

EE334 Computer Architecture Homework Assignment 7

Due: Monday, March 26, 2007

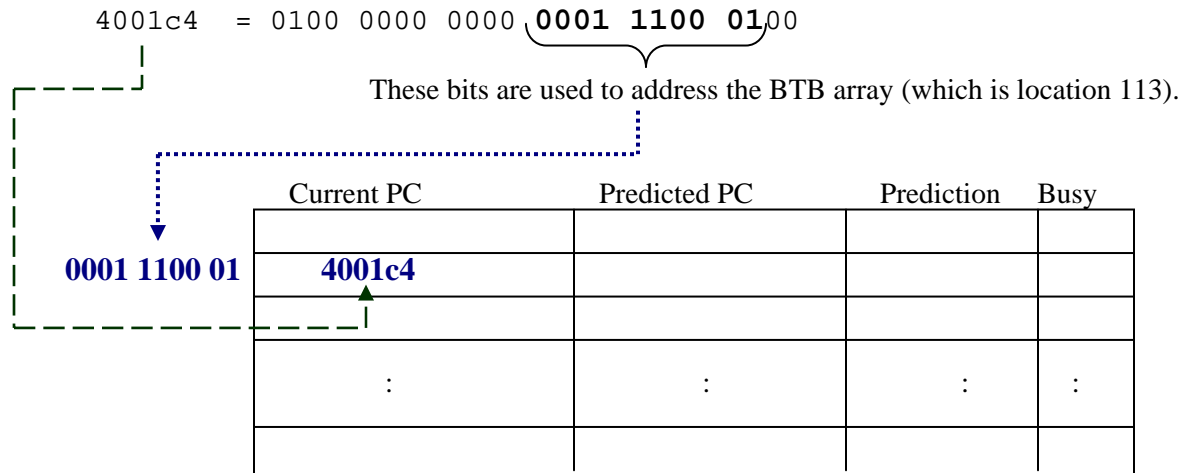
You are to write a program that reads data from a file that contains memory addresses. These hexadecimal addresses are written in ASCII. Below is a very small sample of the addresses the files will have.

400190
400194
400198
40019c
4001a0
4001a4
4001a8
4001ac
4001b0
4001b4
4001b8
4001bc
4001c0
4001c4
4202b0
4202b4
4202b8
4202bc
4202c0
4202c4
4202c8

In your program you have an array of 1024 (1K) entries, each entry has the following four fields (with the type of variable): Current PC (6 ASCII), Predicted PC (6 ASCII), prediction (integer value: 0→3), and busy (binary). The figure below shows the array (which in hardware is called Branch Target Buffer –BTB).

	Current PC	Predicted PC	Prediction	Busy
PC → 10	:	:	:	:

What you are going to do in your program is to insert in the array the entry that is a branch. This is detected by looking at the consecutive addresses if the following address has a difference different than 4 the current address is a branch. For instance, in the sequence above a branch is detected at 4001c4. This entry will be inserted in the array at the address given by the 12 least significant bits excluding the two least significant bits. This is shown below.



Trace files are at the following URL: <http://www.eecs.wsu.edu/~jdelgado/traces/>
 Please use the trace file: trace_sample.txt which is the last file in the directory (save this file in your machine).

Report:

- Explain the structure/organization of your program
- List the first 30 entries in the BTB array that have an address in the *Current PC* field.
- Include a copy of your code.