

1996 Paper 2 Question 8

Regular Languages and Finite Automata

Show that if L is a regular language then the set of strings in L of odd length is also a regular language. Is the same true of strings of even length? Justify your answer. [8 marks]

If L is regular language let L' be the set of strings in L that are palindromes. Is it possible that L' is regular? Will L' necessarily be regular? Explain your answer with suitable examples and proofs. [6 marks]

It is known that the language Pal consisting of all palindromes is not regular. Is it possible to find a regular language L such that L is a subset of Pal , or if this is not possible explain why. Similarly either find a regular language L' so that Pal is a subset of L' , or again explain why this can not be done. [6 marks]