

(Notes: Paper materials are allowed)

A Pet shop wants to build a "Booking Pet hotel service" to meet high demands of pet owners in the Lunar New Year holiday as follows:

1. Manage Rooms and Services:

- The shop provides for pet owners with:
  - o many Rooms, each room has information as: Room ID, Room Name, Size (Small, Medium, Large, Very Large), Type of Room (Standard, Luxury), belongs to Type of Pet (Cat, Dog, Hamster), and has a Cost of one day.
  - o many Services (food, hygiene, healthcare) with different levels and costs. The system stores information of each service as: Service ID, Service Name, Type of Pet, Food, Healthcare, Cost of one day.
- The General Manager (GM) are allowed to insert, delete, and update information about Rooms and Services. Before performing updating operation or deleting operation, the General Manager uses the search function in order to select suitable information.

2. Submit booking requirement:

- Once a pet owner wants to book a room and service for his pet. First, he inputs and submits his booking requirements (via booking requirement form) including Pet Owner Name, Pet Owner Phone, Pet Owner Email, Type of Pet, Room ID, Service, Number of day, Start day, End day, and Other note (if needed). The RoomID is enabled to select on the booking form just in case of available room.
- Pet owner can use search function to find suitable rooms, services, and costs.

3. Process booking requirement:

- After receiving booking requirement, the system sends a notification to staff's working screen. Then, staff confirms the pet owner booking requirement, amount (total of cost), and announces that 10% of the amount must be deposited when contract is signed. If the pet owner accepted and deposited, a contract is created including Contract ID, Date of Contract, Pet Owner ID, Pet ID, Amount, Room ID, Service ID, Number of day, Start day, End day.
- In case of new pet owner or new pet, the system stores information of the new pet owner and new pet. Information of pet owner including Pet Owner ID, Pet Owner Name, Pet Owner Phone, Pet Owner Email. And information of pet including Pet ID, Pet Name, Age, and belongs to a Pet Owner.
- The staff can manage pet, pet owner, and contract information. When updating the pet, pet owner, and contact information, staff can use search function to select suitable information.

4. Manage reports

Moreover, Staff and General Manager can create and manage reports daily, monthly, and on demand.

Note: Staff and General Manager have to login the system before performing offered functions.

**Question 1 (3.0 scores)** Create use case model of the system.

**Question 2 (2.0 scores)** Create activity diagram of the "Process booking requirement" use case.

**Question 3 (2.5 scores)** Create class diagram of the "Process booking requirement" use case.

**Question 4 (2.5 scores)** Create sequence diagram (including: Actor, User Interface object, Controller object, and Entity object) of the "Process booking requirement" use case.