CS 482 Summer 2005
Prelim 2 Review Suggestions

Suggested Review Questions

The following are a few questions I recommend for review. They are neither sufficient nor necessary for studying for the prelim. I won't be posting solutions for these problems, but you are more than welcome to drop by office hours or the review session to ask about them. You can also ask me about any other question in the text (of which there are muchos *many*) and I can (try to) help you out.

General Flow Question Ch. 7 Qn. 12

Cut Application Ch. 7 Qn. 45 (!!)

Flow Application Ch. 7 Qn. 16

NP-Complete Proof Ch. 8 Qn. 20

NP-Complete Proof Ch. 8 Qn. 10

NP-Complete Proof Ch. 8 Qn. 37

NP-Complete Problems You Are Responsible For

The following are the NP-Complete problems you are responsible for knowing for the prelim. They are problems we have either covered in class or assigned on homeworks. You don't necessarily have to know the reductions used to show these are hard, but you should understand the definition of each problem, especially what the inputs and outputs are.

3-SAT Given a set of clauses $C_1, \ldots, C_k$, each of length 3, over a set of variables $\{x_1, \ldots, x_n\}$, does there exist a satisfying truth assignment?

VERTEX COVER Given a graph G and a number k, does G contain a vertex cover of size at most k?

INDEPENDENT SET Given a graph G and a number k, does G contain an independent set of size at least k?

HAMILTONIAN PATH Given a directed (or undirected) graph G, does it contain a Hamiltonian path?

HAMILTONIAN CYCLE Given a directed (or undirected) graph G, does it contain a Hamiltonian cycle?

3-COL Given a graph G, does a 3-colouring exist?

k-COL Given a graph G, does a k-colouring exist?

KNAPSACK/SUBSET SUM Given natural numbers $w_1, \ldots, w_n$ and a target number W, is there a subset of $\{w_1, \ldots, w_n\}$ that adds up to precisely W?

CLIQUE Given a graph G and a number k, does G contain a clique of size at least k?

LONGEST PATH Given a directed (or undirected) graph G and a number k, does there exist a simple path of length at least k?

Review Session

I'll be holding a review session on Monday night, 5:30-6:30pm The room will be Upson 205 or around there somewhere.

The review session will be for you to ask questions. In particular, I am not going to prepare any sort of review material, so please come armed with questions.

And last but not least, *be on time* and GOOD LUCK!