

Exam Performance Feedback Form

COMP10042—Part 1

2008/2009

The following only concerns Section A of this exam.

General remarks: 170 students answered questions from this part. The average mark for this part was 11.3 marks out of twenty. 45 students received a mark of 7 or fewer; of these five had 0 marks, the same number 1 mark, and 4 students had 2 marks—these candidates seem to have done very little to prepare for the exam. 68 students received a mark of 14 or better, 10 of these got 20 out of 20.

Question 1. 122 students attempted this question. The average mark was 4.9 out of 10. 29 students received 2 marks or fewer, 23 students got 8 marks or higher.

- a) Most students correctly wrote that the two languages described are the same, gaining one mark. If there was an attempt at reasoning for why this is the case they got the second mark unless they a false statement here.
- b) Many students did not give a correct automaton here. Some automata given only accept words that contain at most $2bs$, others expected the word to end once it had reached the only accepting state—the latter could have been made correct by including three transitions from the accepting state.
- c) One way of solving this question would be to form the automata for the intersection of two languages as described on pages 44f of the notes. Some students constructed the required automaton from scratch, but many made mistakes here. A few misread the second set to demand that every c be immediately *followed* by a b although the question demands that it be *preceded* by that letter. Many automata as given accepted words they shouldn't have, while others did not cover all the words needed (many automata would not accept the perfectly valid abc).

Question 2. This question was attempted by 119 students. The average mark was 6.5 out of ten. 20 students received a mark of 2 or lower, while 50 students got full marks. A number of students could construct the automaton without mistake. A fair number could construct an NFA (often with ϵ -transitions) but then could not turn it into a DFA. Some students got confused about how to cope with the choice operator. The language required contains all words that contain a number of 0s which is

- divisible by two or
- divisible by three

(it may be divisible by both), followed by one 1.

Question 3. This question was attempted by 102 students. It had an average mark of 5.3. 15 students received a mark of at most 2, while 35 managed 8 or more.

- (a) Most students could correctly determine that only the last two words are generated by the grammar but quite a few did not specifically state that the first two are not. I received quite a few attempts at drawing parse trees that did not, in fact, form trees, and a mark was deducted for that.
- (b) Most students listed a correct property here, some even several. The trivial observation that all words consist of *as* and *bs* did not receive full marks.
- (c) There were a lot of incorrect answers here. Many grammars given did not create all the words required (*bab*, *a*, *aa*, *aaa*, where popular candidates). There often wasn't a way not to have any *b* in the word, or to have *as* in arbitrary places. A few grammars allowed for at most two *bs* in a word. Some people wrote down rules for grammars generating words that could contain any number of *bs*.