Practical-3

Aim: To study about class and object diagram.

(1). Identify the classes from each case study given here. List all possible attributes and functions of those classes.

1. Online Shopping System The telephone agent uses an order registry and customer catalog to obtain access to an order & a customer respectively. The order registry uses an order number as a qualifier to select particular order instance. A customer catalog uses customer name and phone number as a qualifier to select particular customer. The attributes of an order are the order numbers and time when it is placed. The order consists of many items. An item has item_number, a quantity, unit price. It also has reference to catalog item which represents listing. When an order is cancelled or committed, it cancels or commits each of its items first. When an order's total price method is invoked, the order calls the total price method of each of items and returns the sum.

Class:

Telephone Agent
Order
Item
Customer Catlog
Order Registry
Catlog Item

Attributes:

Name
Id
Salary
Designation
Order name
Item Price
Total Price
Address
Order Date
Add stock

Functions:

Add Order
Cancel Order
Add Item
Cancel Item

2. Airport Boarding • We differentiate between three options for check-in: o Normal check-in with luggage at a normal check-in counter o Expres scheck-in without luggage at a special check-in counter o Automated check-in without luggage at a machine • In addition to the passenger, who represents travelers, there is the check-in representative. The check-in representative is a person who is not the actual passenger, but an agent of the passenger. The check-in representative has the task of performing the check-in with the ticket of the passenger. • The check-in procedure includes submitting the ticket, baggage check-in, seat reservation, and issuing and handing over the boarding pass. • Passengers who only have hand luggage can use express check-in. No baggage check-in is performed. • During boarding, the boarding pass of the passenger is verified at the gate. • Automated check-in is conducted without the help of a check-in clerk, directly at a machine (screen). Baggage cannot be checked in. • The passenger can choose between a normal check-in, automated check-in, and express check-in. The passenger walks to the gate and presents his or her boarding pass. The check-in representative can perform a regular check-in, but is not able to perform express check-in and automated check-in. • If we take a closer look, we notice that a passenger often travels with luggage, which he or she checks in. Baggage transportation is responsible for loading luggage into the airplane. Baggage transportation is carried out by an independent organization, known as a handling agent. Consequently, it is considered an actor, more specifically, an outside service provider. It does not matter for our diagram that individual employees of the partner enterprise perform these tasks. • Ten minutes before a flight leaves, baggage transportation requests a passenger list from passenger services, which includes every passenger who checked in, but did not board the airplane. On the basis of this list all affected luggage will be unloaded again from the airplane. If the flight is an international flight, the customs authorities of the country in which the destination airport is located also request a passenger list.

Class:

Ticket
Check-In-Employee
Lauggeg
Employee
Boarding Pass
Passenger List
Boarding Employee
Baggage Transportation
List of passengers not yet boarding
List of passengers on board

Attributes:

FlightNo
TicketNo
Id

Weight
First Name
Last Name
Contact No
Emp Id
Emp Name
Designation
Seat No
Gate No
Depart Time
Boarding Time
Handling Agent Id

Functions:
Verify Tickets
Checking Passengers
Loading Luggage
Verify Boarding pass
Generate list of passenger not yet boarding
Generate list of passenger on board

3. Course-ware Management System: • Construct the design element for a course ware management system that can be used to manage courses and classes for an organisation that specialize in providing training. • The organisation offers a variety of courses in a variety of areas such as learning management techniques and understanding different software languages and technologies. • Each course is made up of set of topics. • Tutors in the organisation are assigned courses to teach according to the area that is specialized in and their availability.

• The organisation publish and maintain a calendar of different courses and assign tutors every year. • There is a group of Course Administrator in the organisation to manage the courses including course content, assign courses to tutor and define the course schedule. • The training organisation aim to use the Course-ware Management System to get a better control and visibility to the management of courses as also to streamline the process of generating and managing the schedule of the different courses.

