Assignment 4:
Solving Vertex Coloring using SAT

Due Tuesday, 30 May, 11:30pm

Consider the propositional logic description of the Vertex Coloring problem, presented in the course slides.

(a) Write out these formulae for the graph $(\{0,1\},\{\{0,1\}\})$. (You can abbreviate $\mathit{color}(0,\mathit{Red})$ as r_0, $\mathit{color}(0,\mathit{Blue})$ as b_0, and similarly for other atoms.)

(b) Transform these formulae into CNF format.

(c) Transform the CNF formulae into DIMACS CNF format.

Find an interpretation satisfying these formulae, using a SAT solver.

You are expected to submit a 3-slide presentation at SUCourse+, one slide for each part (a)–(c), and to make a demo of your solution.

We will grade your solutions based on your demo (including your presentation and your explanations to our questions during the demo). Note that simply making a demo without a presentation or simply submitting a presentation without a demo will be graded as 0.

The demos are planned for the week of 30 May and will be scheduled later on.