



W10 Mar 18 (D3) Hardware implementation of C program

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These questions are presented under the following assumptions:

- They may be selected to be part of the final exam
- Responses must be posted by the students (not me)
- I will call your attention to any mistakes or wrong content posted in response

N.B.: The source of this question is Patrick R. Schaumont, “[A Practical Introduction to Hardware/Software Codesign](#)”, Problem 4.6, pp. 108-109.

Design a hardware implementation (datapath and controller) for the program in Listing 4.4, assuming that the elements of array `a[]` are all stored in a memory with a single read port. Figure 4.15 illustrates such a memory. The time to lookup an element is very short; thus, you can think of this memory as a combinational element.

```
int a[ ] = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10};  
int findmax ( ) {  
    int max, i;  
    max = a[0];  
    for (i=1; i<10; i++)  
        if (max < a[i])  
            max = a[i];  
  
    return max;  
}
```

Listing 4.4 Program for Problem 4.5

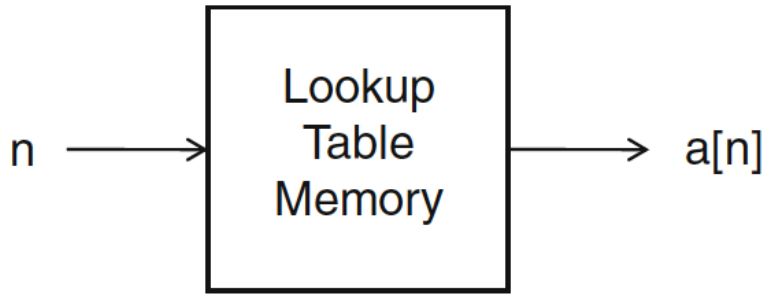


Fig. 4.15 A single-port read-only memory, used to solve Problem 4.6

