CS2292 Lab 4

February 17, 2021

Question 1.

(Not part of the evaluation.) (For people who are willing to get their hands dirty!)

- Read the Pin tutorial here: `http://www.ic.unicamp.br/~rodolfo/mo801/04-PinTutorial.pdf`
- Download PIN tool `https://software.intel.com/sites/landingpage/pintool/downloads/pin-3.11-97998-g7ecce2dac-gcc-linux.tar.gz`
- cd pin-3.11-97998-g7ecce2dac-gcc-linux/source/tools/ManualExamples
- make -j4 all TARGET=intel64
- ../../../pin -t obj-intel64/inscount0.so -o inscount0.log – /bin/ls (Note that there are two hyphens before the /bin/ls)
- Look at the contents of inscount0.log
- Read the code in inscount0.cpp (source/tools/ManualExamples/inscount0.cpp)
- Write your favorite C program. Run it with the Pin tool and count the number of instructions.
- Pin manual here: `https://software.intel.com/sites/landingpage/pintool/docs/81205/Pin/html/`

Question 2.

Write a MIPS32 program to count a number of ones and zeros in a 32 bit binary number. The count results are to be kept back in the data section of memory (you need to find out where to store back the results). Assume that the given number is stored in register $r1$.

Question 3.

Write a program to count the binary sequence group, zero group or one group, in a given binary number of 32 bits. For example your program should indicate 3 and 2 for the binary number 00000011111111000001111110000000 for zero sequence and one sequence respectively.