patient is stored in hospital database.

Based on the above requirements, produce an ERD showing the following items:

1. Entities, (5 marks)
2. Attributes, (8 marks)
3. Relationships and (4 marks)
4. Cardinalities. (3 marks)
5. The following are the requirements for an Easyjet Airline Management and Reservation System:

* Airport authority manages several airlines,
* Flights are managed by individual airlines,
* Each flight can have unique flight number, registration number and quantity of passengers it can accommodate (i.e. capacity),
* Each flight belongs to single airline,
* Details of the passenger flight reservation is stored in the database,
* Flight reservation details is stored in a database of individual airline which in turn is managed by the manager,
* Passenger must provide details such as airline name, date and time of travel, name, email address, etc.,
* Upon payment request, the database issues booking confirmation to passengers containing unique confirmation number, seat number, flight number, time of departure, etc.

Draw an Entity Relationship Diagram showing the following items:

1. Entities,
2. Attributes,
3. Relationships and
4. Cardinalities.
5. Match the following terms and definitions:

|  |  |
| --- | --- |
| **Data** | Data placed in context or summarised. |
| **Constraint** | Facts, text, graphics, images, etc. |
| **Repository** | A structured, step-by-step approach to systems development. |
| **Metadata** | Organised collection of related data. |
| **Information** | Centralised storehouse for all data definitions. |
| **User View** | Separation of data description from programs. |
| **Database Management System** | A rule that cannot be violated by database users. |
| **Data Independence** | Logical description of portion of database. |
| **Database** | A software application that is used to create, maintain and provide controlled access to user database. |
| **Systems Development Life Cycle (SDLC)** | Includes data definitions and constraints. |
| **Prototyping** | A comprehensive description of business data. |
| **Enterprise Data Model** | A rapid approach to systems development. |

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