Advanced Computer Architecture
(高等計算機結構)

元智大學資工所
Project 1
Out: 10/20/2003
Due: 11/12/2003

1. Project Purpose
This project intends to make you familiar with the SimpleScalar tool set and how it can be used to find instruction mix, the frequency of each type of instruction executed in a program.

2. Works to Be Done
You are asked to use SimpleScalar to perform the following experiments:
(a). Write (or find if you can) a short segment of C code for each of the following tasks:
  □ Fast discrete cosine transform.
  □ A tridiagonal linear solver on a matrix of size 128x128.
  □ LU-decomposition algorithm on a matrix size 128x128.
  □ Fast Fourier transform with block size of 256 samples.
  □ Matrix multiplication on a matrix of size 50x50

Compile the above programs into object codes using the C compiler given in the SimpleScalar tool set. You can use google to find out SimpleScalar web site. Use the latest version of the tool.
(b). Use the SimpleScalar to find the instruction mix for the above five programs.
(c). Find the average size of a basic block in the above five programs.

3. Report
You should write a report to describe your work and results. The format of the report is as follows:
1. Introduction
2. Methods
3. Results
4. Discussions