Class:
Course Administrator
Topic
Course
Tutor
Student
Course calendar

Attributes:

Topic name
Topic id
Course id
Course name
Name
Id
Date
Time
Enroll no

Functions:

Course name
Manage course
View tutors
Manage topics
Manage tutor information
View topics
Create topics
Remove topics
Modify topics
Create course
Modify course
Create tutor
View tutor information
Edit schedule
View student information

4. Hospital Management System Hospital management system helps in registering information about patients and handles patient's query. A unique ID is generated for each patient after registration. This helps in implementing customer relationship management and also maintains medical history of patient. This system also monitors the doctor appointments, when the ID is generated the patients receives the appointment time and number from the receptionist and accordingly visit the doctor. This system also deals with testing appointments as and when ID is generated the patient receives the appointment time and number and accordingly undergoes the test. It also deals with bed allotments to various patients by checking their ID. It also undergoes various operations by diagnosing the patients. The systems identifies whether the person is a doctor or staff and handles various activities such as draw salary and give salary, also it adds doctor/staff information into database. This system is responsible for handling various other activities like deleting, editing doctor/staff information into the database. As per doctor diagnoses the patient, gives treatment and gives suggestions to patients and prescribe laboratory tests and

medicines. This system also takes care of medical equipment, doctor visit, vitals recording, patient case sheet, diet ordering, blood requisition, transfer information and discharge information, maintenance of wards, inter and intra wards transfers also it generates patient's discharge summary which includes patients health at the time of discharge, medical history, various diagnosis and drug prescriptions, history of patients illness and course in hospital. Patient can pay bill through credit card, cash or Cheque whose information is maintained by this system.

Class:

Doctor
Patient
Room
Department
Receptionist

Attributes:

Id
Name
Department
Room no
Phone no
Age
Doctor id

Functions:

Visit
Visitor record
Make patient sheet
Diet record
Blood report
Discharge info
Pay bill by cash or card
Add department
Delete department
Add doctor
Delete doctor
Check room availability
Book room
Generate bill
Maintain patient details

5. Retail Store Management System Construct a design element for Point of sale terminal management system that can be used for buying and selling of goods in the retail shop. When the customer arrives at the post check point with the items to purchase. The cashier records each item, price and adds the item information to the running sales transaction. The description and price of the current item are displayed. On completion of the item entry the cashier informs the sales total and tax to the customer. The customer chooses payment type (cash, cheque, credit or debit).After the payment is made the system generates a receipt and automatically updates the inventory. The cashier handovers the receipt to the customer.

Class:

Customer
Cashier
Item
Payment
Store
Product Catalog

Attributes:

Name
Id
Bill no
Amount
Weight
Price
Other details
Product type
Address

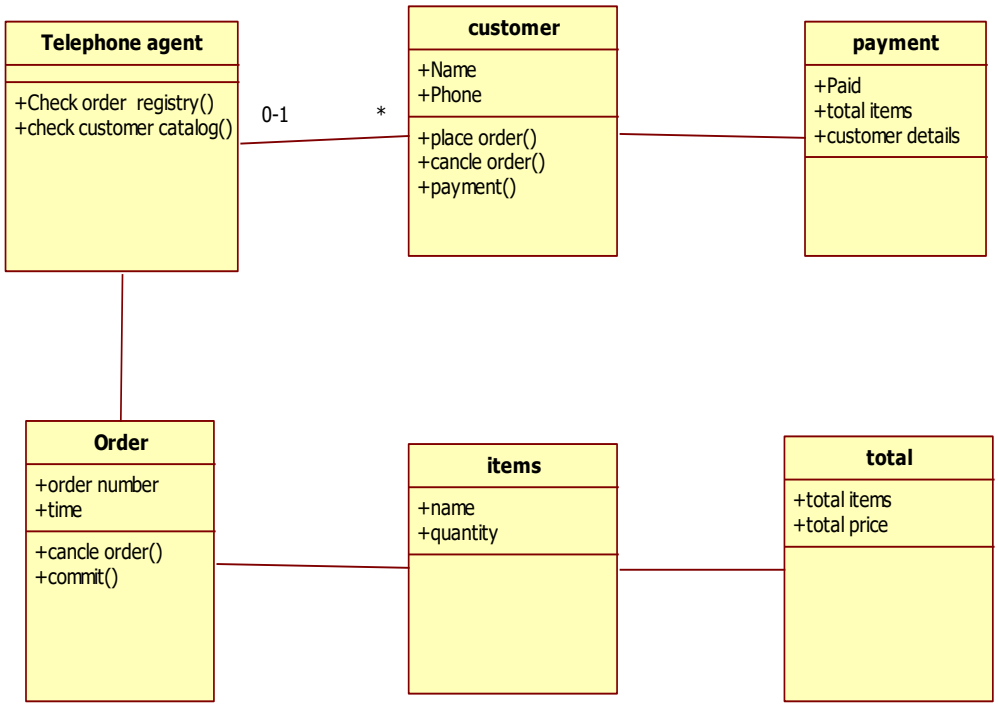
Functions:

