

Homework 1: Introduction to Program Analysis

Due: January 18, 2006.

In this homework you will get an overview of program analysis.

If you wish, you can work in groups.

Read chapter 1 of our textbook: *Principles of Programming Analysis* by Flemming Nielson, Hanne Riis Nielson, and Chris Hankin (Springer-Verlag, 1999).

1. (20 points) There are only a few resources about program analysis listed on the course resources web page, <http://www.cs.iastate.edu/~cs641/resources.shtml>. For this problem, find at least two other interesting resources about program analysis that are available on the Web. Write down the URL for each resource and a short description of why you found it interesting.
Hint: look in Chapter 1 of the textbook for terms to search for. You may find more material under the specific approaches than under the general term “program analysis.”
2. (10 points) What are the main ideas and goals of program analysis?
3. (10 points) Aside from optimizing compilers for programming languages, describe one other area of computer science in which the ideas and goals of program analysis might be usefully applied.
4. (10 points; extra credit) Describe as many other areas as you can in computer science where the ideas and goals of program analysis might be usefully applied.
5. (suggested practice) Read Chapter 1 of our textbook through the end of section 1.3 carefully. Write down any questions you may have about the material. Select some exercises that look interesting to you and try them out until you get stuck.