Fall 2017 CDA3101

Programming Assignment I

Date assigned : Sep. 8th, 2017

Due date : Sep. 18th, 2017, 11:55 pm

Instructions

Transform the following code into MIPS instructions. Your programs should run correctly on the QtSPIM simulator. Submit your assembly solution (project1.s) containing the neatly written/organized MIPS code in e-Learning (Canvas) website before the deadline.

Important

- You should use comments ('#' followed by text) in order to make your programs more readable.
- The name of the file submitted **MUST** be "**project1.s**"
- You **MUST** verify that your submission in Canvas is successful by downloading your submission from Canvas and successfully testing it again using SPIM simulator. This will ensure that you uploaded the right file in eLearning and the upload is successful.

Problem Statement

We have an array A which has 12 positive numbers. All numbers are unique numbers (no duplicates). The allowed numbers are in the range 1 to 100 (0 is excluded). Find the index of the largest value in the array and print both the index and the largest number.

Your assembly implementation **should exactly follow** the pseudo code sequence given below. **Please do not perform any optimization at pseudo code level or at assembly level.**

Inputs: A[12] = {89, 19, 91, 23, 31, 96, 3, 67, 17, 11, 43, 75}

We will also test your code using other possible values in the A array. The array A will always have 12 unique positive numbers in the range 1 to 100 (0 is excluded). **Please test your MIPS assembly with other possible values in A.**

Outputs (with expected values for the above input)

Index of the largest number: 5

The largest number: 96

Tips:

For printing to/reading from console, you should first load **correct** value to register $v0, and then call “syscall” method. If there is an input, the value would be returned in $v0.

Pseudo-code:

```
int A[12] = {89, 19, 91, 23, 31, 96, 3, 67, 17, 11, 43, 75};
int max = 0;
int maxIndex = 0;
int i=0;
/*find the index of the largest number in the array*/
for (i = 0; i < 12; i++) {
  if( A[i] > max ) {
        max = A[i];
        maxIndex = i;
  }
}
printf("Index of the largest number: %d\n", maxIndex);
printf("The largest number: %d\n", max);
```