Make Payment
By cash
By debit card
By credit card
By cheque
Show product
Add new product
Add tax
Add item price
Generate bill

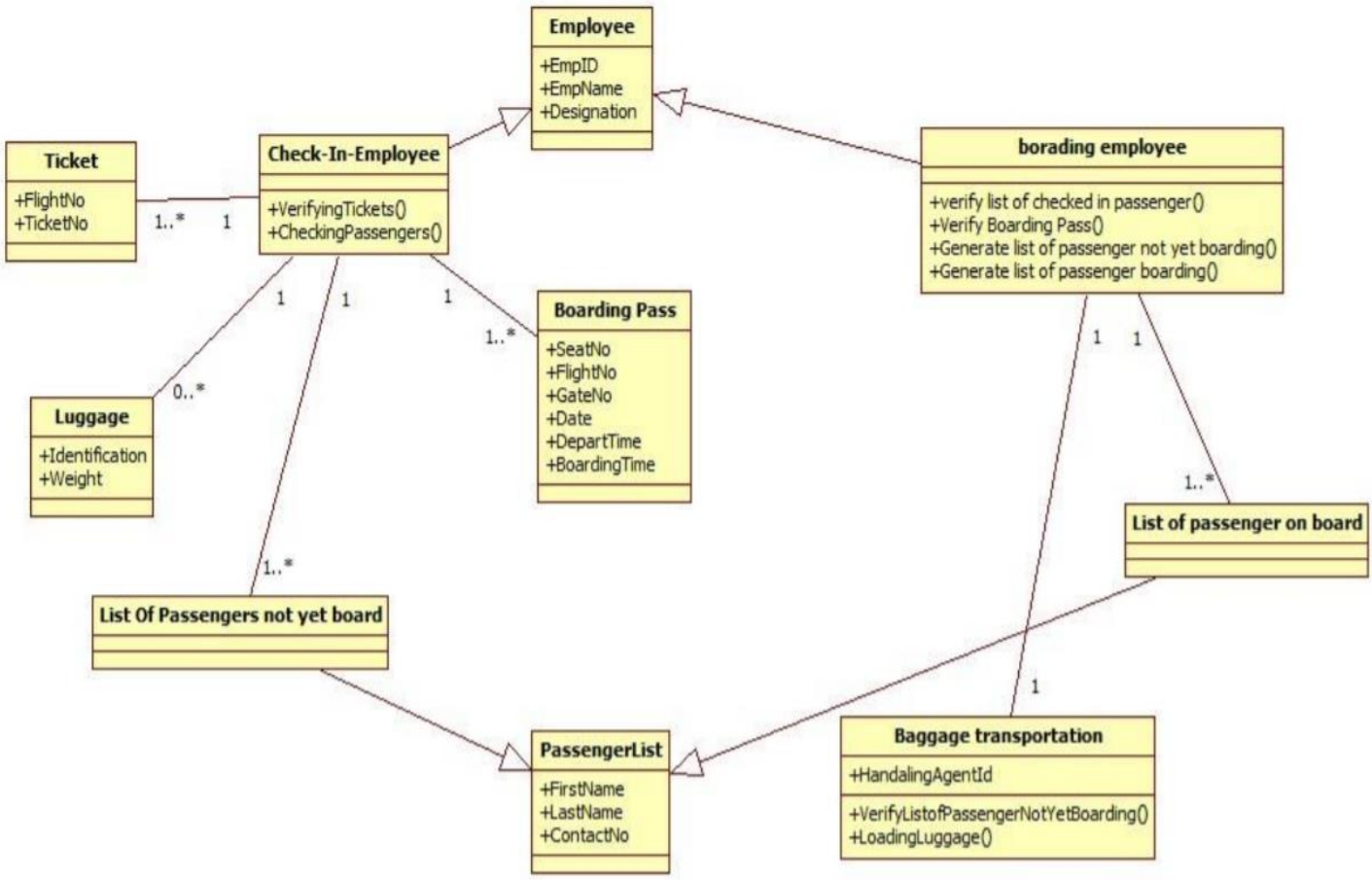
(2). Develop a class diagram for all above five cases studies.

