INSTRUCTION LEVEL PARALLELISM
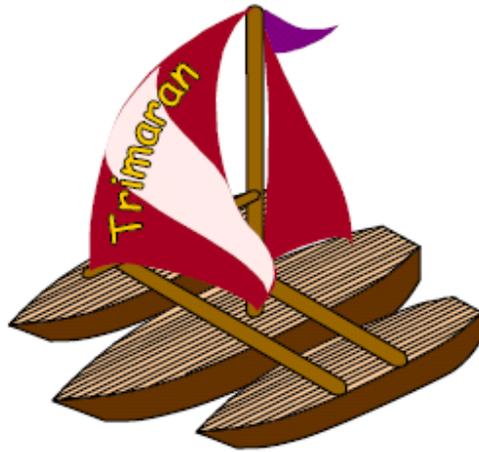
ILP Warmup (DUE: Mon. 4/13/2009, 5PM)

Experience the same tool being used by researchers to explore the interaction between compiler techniques and computer architecture.

Instruction Level Parallelism

Thanks to the TA, Marty Nicholes, for the prior project handout that I leveraged.

INTRODUCTION

The ILP project will be done using the Trimaran toolchain. This is an integrated environment, which allows you to compile a program for experimental target architecture. In the project, you will be using Trimaran to determine how modifications to the target platform affect the performance of particular benchmarks.

TOOLCHAIN

- http://www.trimaran.org/
- Trimaran documentation (see the Trimaran and MDES Manuals)

USING TRIMARAN

The goal here is to become familiar with the Trimaran environment. Some steps will be provided, and some steps you will need to determine by checking the Trimaran docs. Commands to be entered will be shown in the *courier italic font.*

NOTE: when you are asked to note any items in the following steps, record values into a file that you will turn in with the assignment.

1. First logon to one of the ECE unix systems. All these systems will have the afs directory mounted. (Setting up a ECE account first. http://www.ece.ucdavis.edu/support/account/eceacct.html)

2. Run the script to setup necessary Trimaran environmental variables:
   source /afs/ece/users/jowens/eec171/trimaran/scripts/envrc
   or if you are using bash:
   source /afs/ece/users/jowens/eec171/trimaran/scripts/envrc.bash

3. Locate the machine description file that is being used (refer to p. 29 in the version 4.0 Trimaran manual). You can determine the filename from the text in the manual.
   a. Review the file and record the number and type of functional units, and the issue width.

4. Use the *tcc* command to run the simulation for benchmark fact2 and log the output (refer to p. 11 of the Trimaran manual). Some errors are expected during the run.

5. Verify the run was successful by looking for the following line in the log:
   tcc: Result Check *SUCCESSFUL* for Benchmark fact2

6. Use the Sumstat command to review statistics obtained during the run (refer to p. 11 of the Trimaran manual). Find and record the operations per cycle. Record your thoughts about this number… was it what you expected, based on the parallelism of the machine? Record the number of dynamic integer ALU operations for the run.

SUBMISSION

Pretty easy for the warmup. Use the SmartSite tool to turn in: **1)** the log file from the tcc run (step 4), and **2)** the file containing the notes you recorded in response to the questions (steps 3 and 6). For the real project,

you will have to turn in a FILEINFO file that provides a quick description of each file that is part of your submission.   Please zip up all your files to one file named xxxILP.zip, where the xxx are your first, middle and last initials in lowercase letters. If you don't have a middle initial, just use your first and last initials. If your name is hyphenated, use your first initial and your two last initials, but without the hypen. For example, if your name was Daniel Xavier Smith, the filename would be dxsILP.zip. If your name was Danielle Cleopatra Smith-Jones, the filename would be dsjILP.zip. If your name was Cleopatra Smith (no middle name), the filename would be csILP.zip.

DUE DATE: Monday 4/13 at 5PM.