Machine Organization and Assembly Language Programming

Problem Set #4

Due: Wednesday May 5th

By the due date, you should have read Chapter 1, Chapter 4 (Sections 4.1 to 4.3), Chapter 3 (sections 3.1 to 3.11), Chapter 5 (sections 5.1 to 5.4) and Chapter 2 (sections 2.1 to 2.5). Of course it is highly recommended that you read the other sections in these chapters.

This assignment has to be done individually.

1. Exercises on Multiple Cycle Implementation:

   (a) Chapter 5. Ex 5.15. Answer the question if we wanted to implement not only *addi* but also *ori*, *lui*, and *sll*. Do not forget about ALU control. Besides arithmetic and logical operations, the ALU can also perform shifts with the shift count being one of the sources of the ALU.

   (b) Chapter 5. Ex 5.17.

2. Exercises on Performance (although I am sure that solutions for these exercises are available, I encourage you to do them by yourselves; it might be handy a couple of days after you hand in this assignment).

   (a) Chapter 2. Ex 2.10, 2.11, 2.12

   (b) Chapter 2. Ex 2.18, 2.20, 2.21, 2.22

   (c) Chapter 2. Ex 2.41, 2.42