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**Project Report**

**Project 4**

1. Description:

Create a program to:

- Input an array of integers from the keyboard.

- Find the maximum element of the array.

- Calculate the number of elements in the range of (m, M). Range m, M are inputted from the keyboard.

1. Solution idea:

* Prompt user to input the size of the array first and input elements one by one.
* Using stack to store user inputs.
* Make comparison at each input element to store max value.
* Find from the beginning to the end of array, find the value m before M to make sure M follows m in the array.

1. Program:

* Read input array and find max:
  + User input the size of the array (n) then enter n elements of the array one by one.
  + Use stack to store array elements.
  + With each input element, the max value will be checked and updated.
* Used registers:
  + $t0 number of elements
  + $t2 current index
  + $t3 max element

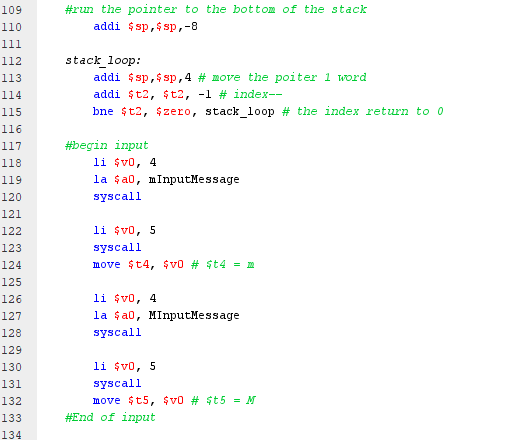
A screenshot of a computer program

Description automatically generated

A screenshot of a computer code

Description automatically generated

* Find m and M:
  + After pushing values to the stack, the stack pointer is at the top of the stack, move the pointer back to the end of the stack to read from the beginning of the array.
  + User input 2 integer m and M
  + The program read the array from begin to the end to find m if m is found, save the index of m then find M on the rest of the array, if M found then the number of elements between m and M will be calculated by: <index of M> - <index of m> - 1
  + If any value of m or M is not found, then exit the program.
* Used registers:
  + $t4, $t5 m, M
  + $t6 found m index.
  + $t7 number of elements between m and M



A screenshot of a computer program

Description automatically generated

A screenshot of a computer code

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