CSE140: Lab/HW #2a
Machine Language...continued

Overview

In this lab, you will bring your knowledge of machine language translations into the next level!

(Programming exercise) Create MachineCode.c

Paired with the classmate sitting next to you and do the following tasks (you can have groups of 3 students):

Write a C program (***MachineCode.c***) to convert any **R-format MIPS instructions** into machine codes. Refer to the MIPS reference sheet to find out all the possible operators your program will need to implement.

You must not use any library other than stdio.h, string.h, and stdlib.h.

You program must produce the following sample results in the **exact same format**:

Sample results (input is in italic and bold):

Enter an R-format instruction:
add s1, t0, t1
Operation: add
Rs: t0 (R8)
Rt: t1 (R9)
Rd: s1 (R17)
Shamt: 0
Funct: 32
Machine code: 00000001000010011000100000100000

Enter an R-format instruction:
jr ra
Operation: jr
Rs: ra (R31)
Rt: 0 (R0)
Rd: 0 (R0)
Shamt: 0
Funct: 8

Machine code: 00000011111000000000000000001000

As a group, discuss about how to read and interpret the instructions from user. Once this step is done, split the task among your group so that each member will implement different category of the operators (arithmetic, shift, or jump) individually. In an upper division course, you are expected to complete your own portion of a group work.

Do not worry about invalid inputs. Assume all test cases will follow the correct instruction format.

Demo to your TA your working program before the end of your next lab (Lab #2). Indicate which portion of the code was your implementation. "Working on the code together" means someone did not implement individually.

What to submit

When you are done with this lab assignments, you are ready to submit your work. Make sure you have included the following ***before*** you press Submit:

- Your ***MachineCode.c*** and a list of Collaborators.
- Your assignment is closed **7 days after this lab is posted** (at 11:59pm).