Diagram:-

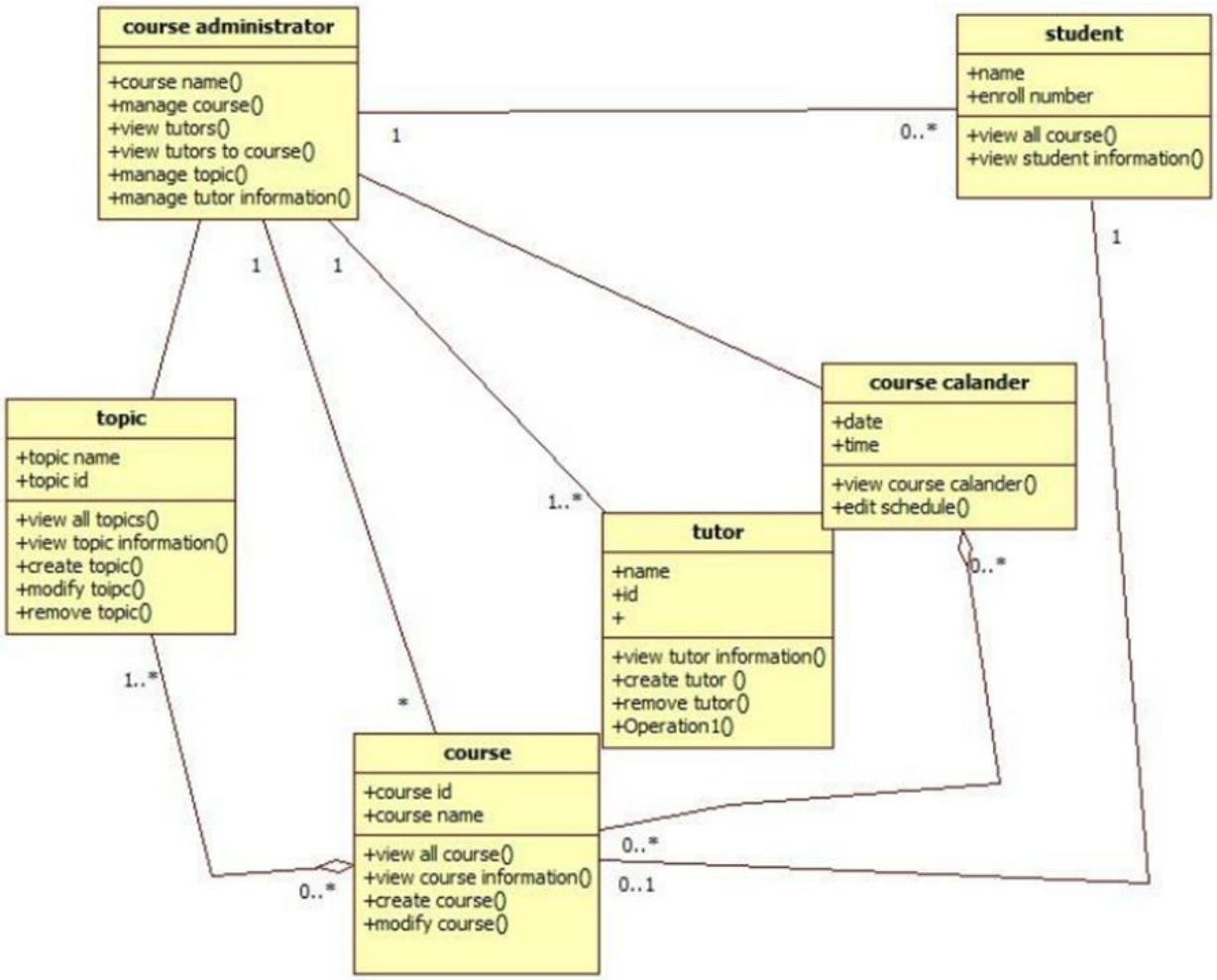
1. Online Shopping System



