School of Electrical Engineering & Computing
University of Newcastle
COMP1010 –Computing Fundamentals

Workshop Week 8

Task 1. Case study

1. Osceola Auto Parts (30 mins)

Osceola Auto Parts is an independent auto parts dealer that sells auto parts, runs tests on customers' cars, and delivers parts and tools to mechanic shops around town.

a. Identify possible actors and use cases involved in Osceola's business functions.

b. Create a use case diagram for Osceola's operations.
*** Please show your diagram to your tutor to discuss when completed.

c. **Create a class diagram.**
   *** Please show your diagram to your tutor to discuss when completed.

d. Create a sequence diagram for the use case you selected.
*** Please show your diagram to your tutor to discuss when completed.

2. Area Transit Authority (30 mins)

The Area Transit Authority (ATA) is a rural public transportation company. ATA operates a fleet of 25 buses that serve approximately 1,000 riders each day. The bus operation involves 10 regular routes, plus routes for special events. The ATA employs 20 full-time drivers and 10 to 15 part-time drivers. A dispatcher coordinates the staffing and routes and relays messages to drivers regarding traffic information and special passenger pick-up arrangements.

a. **Identify possible actors and use cases involved in ATA's bus operations**

b. **Create a use case diagram for the bus system.**
*** Please show your diagram to your tutor to discuss when completed.

c. **Create a sequence diagram for the use case you selected.**
   *** Please show your diagram to your tutor to discuss when completed.

d. **Create a state transition diagram that describes a DRIVE class states and how they change based on specific actions and events**.
   *** Please show your diagram to your tutor to discuss when completed.

3. Oakwood Community College Registration (30 mins)

Oakwood Community College has a student registration process similar to the one at your school. The administration asked you, as IT director, to develop a new system that would be more user-friendly. Your first task is to create an object-oriented model of the current system. You can use your school's registration process as the basis for the model.

a. List possible objects in the registration system, including their attributes and methods.

Object	***Attributes***	***Methods***
Student	*Student number* *Name* *Address* *Date of Birth* *Major* *Credits Earned* *GPA*	*Add course* *Drop course* *Complete course* *Pay* *Request transcript*

b. Identify possible use cases and actors.

c. Create a use case diagram that shows how students register.
*** Please show your diagram to your tutor to discuss when completed.

Task 2. Discussion Topic

1. You are an IT consultant, and you are asked to create a new system for a small real estate brokerage firm. Your only experience is with traditional data and process modeling techniques. This time, you decide to try an object-oriented approach. How will you begin? How are the tasks different from traditional structured analysis?