UG Exam Performance Feedback
Second Year
2013/2014 Semester 1

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Comments   Generally, the level was lower than I expected - it seems that low attendance of lectures has taken its toll.

In my opinion, the main reason for incorrect solutions was that the students tried to learn concrete recipes (how to solve a specific problem), instead of understanding definitions (after all, it's math) and how they work in algorithms.

Question 1
Very few attempted this question, so it hard to point out typical problems.

1a (1) about 40% of solutions were correct, (2) almost no correct solutions (3) more than 50% of solutions were correct 1b Few correct solutions. Some students tried the right method but the result was wrong (or even no result was given) 1c Only one correct solution and no common pattern - solutions looked nearly random

Question 2
2a Typical errors:
  - wrong splitting order (not allowed with quantifiers)
  - split on r instead of unit propagation (too many!)
  - unnecessary branches (when one branch on q returns false, there should be no second branch)
  - use of propositional DPLL (quantifiers ignored) 2b Few correct answers. Typical errors:
  - there is a way to satisfy the set after two flips, so the probability is 1
  - probability is calculated for 2 steps, instead of 2k steps 2c - mostly correct answers to 2c1, essentially random answers to other subquestions. It seems that reachability-checking algorithms were not properly understood. Some answers assume that backward reachability algorithms begin with initial states.

Question 3
3a 25-30% of all answers correct. Many errors due to the use of decision trees instead of OBDDs 3b More than half of all answers are correct. Some solutions contained errors in counting the number of models. Some answers used WSAT instead if GSAT 3c Many correct answers. Some solutions used naming instead of the standard transformation. Quite a few errors in various rules, especially distributivity 3d A reasonable number of correct solutions to 3d1, very few to 3d2.

Question 4

4a Many errors in applying rules. The most typical error was to start with the signed formula A = 1 instead of A = 0 - one cannot check validity this way 4b Surprisingly, lots of answers with unbalanced if-then-else (any if-then-else normal form contains an equal number of if's, then's and else's). Quite a few errors with non-variables in the if-part. Quite a few used truth values 0 and 1 (or even words true and false) instead of formulas.
4c Many errors. Some solutions presented paths or transition systems instead of a formula. Some used inequalities, which do not exist in PLFD. Some did not use next state variables 4d Te majority of solutions was correct, though there were a few errors. Some solutions used the formula T instead of the boolean value 1.