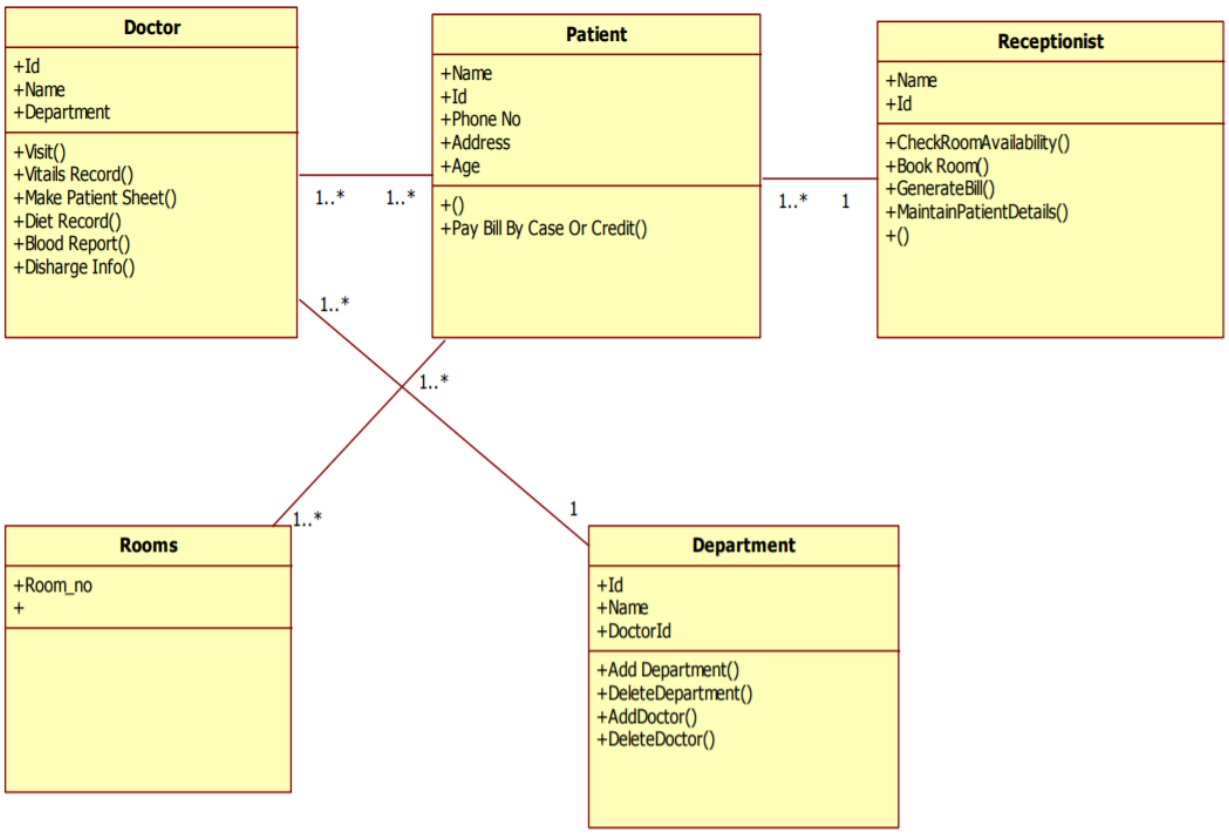
2. Airport Boarding system



