

## Part 2- Conceptual and Logical Design (30 points)

### a) Conceptual Design (15 points)

Consider the following requirements:

Kazuma is a Furniture store in Vancouver. Kazuma get its raw items from a supplier. These items are assembled then form a product. Data needed for supplier are supplier number, supplier name, date registered and telephone. For items the store keeps the item number, item name, model and color. A supplier may supply many items and each item is supplied by any number of suppliers. Each item must be used to assemble at least one Product or may be used in many products. Each product must use one or more items. The company keeps the product number, product name, date built and model. The company would also like to keep track of the quantity of items used with each product.

The supplier also sends shipments. A shipment should only have one supplier. Shipment data are shipment number, shipment date and transport type. A shipment must include at least one item, but an item can be included with several shipments.

A customer makes an order for products. Customer data needed are customer number, customer name, city, and telephone. Each order should only be submitted by one customer. Order data needed are order number, product number and quantity. An order must request for at least one product. A product can be in many orders. The company would like to keep track of the quantity of products in each order.

Draw the ERD diagram and show the following:

1. Entities of the problem domain
2. Attributes in the problem domain
3. The relationships and relationship descriptions
4. Primary keys

Note: You can draw the diagram on paper and scan or take a clear a picture of it and submit.

### b) Logical Design (15 points)

Using the table mapping techniques, convert the ERD diagram into tables. Use the textual format (Example: Student( Studno, Studname, GPA)). Normalize the tables up 3<sup>rd</sup> normal form. Identify the primary and foreign keys. You can also add additional logical constraints if you think it is necessary. Please type this in word and convert it to pdf before submission.

Note: Even if you drew an ERD design that is already complies to the logical design, you still need to convert it into a textual format for consistency purposes. Put the your ERD and logical design in one pdf file.