CS335- Lab/Exercise

Requirements Engineering

This lab is about practicing capturing user and system requirements then eliciting system requirements. You may work in groups (3 or 4 students per group).

This lab includes two parts. The first part is about using StarUML to develop Use cases diagram. UML is an open source modelling tool which allows drawing various diagrams of UML. You will use Use cases diagram for functional requirements description (very simple diagrams at the moment).

The second part asks for user requirements and system functional requirement elicitation and discovery.

1. Using StarUML

First, Open **StarUML** on your desktop. A window should be open as shown in Fig.1. Click on "**Set As Default Approach**" and then "**OK**". This will open a new project for you.
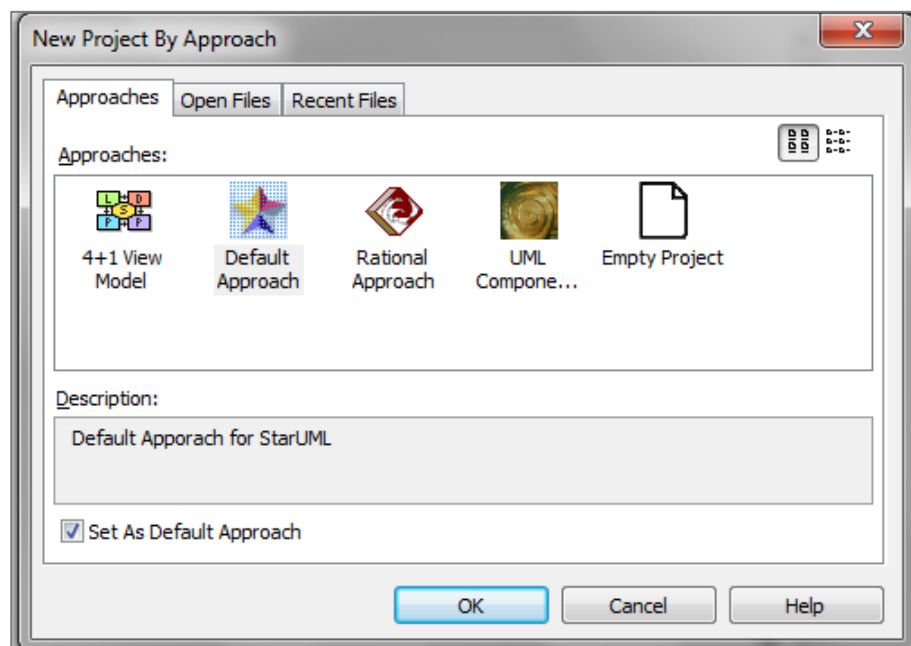

Fig.1 Create a New Project in StarUML

Note: Make sure that **Model Explorer** and **Toolbox** are checked as shown in Fig.2. You should be able to see **Model Explorer** window on the right hand side.

Then, click on **Use Case Model**. Double click on **Main** entry, the Use case tool box will appear on the left hand side.
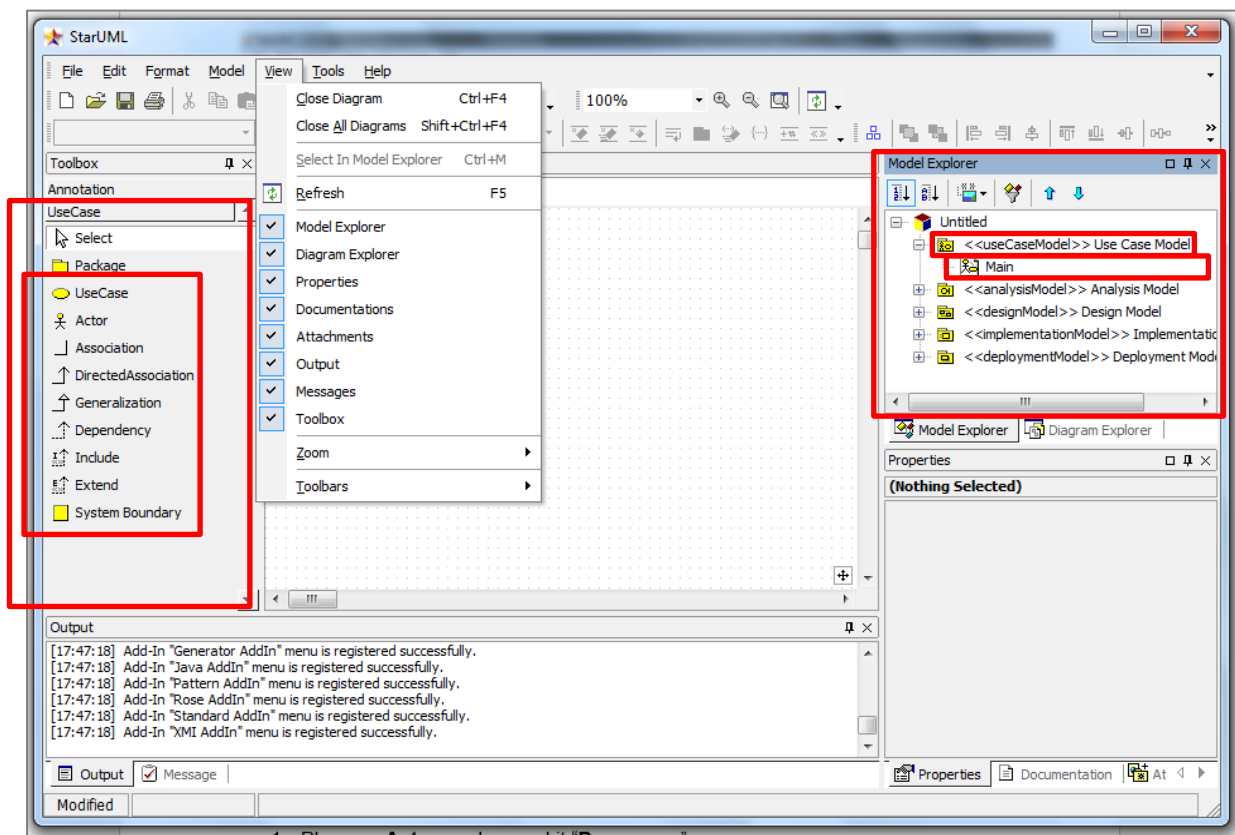

