Second written examination of

Algoritmos e Estruturas de Dados

Outubro 26, 2015 Duration: no more than 30 minutes

Name:

Student number:

5.0 **1:** **What is a stack? What operations does it provide?**
Answer:

3.0 **2:** **Write on the left C++ code that implements the pop function (stack implemented as an array, data items are of type T), using some of the lines of code presented on the right.**

```
                                T pop(void)
                                void pop(T v)
{                               assert(cur_size > 0);
                                assert(cur_size < max_size);
                                return data[cur_size++];
                                return data[cur_size--];
                                return data[++cur_size];
                                return data[--cur_size];
                                data[cur_size++] = v;
}                               data[cur_size--] = v;
                                data[++cur_size] = v;
                                data[--cur_size] = v;
```

5.0 **3:** **What is a queue? What operations does it provide?**
Answer:

3.0 **4:** **Explain how to increment an index in a circular buffer.**
Answer:

4.0 **5:** **Write a C function that counts the number of nodes of a linked list that appear before a given node n. The function must return -1 if the node does not belong to the linked list. Use some of the following lines of code.**

```
for(int c = 0;head != NULL;head = head->next,c++)
for(int c = 0;head != NULL;head = head->next,c--)
for(int c = 0;head != NULL;head = head->prev,c++)
for(int c = 0;head != NULL;head = head->prev,c--)
if(head == n)
if(head != n)
return c;
return c - 1;
return c + 1;
return -1;
```

Answer:

```
int count_before(node *head,node *n)
{



}
```