BACS2033 Software Requirements Engineering

Tutorial 3 – Extra (Use case, use case description, state diagram)

Chapter 3

1. TaPao4U Sdn. Bhd. provides food delivery service to the customers in Klang Valley. They contracted with a variety of well-known restaurants in the Klang Valley to accept orders from customers and to deliver the complete meals. As the business continues to grow, the company realizes that they need a custom computer system to support their daily operations.

   a) Construct a suitable *use case diagram* that is appropriate for the TaPao4U Sdn. Bhd. for the customers. Your use case diagram should include the following system functionalities:

      - Register a new member
      - Make online meal order
      - Make online payment
      - Generate online receipt
      - Change meal order
      - Search a meal order
      - Add delivery details
      - Calculate total charges

   b) Write a *use case description* to document the basic scenario for the main flow and alternative flow of events for the "Make online meal order*"* use case.

2. XYZ Company is one of the leading local courier companies. It provides next day delivery for its courier services; logistics and warehousing; international freight; Air and Sea; pick and pack and etc for its customers.

   With the increasing of customer demands, XYZ Company would like to provide more satisfactory services to its customers. Thus, the Chief Executive Officer (CEO) of the company would like to enhance the existing Courier Management System with the following system functionalities that allow customers to perform via online:

      - To track parcel location
      - To check the parcel status
      - To claim compensation for damaged items
      - To make online service request
      - To make online payment
      - To generate online receipt
      - To register a new customer

   a) Construct a *use case diagram* that depicts the functional requirements for the Courier Management System.

   b) Write a *use case description* to document the basic scenario for the main flow and alternative flow of events for "make online service request" use case.

3. You as the system developer in CITC have been asked to develop a new *registration system* for TARUC.

The new system allows students to register for courses and view transcript from personal computers attached to the Internet. At the beginning of each semester, students may request a course catalogue containing a list of course offerings for the semester. Information about each course, such as lecturer, department, and prerequisites, will be included to help students make decisions for the course registration. For each semester, there is a period of time that students can change or maintain their schedule. Students can access the system during this time to add or drop courses. Once the registration process is completed for a student, the registration system will generate the student's bill (based on the number of credits that they are registered for) and sends information to the billing system. At the end of the semester, the student will be able to access the system to view an electronic transcript.

The system also allows the lecturers to sign up for the courses which they will teach. They can view the course schedule which includes the students' name who registered for the course offered. In addition, the lecturers are also able to record the grades of the students for their courses.

The system will have the following functions:

- Register course
- Maintain schedule
- Request course catalogue
- View transcript
- Sign up for course
- Record grades
- View course schedule
- Generate bill

a) Construct a suitable ***use case diagram*** that is appropriate for the **Registration System** for TARUC. Your use case diagram should include:
   - **All** the use cases
   - **<<extend>>** and **<<include>>** relationships used
   - A **boundary** with a system name
   - Primary and supporting actors

b) Write a *use case description* to document the basic scenario for the main flow and alternative flow of events for "Register course" use case.

4. You, as a senior system analyst, have been assigned to develop a Library System for Excel College. The system should allow the library officers to manage the book items in the library. The officers will add new book item(s) into the system whenever there is/are new shipment(s) of book item from book supplier(s). The library officers will perform book item inventory checking every 6 months to track for any outdated or lost items. After the inventory checking exercise, the library officers will use the system to remove the book items that are outdated or lost. The system should also allow the library officers to make changes on certain information on the book items when it is needed.

Besides that, the system should allow the borrowers to view currently available book items the library. With the new library system, the borrowers should be able to perform borrow and return book transactions by using the auto book check-in and check-out device. The system will automatically calculate the fine charges if there is late return case when borrower perform book check-in transaction at the device. The library director can perform all the functions that can be

performed the library officers. Additionally, the library director is allowed to use the system to generate the Monthly Borrow Book Transaction Report and he/she can print the report if it is needed for further analysis purpose.

The system consists of the following main functionalities:

- Add book item
- Remove book item
- Change book details
- Display available book
- Borrow book
- Return book
- Generate Monthly Borrow Book Transaction Report
- Print Monthly Borrow Book Transaction Report
- Calculate late fine charges

a) Construct a suitable ***use case diagram*** that is appropriate for the **Library System** for Excel College. Your use case diagram should include:
   - **All** the use cases
   - **<<extend>>** and **<<include>>** relationship used
   - A **boundary** with a system name
   - All Actors
   - Generalization

c) Write a *use case description* to document the basic scenario for the main flow and alternative flow of events for "Borrow book" use case.

5. A student can only enroll for a programme per intake. On enrollment, the student's status is "Normal". If the student passed all the subjects, the student's status is "Graduate", if not, the student's status is either "Repeat" (fails 7 or more subjects) or "Resit" (fails 6 or less subjects). For the "Repeat" or "Resit" students, if they passed all subjects within the given duration, then the student's status will be "Graduate". Otherwise, the student's status will become "FO" (failed out).

   Construct a *state chart diagram* for S**tudent** class. Include event name, guard-condition and action-expression in your diagram.

6. A country recently would like to implement an online Automated Enforcement System (AES) which include services such as check and pay summon. The system will help the users to check their recent five years summon records. After five years, the record will be deleted from the system. If summon is not paid within a year, the user will be issued a letter to attend a court defend. Once summon is paid, it will be checked as "Cleared".

   Construct a *state chart diagram* for **Summon** class in the AES. Include event name, guard-condition and action-expression in your diagram.

7. MyWarehouse.my is an online ordering system which collaborates with suppliers from different countries such as United Kingdom (UK), United States (US), Canada, New Zealand and Australia. MyWarehouse.my negotiates best price offered by suppliers and sell its products through their online portal for a period of time with deadline given. The customer can place order within the offered time. Once the customer has placed the order, they can check the order status from their account. MyWarehouse.my will check the payment and product availability before approve the order. After the order is approved, it will be sent to the associating overseas supplier. The order status will be changed from "Approved" to "Pending". Once the deadline is expired, MyWarehouse.my will collect all the orders from the customer and inform the suppliers on the quantity to deliver. All products will be shipped directly from overseas supplier to MyWarehouse.my office in bulk. The order status will then be changed to "Shipped". Once the products reached the office, MyWarehouse.my will then dispatch it to individual customer through local courier service. The customer can see "Dispatched" status in their account.

   Construct a *state chart diagram* for an order in the MyWarehouse.my. Include event name, guard-condition and action-expression in your diagram.