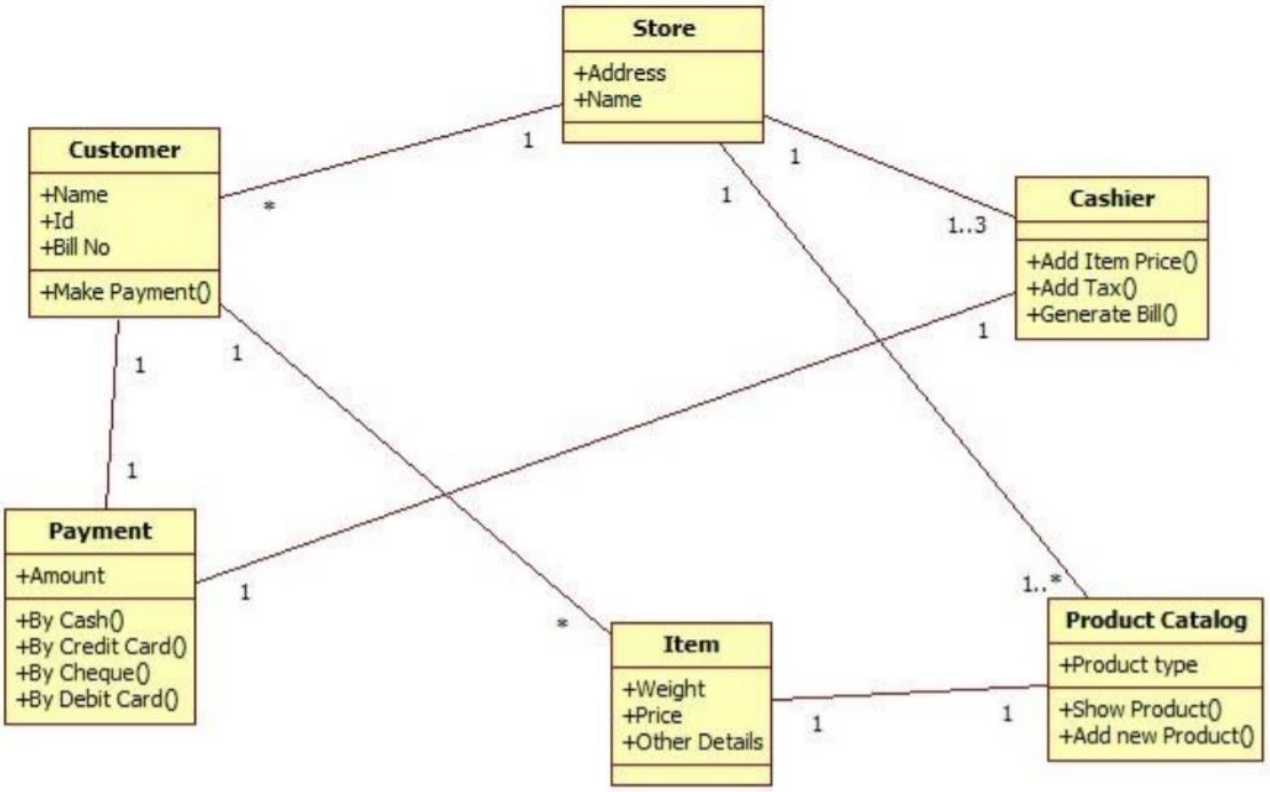
3. Course-ware Management System:



