Exercise 12.1 (Strong cyclic planning, 5 + 5 points)
Consider the planning task that induces the following nondeterministic transition system with two operators $o_{\text{red}}$ and $o_{\text{blue}}$.

(a) Apply the nested fixpoint algorithm presented in the lecture, and specify the candidate good state sets $C_i$ as well as, for each iteration of the outer loop, the sets of states $W_j$ from which a goal state can be reached in at most $j$ steps without the danger of leaving the current set of candidate good states $C_i$. Extract a strong cyclic plan $\pi$ for all good states.

(b) Apply the determinization-based incremental algorithm presented in the lecture for the initial state $a$. Assume that the deterministic search algorithm computes the optimal plan in the determinization (e.g., finds the shortest path to the goal). For each iteration specify $\text{fail}$, $s$, $\pi'$, $\pi$ and choose the alphabetically smallest node when selecting a node from $\text{fail}$.

Exercise 12.2 (Maintenance Goals, 5 points)
Simulate the computation of the algorithm for maintenance goals for the following nondeterministic transition system with two operators $o_{\text{red}}$ and $o_{\text{blue}}$.

Specify the sets $\text{Safe}_i$ and a resulting plan for maintenance $\pi$.

You can and should solve the exercise sheets in groups of two. You can send your solution to ortlieb@informatik.uni-freiburg.de. Please give both your names on your solution.