

## CS2102 Project (Part 1)

The objective of this part of the team project is for you to apply what you have learned in class to design an ER diagram for the following application.

### 1. Application Description

Adazal is an online shopping website similar to Lazada. The site hosts a number of shops, each of which has an ID and a name. Each shop sells a number of products, each of which has an ID, a name, a category, a manufacturer, a description, a price, and a quantity that indicates its availability in the shop. Each manufacturer has an ID, a name, and a country. Each category has an ID and a name, and may have a parent category. For example, the category “vacuum cleaner” has a parent category “home appliance”.

Adazal has a number of employees. Each employee has an ID, a name, and a monthly salary.

Adazal allows users to place orders in the shops that it hosts. Each user has an ID, a name, and an address. An order involves one or more products from one or more shops, and may involve multiple instances of the same product. The order has a shipping cost for each product, and it has a shipping address. The total cost of the order is also recorded. After an order is made, the user can track the status of the ordered products on Adazal. Initially, the status of each product in the order is shown to be “being processed”. After the shop (that sells the product) ships the product, the status of the product will be changed to “shipped”. In addition, an estimated delivery date will be shown to the user. Once a product is delivered to the user (as reported by the courier), the status of the product is changed to “delivered”. Within 30 days from the delivery date of a product, the user may return the product for a refund. In case that multiple instances of the same product are ordered, the user may return any number of the product instances received.

For each order with at least one refund, Adazal associates the order with a list that records the details of each refund request (e.g., product ID, number of instances). Each refund request is handled by an Adazal employee. For each request, Adazal records the date on which the request is made. If the request is accepted, Adazal records the date of acceptance; otherwise, Adazal records the reason for refund rejection, as well as the date of rejection.

Each time a user purchases a product from a shop, he/she is allowed to rate and comment on the product once. There are five possible ratings: 1, 2, 3, 4, and 5, with 5 denoting the highest. A user can modify his/her rating and comments at any time, and he/she can also reply to other users’ comments. For each rating/comment/reply made by a user, Adazal keeps track of its revision history (i.e., all historic versions, including deleted ones) for auditing purposes.

Occasionally, Adazal provides selected users with coupons. The coupons are issued in batches (e.g., one week before Christmas). Each batch of coupons has the same validity period and the same coupon reward. In particular, a coupon reward provides users X dollars off an order, as long as the total value of the order is above Y dollars (the value of X and Y vary from batch to batch). The user can choose to apply a coupon when he/she places an order on Adazal; once the coupon is applied, the payment amount of the order will be adjusted according to the coupon award. Note that no two coupons can be applied to the same order. The effects of coupons are ignored during product refunds, i.e., the refund of any product is processed as if no coupon has been applied on the order.

Adazal users are allowed to file various complaints. In particular, if a user has not received a product that has been shown to be “delivered” in an order, he/she can file a complaint to Adazal about the said product and

order. If she is not happy about a certain shop, she can file a complaint about the shop. If he/she finds that a certain user comment (on a product) is spam or uses abusive language, he/she can file a complaint on the comment. After a complaint is filed, the user can check the status of his/her complaint. Each complaint is handled by one Adazal employee. Initially, the status of the complaint is set to “pending”. After the complaint is picked up by an Adazal employee, the status is changed to “being processed”, and the name of the employee is shown. Once the complaint is addressed, its status is changed to “addressed”.

A user may choose to close his/her Adazal account at any point in time. After the account closure, however, all information pertinent to the user (e.g., ID, name, address, orders, comments, ratings, complaints) is still retained by Adazal for auditing purposes. The comments, ratings, and replies made by the user are still visible to other users, just that they will be shown as comments, ratings, and replies from “A Deleted User”.

## 2. Deadline and Deliverables

By 6pm, February 19, 2022, each team is to upload a pdf file named teamNN.pdf, where NN is the team number, to the LumiNUS file folder named ER\_model\_submissions.

The submitted pdf file must be at most **8 pages** and consists of the following contents:

- Project team number & names of team members (on the first page).
- ER data model for the application. If your ER model is too large (spanning more than a page), you may want to include a single-page simplified ER model (with non-key attributes omitted) before presenting the detailed ER model.
- **The relational database schema corresponding to your ER data model, in the form of “CREATE TABLE” statements.**
- Justification for any non-trivial design decisions made.
- List down up to 5 of the application’s constraints that are not captured by the proposed ER data model.
- **List down up to 5 of the application’s constraints that are not captured by the proposed relational database schema.**

For late submissions, upload the pdf file to the LumiNUS file folder named Late\_ER\_model\_submissions. **Two marks (out of ten)** will be deducted for submissions up to one day’s late; submissions late for more than one day will receive zero marks and will not be graded.