

Assignment 1

Aim

The objectives of this assignment include:

- Interpretation, Analysis and Creation of Conceptual Schema
- Translation of Conceptual Schema into Relational Schemas

Task 1 (10 Marks)

Background

Parcel-Go Private Limited is a local company which delivers small, e-commerce parcels. The company needs a database to maintain its records of employee, parcel, vehicle, delivery, etc.

Business Requirements

An employee is identified by a unique employee id. Other attributes include employee name, gender, birth date and office phone number. Every employee is also assigned an email account. Some employees are delivery staff. The additional attributes of the delivery staff include the driving license number (unique), license expiry date and preferred work hours (if any).

A parcel is originated from a merchant. A merchant has a unique name and address. A parcel is identified by a unique parcel code. Other attributes include the merchant, recipient name, address, parcel description, weight, dimension, date/time dispatched (i.e. start delivery), the employee who dispatches the parcel, the delivery staff who delivers the parcel, and the date/time the recipient receives the parcel.

Parcel-Go has a fleet of delivery vehicles. A vehicle is identified by a unique vehicle number. Other attributes include the vehicle manufacturer, model, capacity, and the year in which the vehicle is bought. A delivery staff is allocated a delivery vehicle on a daily basis. Therefore, a delivery staff may be allocated a different vehicle from day to day. The allocation record must include the allocated vehicle, the delivery staff who is allocated the vehicle, the allocation date and the distance travelled on that day,

Periodically, Parcel-Go will invoice each merchant for the parcels delivered in a period. Each invoice has a unique reference number, invoice issue date, amount due, date due, the parcels delivered and the employee who prepares the invoice.

Task 1 Requirements

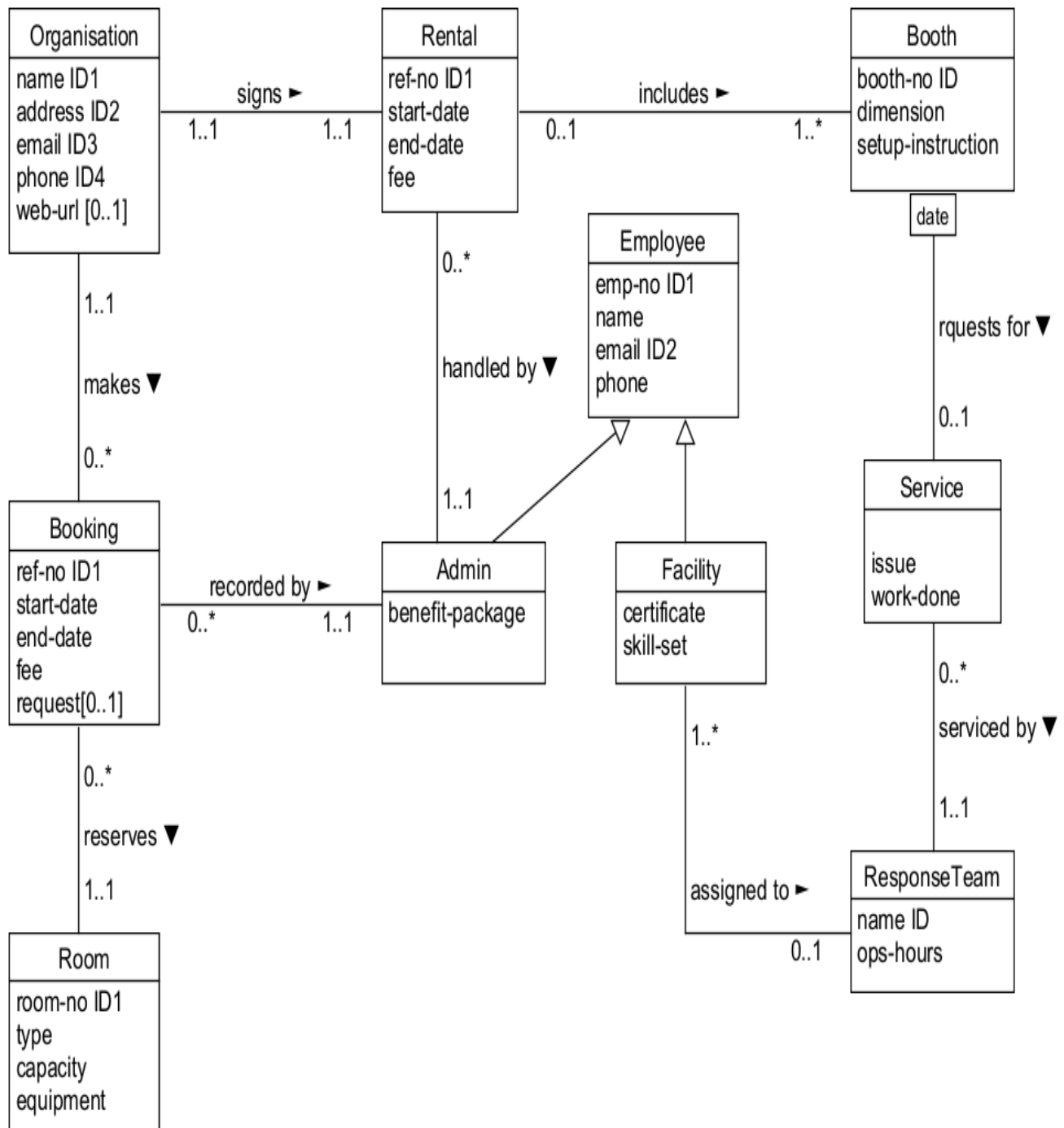
- A) Based on the business requirements stated in the above scenario, use UMLet tool to create a drawing of a conceptual schema in a notation of UML simplified class diagrams. No other notation will be accepted. Hand-drawn diagram will NOT be accepted.
- B) You are not allowed to add attributes (as identifier) or change the attributes stated in the scenario.
- C) *If necessary*, you may include assumptions to justify your design decision if you think the requirements do not provide a clear decision. For instance, you may state

