**Course Assignments**
**for**

**Graph Drawing**
**4DV302 – Fall 10**

1st assignment

Deadline for this assignment is Sep 16, 2010.

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**Task 1** *Graph example (no group work)*
Draw the following graph given by the adjacency matrix

$$\begin{pmatrix}
0 & 1 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 \\
1 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 \\
0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 1 \\
0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 1 & 0
\end{pmatrix}$$

by using your creativity and hands. Answer the following questions:

1. Is the graph directed or undirected?

2. Does it have cycles? If yes, where?

3. Is this graph simple?

4. What is the maximal degree of a node in the graph? In case the graph is directed, distinguish between indegree and outdegree.

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**Task 2** *Graph editors and specification languages (no group work)*
Install the graph editor Gryphon. You will find it in *Assignment 1 Material* folder in the BlackBoard. Produce a nice drawing of the graph from Task 1 with the help of Gryphon. To do that you must convert this adjacency matrix to a GML-file, load it into Gryphon, and choose a suitable layout algorithm. A URL to the specification language GML is also given on the course web page.

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**Task 3** *Layout of selected graphs (no group work)*
Download the following ZIP-file with five different graphs from BlackBoard in *Assignment 1 Material/Graph-GML.zip* and draw them with Gryphon as good and nice as possible! Test all algorithms and available options of this tool to get the best result. Why do you think that your result is nice and the best? Please, justify your thoughts!

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Please prepare a short presentation (PowerPoint, Latex, PDF, ...) on/with your results and send it to Ilir Jusufi via email (ilir.jusufi@lnu.se) by the given deadline! You will present it during the first exercise.