4. Hospital Management System

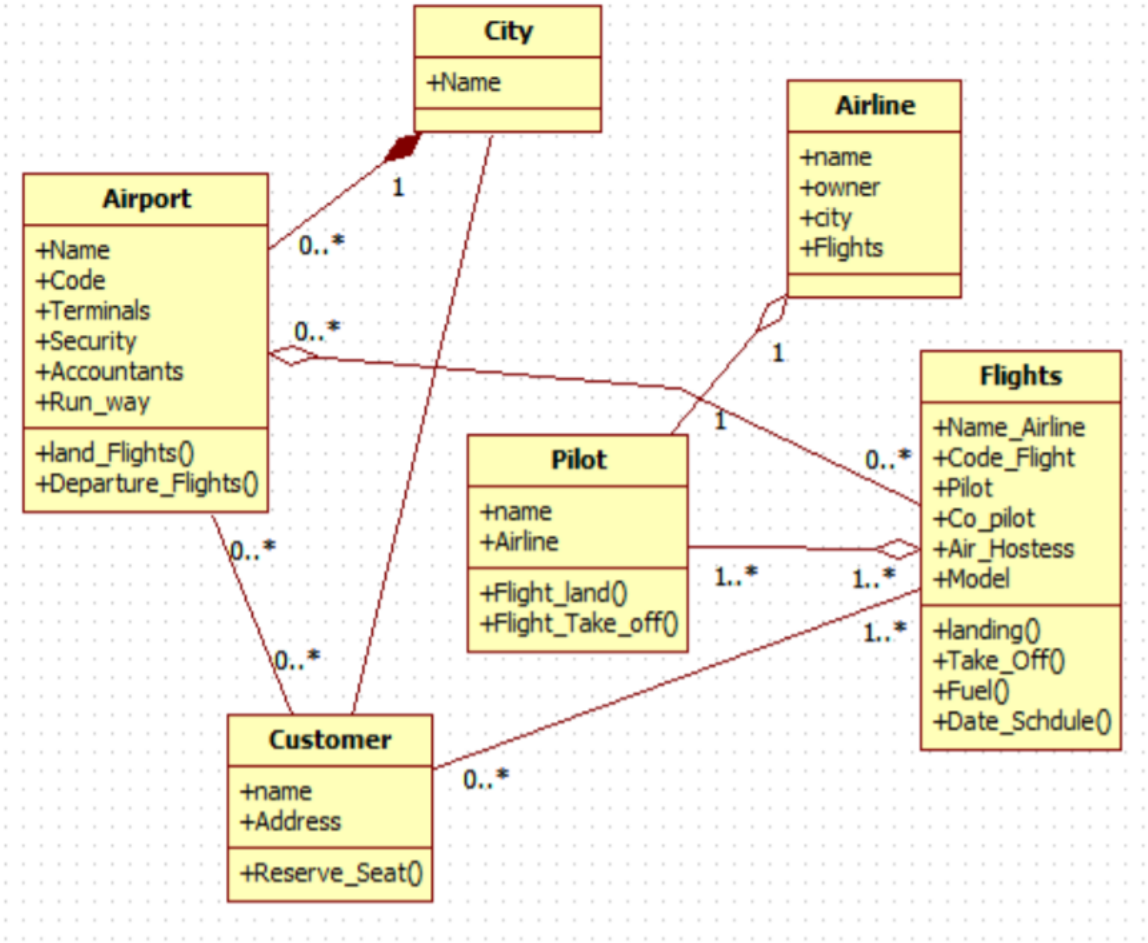


5. Retail Store Management System



(3). Class and Object diagram for Airport: Consider the air transportation system. Many flights land and depart from city's airport. Some of the big cities may have more than one airports. Every flight belongs to specific airline. The planes may have many flights to different airports. Each plane is identified with serial number and model. E.g. hypersonic. There are specific pilots for each airline and they fly many flights. Each flight is identified by flight number and date on which flight is scheduled. The passenger reserves a seat for a flight. The seat is identified by a location. - Prepare a class diagram for above description. Prepare an object diagram for above description assuming your round trip in last month to London. Include at least one instance of each class. The flight was arranged on a hypersonic plane. A friend went with you but decided to stay there. Captain Johnson was your pilot on both flights. You had a different seat each way, but you noticed it was on the same plane.

Class diagram :



Object diagram :