the assumptions which lead you to decide that the association is one-to-one, one-to-many or many-to-many. If you include assumptions in your design, the assumptions must not re-state or contradict the requirements stated in the scenario.

Task 2 (10 Marks)

Background

You have been tasked by your manager to assist with the analysis, design and implementation of a database system for an event organiser to manage the resources. You are to transform the following conceptual schema into a set of relational schemas.



Task 2 Requirements

- A) Transform the above conceptual schema to a set of relational schemas. You are not allowed to add or modify attributes in the conceptual schema. Use the **Association method** to transform generalisation/specialisation.
- B) The relational schemas must be presented in the format described on page 44 of the lecture file: Logical Design.pdf. (Refer to the screenshot below.)

```
CUSTOMER(name, phone, address)
PRIMARY KEY = (phone)

FREQUENT-CUSTOMER(phone, points)
PRIMARY KEY = (phone)
FOREIGN KEY = (phone) REFERENCES CUSTOMER(phone)

ORDERS(order#, odate, phone)
PRIMARY KEY = (order#)
FOREIGN KEY = (phone) REFERENCES CUSTOMER(phone)
```

Submission

- A) Please submit a single PDF file.
- B) Please name your file as: <Your group>_<UOW ID>_<full name>.pdf. For instance, T1_1234567_TanHongEng.pdf
- C) Submission must be uploaded to Moodle before the due date (set on Moodle). NO email submission is allowed.
- D) Late submission penalty (5% per day) will be applied regardless of the reasons: network delay, disconnection, etc. Therefore, you are advised to avoid peak submission period near the submission deadline. This deduction amount is per day including public holidays and weekends. Work more than 4 days late will be awarded a mark of zero.
- E) Re-submission (because of incorrect file included in the original submission) will be treated as late submission if it is submitted after the deadline.