Homework 6
posted Mar. 29, due Apr. 12 at the beginning of the class (no late turn-ins will be accepted).

(35 pts) Translation IR into machine code.

    a. (5p) Textbook 8.1 b
    b. (5p) Textbook 8.1 c
    c. (10p) Textbook 8.2 a
    d. (10p) Textbook 8.6
    e. (5p) Generate a set of traces for the basic blocks in d. You only need to represent the traces in basic block ids.

(15 pts) Instruction Selection

    a. (10p) Textbook 9.1.
    b. (5p) Prove that the maximal munch algorithm produces an optimal solution (hint: through contradiction).

(50pts) Register Allocation

    a. (20p) Liveness analysis Exercise 10.1 in the textbook. For Question 10.1(c), please work directly based on the definition of interference (two variable's live ranges overlapping), instead of using the two-step algorithm on Page 214.
    b. (20p) Exercise 11.1 in the textbook
    c. (10p) Exercises 11.2 (a) in the textbook