CS579
Project Assignment – Part 1

Due: 9/28

Project will be performed by a team of at most two students.

You are required to design a conceptual model of the database system whose requirements specification is given below. Use the ER model that is described in our textbook. Show (*min*, *max*) constraints on all relationship types in your ER diagram. If any part of the requirements is incomplete, inconsistent, or ambiguous, make your own assumption and design a model based on this assumption. You need to clearly state your assumptions in your report.

Requirements

This is a purchase order processing database of Boston Papers Company. The company produces papers and sells them to office supply retail stores. The following is a description of the order processing database and other relevant information.

1. The customers of Boston Papers Company are retail office supply stores (e.g., Officemax, Officedepot, Staples, Walmart, Target, etc.). Each customer has one headquarter and one or more branch stores.
2. For each customer headquarter, we want to store the name of the customer ((e.g., Officemax, Officedepot, Staples, Walmart, Target, etc.), address, and phone number.
2. For each branch store of a customer, we want to keep a branch number, address, and phone number. A branch number is an integer starting with 1 and is not unique among all branch stores. It is unique only among those that belong to the same retail store. For example, Officemax has three branch stores and their branch numbers are 1, 2, and 3; Officedepot has two branch stores and their branch numbers are 1 and 2.
3. Boston Papers produces many different types of papers and each type of paper has a unique type number, size, weight, and unit price.
4. An order is issued by a retail store headquarter. For each order, we want to keep the following information.
   (1) A unique order number
   (2) The retail store who issued the order
   (3) Order date and order amount (in Dollars)
   (4) The employee(s) of the Boston Papers who handle the order

5. An order consists of one or more suborders. Each suborder has a suborder number. This suborder number is an integer starting with 1 and is not unique among all suborders. It is unique only among those that belong to a particular order. A suborder is shipped to exactly one branch store. A suborder includes one or more paper types. In addition to the suborder number, for each suborder, we want to keep the following information in the database:
   (1) The branch store the suborder is shipped to
   (2) Required shipping date
   (3) Actual shipping date
   (4) Quantity of each paper type included in the suborder

6. For each employee in the Boston Papers, we want to keep a unique employee ID, name, salary, address, classification, and the date of birth.

7. An order is handled by at least one employee and at most two employees, and an employee handles at most five orders.

The above description is itemized for the sake of description purpose only. You need to read the description carefully and decide whether to model an object/concept as an entity type, a relationship type, or an attribute.

Deliverables

- Documentation
  - A cover page showing the course number, course title, assignment number (e.g., Project – Part 1), names of team members, due date, and date submitted.
  - Show all your entity types in following format.

    Entity Types (example)

		Attribute			
Name	Description	Name	Description	Multivalued	Derived

EMP	if needed
	…
		Ssn{K}
		Name {K}
		  Fname
		  Minit
		  Lname
		…
			if needed
			…
			…
				N
				N
					N
					N

DEPT	…	Dept_no{K} Dept_name {K} … Num_employees	… … …	N N … N	N N … Y

    Note: Here, we assume Name is a composite key.

    In the table, use {K} for a key. If there is a weak entity type, indicate the partial key of the weak entity type with {WK}. The component attributes of a composite attribute must be indented.

  - Show all your relationship types in the following format.

    Relationship Types (example)

		Participating Entity Types		
Name	Description	Name	Structural constraint	Attribute
WORKS_FOR	if needed …	Emp Dept	(1, 1) (1, n)	none
MANAGES	…	Emp Dept	(0, 1) (1, 1)	Mgr_start_date
…	…	…	…	…

- ER diagram.
  - When drawing an ER diagram you may use our textbook's notation or UML notation.

- You must draw a diagram using a software (i.e., you must not draw an ER diagram manually).
- You may use any software to draw an ER diagram.

Include all documents and the ER diagram in a single file (if there are multiple files, then combine them into a single archive file, such as a zip file), name it as *LastName_FirstName_p1.ext*, where *ext* is an appropriate file extension, such as *docx*, *pdf*, or *zip*, and upload it to Blackboard.