This exercise is worth **50%** of the credit for the course.

Deadline: Friday 26th March, at the beginning of the lecture.

Submissions may be handwritten, printed, or printed with handwritten diagrams.

Your name must be clearly written or printed on the first page of your submission, you must include a declaration of originality form from your department, and all pages of your submission must be stapled or otherwise securely attached together.

Problem

This exercise continues the Tool Hire case study from Assessed Exercise 1. In order to give everyone a fair chance at this exercise, a sample solution to Assessed Exercise 1 is provided. You should work from the sample solution rather than your own solution, even if you think that your solution is better. Imagine that your design team decided on this approach after much discussion; even though you had your own ideas, your job is now to continue the project in the direction agreed by the team.

The next steps are domain modelling (identifying classes and their relationships, as in Tutorial 4) and modelling dynamic behaviour (by means of sequence diagrams, as in Tutorial 5).

- 1. Identify the main classes that will be needed in order to implement the use cases.
- 2. Create a set of CRC cards showing the classes and their relationships. (Instead of literally using cards, follow the examples from lectures by showing the cards as linked boxes).
- 3. Produce a class diagram showing the class names, attributes, operations and associations.
- 4. For each use case, draw a sequence diagram showing the objects and operations involved in its implementation. (For this exercise you do not need to draw communication diagrams, although you can include them if you want to). If developing the sequence diagrams leads you to conclude that additional classes or operations are needed, then also produce a modified class diagram.

Optional

If you have experience of object-oriented programming, you might find it interesting to develop implementations of your classes and their methods in your favourite programming language.