University of Stirling
Computing Science and Mathematics
CSCU9P5 Software Engineering I Autumn 2018

Tutorials 3 and 4 (for weeks starting 8 and 15 October)

There is a group project within this module where you will produce an object-oriented design. To help you with this, the next two tutorials will give you practice in producing an object-oriented design for an example problem.

- In Tutorial 3, you should concentrate on use cases and on the class diagram.
- In Tutorial 4, you will continue with your analysis, deal with sequence diagrams and add more operations to your class diagram. This may involve changes to the class diagram.

Object-oriented analysis is not easy. There is no single correct answer and the process is iterative. You can only really understand what is involved by attempting it. Hence, to fully benefit from these tutorials, you should try to produce use cases and a class diagram before Tutorial 3 and sequence diagrams before Tutorial 4. Feel free to do this in consultation with other members of the class. Making the attempt is more important than what you produce. Bring your diagrams to the tutorials.

One simple technique is to identify the nouns in the problem statement; they are all candidate classes. Another technique is to write down use cases for how the system is to be used. You then need to identify the objects that are required for the use cases to be carried out. The example problem is as follows:

> A University Department wishes to implement an automatic Practical Laboratory attendance system. A student will register their attendance at the beginning of a computer lab session. A check will be made that they are a member of that lab session group and, if they are, then their attendance will be registered. All modules offered by the Department will be handled. Students will attend one lab session per module per week, but a given module may have alternative lab sessions.
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> At the beginning of the semester, the Departmental Administrator will, for each module, set up a list of alternative (empty) lab session groups (with their time and place) and a list of students registered for the module. At the beginning of the semester, a student will then join a particular lab session group for a particular module using a web based interface. They will be able to get a list of lab session times for the module and attempt to join a lab session group. If there are still spare places, and they are registered for that module and they have not already joined a group for that module then they will be added to the lab session group for that time. Once they have been added to the group for a particular time, then they will be added to the corresponding lab session group for all ten weeks of the semester.
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> When attending a lab session, students will register their attendance. If they are in the lab session group for the current time, then their attendance will be recorded.
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> Course co-ordinators can access the system and be able to get the attendance record for a particular student for a particular module and get a list of students with poor attendance on a particular module.

End of problem description.

