

# Fondamenti di Informatica

Prof. Marco Gavanelli

18 January 2017

## Exercise (6 points)

Write a recursive function in language C with the following interface:

```
int maggiore(int a[], int b[], int n);
```

that checks if each element of the array  $a$  (from the element of index 0 to index  $n$ ) is greater than the corresponding element of array  $b$ .

The function returns

- 1 if each element of  $a$  is greater than the element in array  $b$  that is in the same position
- 0 if there is at least an element of  $a$  that is not greater than the corresponding element of  $b$ .

E.g., if  $a=\{1,3,4,3,5\}$  and  $b=\{0,1,3,2,10\}$  then  $maggiore(a,b,3) = 1$ , while  $maggiore(a,b,4) = 0$ .

Afterwards, show how the following program, that calls the function just defined, is executed, by showing the activation records.

```
int f(int a[], int n, int *k)
{
    int i, b[3];
    n--;
    for (i=0; i<*k; i++)
        b[i]=a[n-i];
    (*k)--;
    if (maggiore(a,b,*k))
        return 1;
    else return a[n];
}
main()
{
    int a[3]={1,0,2}, k=3, n=3;
    a[0]=f(a,n,&k);
}
```

## Solution

```

int maggiore(int a[], int b[], int n)
{
    if (n<0)
        return 1;
    if (a[n]>b[n])
        return maggiore(a,b,n-1);
    else
        return 0;
}

```

