

Homework - 1, Compilers Monsoon 2015

Suresh Purini, IIIT-H

1. Install LLVM and Intel C compilers on your machine. I presume that you already have gcc compiler installed.
2. Without modifying the source code of the programs `matmul.a.c` and `matmul.b.c`, optimize them. Report the speedup when compared with `gcc` and `clang` 01 optimization levels. Why is it that `matmul.b.c` takes more time to execute than `matmul.a.c`?
3. Construct a DFA for the language $L = \{0^n \mid n = 3x + 5y, x, y \geq 0\}$.
4. Prove that if $L_1, L_2 \subseteq \{0, 1\}^*$ are regular then $L_1 \cap \overline{L_2}$ is also regular.
5. Read the hand out on cross compilers.
6. Read Chapter 11 and 6 of the book *An Introduction to GCC* by Brian Gough.