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THE OPEN UNIVERSITY OF SRI LANKA
DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
B.Sc. DEGREE PROGRAMME : LEVEL 04
NO BOOK TEST I - 2013 / 2014
CPU 2241: DATABASE MANAGEMENT SYSTEMS
Duration: One Hour

Date: 24-02-2014 Time: 10.30 a.m - 11.30 a.m

Answer ALL Questions

QUESTION 01

1. What are the **2** main conditions an entity should satisfy to be a **Weak Entity**?
2. Carefully read the following scenario.

   A research organization wants to keep information about the research they are doing and the publications made for completed research projects. Following are the details of their process and as a student who is doing Database Management Systems, you are asked to build a conceptual model for the given system.

   A registered **Researcher** can start working on a new or ongoing **Research Project**. Once a researcher involves in a research project his **Project Joined Date** should store appropriately. A researcher can complete a research project or he can left at the middle of a project. Therefore the **Project Left Date** of a researcher should also be kept. One researcher can involve in several research projects and a research project should have at least one researcher. A research project can belong to many **categories** *(For example there can be research that can categorize under both computer science and mathematics).* There can be categories with no research projects yet.

   Each researcher has given an **ID** to identify them. Apart from that, the organization keeps **researcher name**, **address**, **sex** and the **degree information**. A researcher may hold several degrees.

   A research project should have a **project id**, **project name**, **project start date** and a **project end date**.

   A Category should have an **ID** and a **category name**.

   After completing a research project, a researcher may publish a **publication** on that research. One research project can have many publications and it is not a must that a research project to have a publication. A publication can be made only on one research project.
   A publication should have an **ID** and a **title**.

   If a researcher publishes a publication, then the **published date** of that publication should also be kept. This **date** should be stored separately as **day**, **month**, and **year**.

(a) To draw the ER Diagram, identify entities and their attributes. Draw each entity with its attributes using the ER notation(Use chen notation).When drawing, Use standard naming conventions you learned.

(b) Draw the complete ER diagram with proper relationships.

- You don't need to show all the attributes of an Entity (Because you showed them in the previous question). Show only the primary key of each Entity.
- Show the proper connectivities of the relationships.
- Show the cardinalities of each entity with each relationship.
- Represent the relationship's participation as Optional or mandatory.
- Use standard Chen notation to draw the ER Diagram.