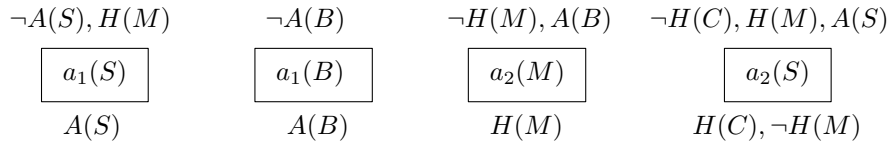


COMPUTER SCIENCE TRIPOS Part IB – 2022 – Paper 6

1 Artificial Intelligence (sbh11)

You are solving a planning problem using the GraphPlan algorithm. The problem has the following actions:



The start state is $\neg H(M), \neg H(C), \neg A(S), \neg A(B)$ and the goal is $H(C)$.

- (a) Draw the state levels S_i and action levels A_i of the planning graph up to and including S_2 . Do not add any mutexes at this stage. [3 marks]
- (b) Explain why it is not possible at this stage to attempt to extract a plan. [1 mark]
- (c) What is the smallest i for which it might make sense to try to extract a plan, starting from S_i . Explain your answer. [2 marks]
- (d) For the value of i identified in Part (c), draw levels S_{i-1} , A_{i-1} and S_i of the planning graph. [4 marks]
- (e) On the diagram you have produced for Part (d), mark four mutexes, each of which arises for a different reason. In each case explain what kind of mutex you have included. [6 marks]
- (f) Give a general description of how the extraction of a plan from a planning graph can be addressed as a heuristic search problem. [4 marks]