Fig.2 Create a Use Case Diagram

Let's now create a use case diagram for a vending machine system that sells tickets. A work scenario for the vending machine system is described as follows:

- A **passengers** *select* his/her *itinerary*,
- then *pay* the corresponding *fee*,
- and the system *print* out the *ticket*.

To draw a use case diagram for the vending machine system, we will:

1. Place an **Actor,** and named it "**Passenger**".
2. Place three **UseCase**, and named them "**Select itinerary**", "**Pay ticket**" and "**Print ticket**" respectively.
3. Create an **Association** between the **Actor** and each **UseCase**.

4. Finally, create a **System Boundary** around the use cases with the actor outside.
5. Save your use case diagram.

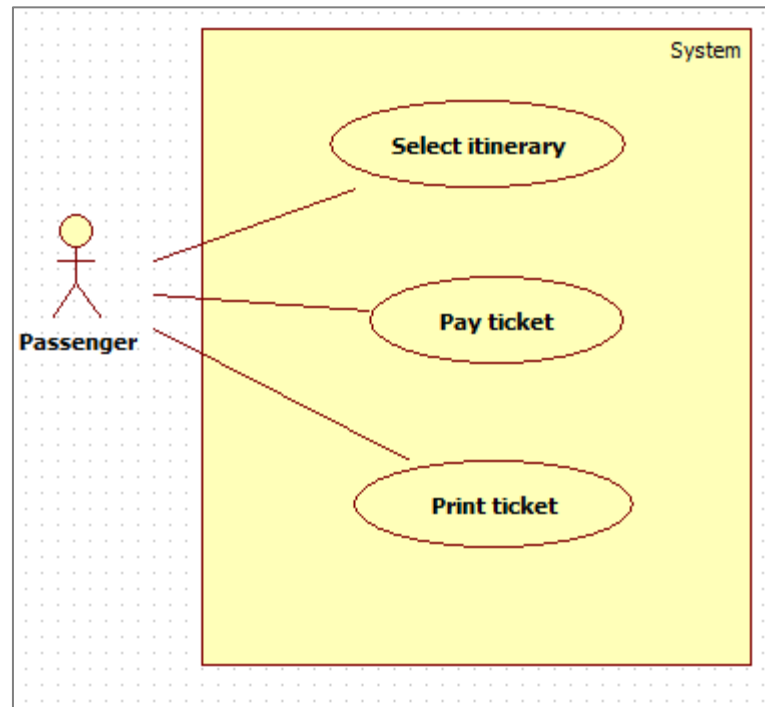You should now have a use case diagram as shown in Fig.3.

Fig.3 Use case diagram for Vending Machine System

2. Capturing and Elicitation of Functional Requirements

Now, let's develop a system for a new video store. The store provides videos renting service to the public. Its owner would like to develop an online system (web-based application) to support their business.

The system description that the store owner provided at the very first communication are the following [1]:

- The video store will keep a stock of videotapes, CDs (games and music) and DVD (films, music, and documentary).

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[1] Adapt from L. A. Maciaszek, Requirements Analysis and System Design, 2007

- The inventory is provided by one supplier at the moment, but in the future there will be more suppliers.
- All videotapes and disks are barcoded so that a barcode reader integrated with the system can support the rentals and returns.
- Customer membership cards will also be barcoded.
- Existing customers can place reservation on several videotapes or disks online and collect them later at the store on a specific date.
- They will pay when return the tapes or DVDs.

Question 1

Considering the following 2 functional requirements identified at the moment:

R1. *The system shall allow clients to place an order online.*

R2. *When the customer returns the DVDs, the correct payment shall be calculated based on renting time, and the status of DVDs must be updated.*

Now discuss within your group to elaborate more detail these 2 requirements at the system level (you may play roles as the store owner and express what you want exactly the system does to allow a customer to place an order online), which may describe the scenarios of placing an order online and returning DVDs.

For instance, for **R1**, the business analyst might interview the store owner with the following questions:

- *Does a customer need to register first (to get member card and ID) to be able to place an order?*
- *Does the system provide a search function? Search by what criteria? Etc.*

Or for **R2** they can be:

- *Does the barcode reader/scanner need to scan the member card to retrieve the renting or just need to scan DVDs?*
- *Does the barcode reader need to scan every item/DVD to update their status? Etc.*

Question 2

a) Identifying use cases, actors and scenario (flow of interactions between actors and use cases) for **R1**, including the new functional requirements you gathered from the "store owner".

b) Drawing the corresponding use cases diagram with StarUML.

Question 3

a) Discuss within your group and elaborate details functional