

MAU22C00: TUTORIAL 8 PROBLEMS
FORMAL LANGUAGES AND GRAMMARS

- 1) Let L be the language over the alphabet $A = \{0, 1\}$ consisting of all words where the string 00 occurs as a substring.
- (a) Prove from the definition of a regular language that the language L is regular.
 - (b) Draw a finite state acceptor that accepts the language L . Carefully label all the states including the starting state and the finishing states as well as all the transitions. Make sure you justify it accepts all strings in the language L and no others.
 - (c) Write down the transition mapping of the finite state acceptor you drew in the previous part of the problem.
 - (d) Let \equiv_L be the equivalence relation defined in Lecture 23 before the statement and proof of the Myhill-Nerode theorem. Determine the equivalence classes into which this equivalence relation partitions L .