Make sure to show the classes, attributes, relationships (Generalization, aggregation, association) and multiplicities

**Exercise number 1**

Draw a class diagram representing a book defined by the following statement: “A book is written by many authors. There exists two types of books; scientific and Information Technology books. A book is composed of a number of parts, which in turn are composed of a number of chapters. Chapters are composed of sections.”

Extend the class diagram to include the following attributes:

• a book includes ( or identified by) a publisher, publication date, and an ISBN

• a part includes ( or identified by) title and a number

• a chapter includes ( or identified by) title, a number, and an abstract

• a section includes ( or identified by) title and a number.

**Exercise number 2**

Draw a class diagram for the following statement, Make sure to show the classes, attributes, relationships (Generalization, aggregation, association) and multiplicities where appropriate

Professor Aladdin is an employee works at Hashemite University. He teaches the following courses: software engineering, software quality and software testing. Ahmad is a student enrolled at Hashemite University. He registers for the following courses: software engineering, algorithms, data base and software quality. Hashemite University is composed of several buildings. Each building is composed of number of levels and each level includes many rooms.

**Exercise number 3**

Imagine that you are analyzing requirements for an online forum system. Imagine that we have only two kinds of users that interact with our system with different responsibilities: Regular Users and Administrators. Both can log in to the system. Both can also register with the system. After logging in, everybody can post new messages to the board, however only Administrators can check statistics and create new threads. Regular users on the other hand can send private messages to other users, while administrators do not have this ability.

Draw a Use Case diagram that contains Actors and Use Cases from the scenario described above.

**Exercise number 4**

Draw a class diagram for the following statement, Make sure to show the classes, attributes, relationships (Generalization, aggregation, association) and multiplicities where appropriate

The house will have a floor area, a garage, a kitchen, and a number of exterior doors and windows. All rooms will have dimensions (length and width). Some rooms will be bedrooms; others will be bathrooms, toilets, or games rooms.

**Exercise number 5**

Let’s imagine we will develop a browser-based training system to help people prepare for Java certification exam. Draw a use case Model according to the following features and function:

1. Allow Mohammad who is a user to request a quiz for the system
2. Allow a tutor to provide questions and hints to the system
3. Allow an examinator to certify questions to make sure that the questions are not too simple.

**Exercise number 6**

Let’s imagine we will develop a shopping online system to help people to buy items online. Draw a use case Model according to the following features and functions:

* Allow the administrator to assign the price of the items, update the items in the list, and delete the items.
* Allow the administrator to update the description about each item.
* Allow the administrator to view the history of the customers who purchased the items
* Allow customers and visitors to view, browse, and select a category on the home page.
* Allow customers to view, add, and update items in the cart.
* Allow customers to delete items from the cart
* Allow customers to check out the items from the application or continue shopping.
* Allow customers to register by adding specific information. They are not allowed to complete the order without registration.
* Allow customers to login using a username and password.
* Allow customers to place the order by completing the order form.
* Allow customers to write reviews and rate specific items.
* Send a confirmation e-mail to customers once their transactions are complete.
* Allow customers to check the status of their orders (e.g., received, processed, delivered).
* Allow customers to pay through visa, master card, PayPal or post paid as after shipping.