1   Lab 6 Questions

1. In Lab 5, you were provided with the psuedocode for the MaxFinder program shown below:

   a = [4 12 9 24 17 -1];
   i = 0;
   max = -1;
   while(a[i] != -1)
       if(a[i] > max)
           max = a[i];
       i++;

   Then, one of the questions in Lab 5 stated: "Assume that the array contains 10 elements and the 11th one contains -1. Based on the timing data of your processor implementation (which you have collected in the previous labs), calculate how many cycles it takes to execute your MaxFinder program. Show your work."

   For this first question, re-write your MaxFinder code using the MOVR instruction and compare the performance of your new code to that in Lab 5.

2. What overhead – i.e. extra hardware – was required to support this new instruction?

3. Comment on changes in performance versus the hardware requirements.

4. Could you think of other instructions that might be more easily implemented now that you have added support for the new load instruction? (Comments: (i) think about the MIPS ISA if you need help getting started. (ii) there is no "right answer" to this problem. Its included to get you to think about how you might reuse hardware and to jump start thinking about your final project.)