

INFO364 – Fall 2016
Assignment 1 (PE1)
Due Date: 9/14/2016

Problem 1

Draw an ER schema diagram for the database that is to keep track of information for a manufacturer. Assume that the following requirements were collected:

- I. Each Vendor supplies a specify quantity (SUP_QTY) of a given Raw Material on a specific date (SUP_DATE) at a specific unit price (SUP_PRICE). Some Vendors supply multiple Raw Materials, and some Raw Materials are supplied by multiple Vendors.
- II. Each Product is made using one or more Raw Materials. Some Raw Materials are used in the manufacture of several Products. For each unit of a given Products, the quantity (U_QTY) of each Raw Material that is used is also recorded.
- III. Products are produced in Batches at Work Centers. Typically there would be multiple Batches of a given Product, with each Batch being for a single Product. Similarly there would be multiple Batches produced at each Work Center, with each Batch being produced at a specific Work Center.
- IV. Each Batch has a batch number (BHNO) but it is possible that multiple batches could have the same BHNO, and so to uniquely identify a Batch the associated product number (PNO) has to be specified.
- V. Each Employee has at least one Skill, with some having multiple Skills. At a given point in time it may be possible that for some Skills there is no current Employee who has that Skill.
- VI. At least one Skill is used in the development of each Product, with some Skills being used In the development of several Products.
- VII. Every Work Center has at least one Employee who is assigned to it. Some Employees are assigned to different Work Centers in different periods (ASGN_START, ASGN_END).
- VIII. Some of the Employees are Managers while some of the others are Technicians. The date (PROM_DATE) on which an Employee was promoted to be a Manager is recorded along with his/her Bonus if production targets are exceeded; the pay grade (PAYGRADE) is recorded for each Technician but not for Managers.
- IX. A single Manager supervises the production of each Batch of a given Product. One or more Technicians are associated with the production of each Batch of a given Product. Some Managers supervise the production of several Batches but some recently appointed Managers might not have supervised the production of any Batch.

Problem PE1.2

Draw an EER schema diagram for the database that is to keep track of information for an art museum. Assume that the following requirements were collected:

- The museum has a collection of *Art_Objects*. Each *Art_Object* has a unique *Id_Number*, an *Artist* (if known), a *Year* (when it was created, if known), a *Title*, and a *Description*.
- *Art_Objects* are classified as: *Painting*, *Sculpture*, *Statue*, or *Other* (to accommodate objects that are neither *Painting* nor *Sculpture* nor *Statue*).
 - A *Painting* has a *Paint_Type* (oil, watercolor, etc.), a *Material* on which it is drawn on (paper, canvas, wood, etc.), and *Style* (modern, abstract, etc.). Each *Material* has a *Description* and a unique *Name*.
 - A *Sculpture* or a *Statue* has a *Material* from which it was created (wood, stone, etc.), *Height*, *Weight*, and *Style*.
 - An *Art_Object* in the *Other* class has a *Type* (print, photo, etc.) and *Style*.
- *Art_Objects* are also classified as either *Permanent_Collection* (objects that are owned by the museum) or *Borrowed*.
 - Information captured about objects in the *Permanent_Collection* includes *Date_Acquired*, *Status* (on display, on loan, or stored), and *Cost*.
 - Information captured about *Borrowed* objects includes the *Collection* from which it was borrowed, *Date_Borrowed*, and *Date_Returned*.
- Information describing the *Country of Origin* and *Epoch* (Renaissance, Modern, Ancient, and so forth) is captured for each *Art_Object*. Each *Country of Origin* has *Region* and a unique *Name*. Each *Epoch* has *Description*, *Year Range* and a unique *Name*.
- The museum keeps track of *Artist* information, if known: *Name*, *DateBorn* (if known), *Date_Died* (if not living), *Country_of_Origin*, *Epoch*, *Main_Style*, and *Description*. The *Name* is assumed to be unique.
- Different *Exhibitions* occur, each having a *Name*, *Start_Date*, and *End_date*. *Exhibitions* are related to all the *Art_Objects* that were on display during the *Exhibition*.
- Information is kept on other *Collections* with which the museum interacts, including *Collection_Name* (unique), *Collection_Type* (museum, personal, etc.), *Description*, *Address*, *Phone*, and current *Contact_Person*.