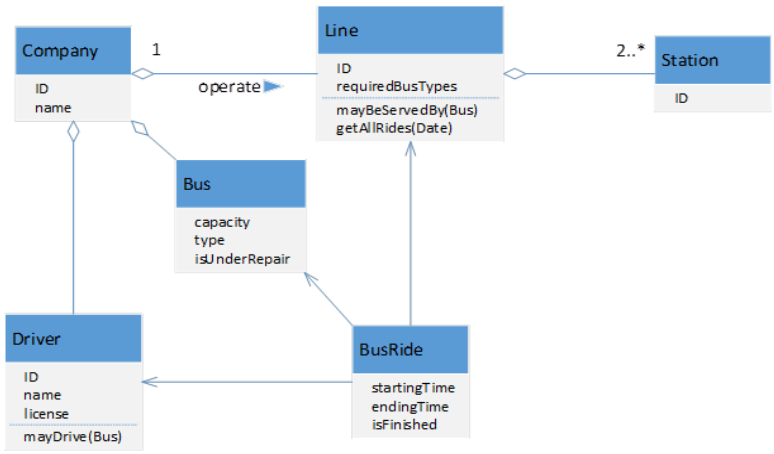
Assignment 2 – Solution

Handout: **Tuesday, 5 November 2024**
Due: **14:00, Friday, 15 November 2024**

1. Class Diagram (15 marks)



Note that the model above is just one possible solution out of many. Particularly, some of the attributes can be modeled as get-methods. E.g., ID → getID().

2. Architectural Design (12 marks)

Naming one of the two advantages is sufficient.

Design 1

- *The clients take more responsibilities, and the design places a lighter processing load on both the server and the network.*
- *Data handling is straightforward as there is no need to manage the interaction between the client and the application processing system.*

Design 2

- *The clients have limited responsibilities and are easy to implement, migrate, and manage.*
- *The clients are easier to set up, making the system easier to access for users.*

3. Software Testing (12 marks)

x	y	z	ExpectedResult	BranchesCovered
1	1	-1	false	c2==true
1	*2*	*4*	*false*	*c2==false, c5==true, c7 == --, c9 == --*
1	*4*	*2*	*false*	*c2==false, c5==false, c7==true, c9 == --*
4	*1*	*2*	*false*	*c2==false, c5==false, c7==false, c9==true*
2	*3*	*4*	*true*	*c2==false, c5==false, c7==false, c9==false*

4. Software Maintenance (11 marks)

The four main types of software maintenance are:

1. Corrective maintenance. The changes made to the system are to repair reported faults which may be program bugs or specification errors or omissions.

2. Adaptive maintenance. Changing the software to adapt it to changes in its environment, e.g., changes to other software systems.

3. Perfective maintenance. This involves adding new functionality or features to the system.

4. Preventive maintenance. The changes are made to correct undiscovered faults.

They are sometimes difficult to distinguish because the same changes may cover different types of maintenance. For example, a reported fault in the system may be repaired by upgrading some other software and then adapting the system to use this new version (corrective + adaptive). Adaptive maintenance may involve adding new features to take advantage of the adapted functionalities.

How to hand in:

Submit your typed, instead of handwritten, answers in a PDF file on Blackboard.