Instruction for the tutors: It would be good if pupils can work in small groups of 4/5 students.

Objectives of today's lab:

- Familiarize with the underlining concepts of UML Sequence Diagrams for system design.
- Model the behaviour of use cases by describing the way groups of objects and entities interact to complete the task of the use case

Note. Use Astah to draw your use case diagram. Astah is fairly straightforward to use. The tools should be self-explanatory. However, if you have difficulty, please ask the tutors or you can watch the following videos:

https://www.youtube.com/watch?v=eIvp8e_MDB0

Please read carefully all information contained within the following passage of text.

It is widely acknowledged that computer systems are becoming increasingly nomadic and pervasive. The advancement of mobile and wireless communication technology have contributed to make computer interaction beyond fixed and predictive desktop settings, so that a user can utilize services at any time and everywhere. You are working for a software company that wants to bid for the job of designing a Location Based Shopping Application (LBSP). The desired LBSP can run on any resource-bounded devices, e.g., smart phones. The application system will be able to find out nearby shopping stores using the Google maps API based on the user location, and as user changes its position new shops might be dynamically added. Each shop displays a list of items available. The user can select items that are part of the shopping location and add them to his shopping list. When the user goes to a particular shop he can easily see from the list what items need to be purchased. If the

user finds some best deals, the application system will allow him sending the deals list using SMS or emails to others who would be interested in shopping similar items. A customer should be authenticated. It could be done through user login page, user authentication cookie ("Remember me") or Single Sign-On (SSO). The checkout could be done either by using credit card and external credit payment service or with PayPal.

Exercises

(Week 2 lecture slides contain the resources/ideas/learning activities to complete the following tasks)

(*try to complete as many as you can 1-7***)**

1. Write the corresponding project description
2. Define system boundary
3. Identify the actors (***at least 3***)
4. Identify the use cases for each actor
5. Draw the use-case diagram
6. In your diagram you should show ***at least one*** <<extend>> and one <<include>> relationship.
7. Your graphical use case representation in (4) only presents an overview to your requirements. You also need to combine it with the textual representation of use cases that describes input-output scenarios with all their possible variants and exceptions. Provide a highest-level use-case specification considering pre and post conditions and an alternative path, considering one use case.

Exercises

[Make sure you have completed all the exercises from the previous week.]

1. Identify the possible classes (**at least 6**)
2. Identify their relationships
3. Draw the UML class diagram
4. In your diagram you should probably show ***at least*** one inheritance, one association, one aggregation, and one composition relationship.

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Exercises

[Make sure you have completed all the exercises from the previous week.]

8. Consider the use cases and classes you identified in the previous labs
9. Show how objects/entities interact with one another using the UML sequence diagrams. Draw three substantial diagrams that add information. For example (but you can consider other scenarios),
   (a) Considering list of nearby shops use case
   (b) Creating item list from the available items
   (c) Sending the deals list using SMS or emails to others