Tik-79.144 **Syksy 1998**
Logic in Computer Science: Foundations
Exercise 6

1. Formalize the following sentences using predicate logic:

a) There is a faulty gate.

b) This algorithm is the fastest.

c) Each participant of this course has a workstation to use

d) Only one process can write in each file at a time

2. A graph is a set S of nodes and a set K of edges between the nodes ($K \subseteq S \times S$). The nodes s and s' of the graph are adjacent, if they are connected with an edge ($\langle s, s' \rangle \in K$). Let C be a set of colors. The problem of *node coloring* is to find a color in C for each node of the graph so that each node has a unique color and two adjacent nodes have different colors.

a) Formalize the node coloring problem using predicate logic.

b) Give a model for your formalization.

c) Give a structure that doesn't satisfy your formalization.