Teoria da Computação

MIEI 2018/2019 - FCT UNL

Aula Prática 12

1. Specify a Stack Based Turing Machine (SBTM) that in the end of its execution contains the value $(\texttt{first}, \texttt{second})$ in the memory cell M_1.

2. Specify a SBTM that in the end of its execution contains the value $(((\texttt{5}, \texttt{7}), \texttt{13}), (\texttt{21}, \texttt{30}))$ in the memory cell M_1

3. Consider a list L stored in the memory cell M_1. Specify a SBTM that in the end of its execution contains the elements of the list in the stack of the machine, in the reverse order (the head of the list at the bottom of the stack).

4. Specify a SBTM that accepts the language of the expression $open(read + write)^* close$ over the alphabet $\{open, read, write, close\}$.

5. Consider a list L stored in the memory cell M_1 and an element X stored in the memory cell M_2. Specify a SBTM that in the end of its execution contains the value `true` in the memory cell M_3 if X belongs to L, and `false` otherwise.

6. Specify a SBTM that, given two lists, one in the memory cell M_1 and another in the memory cell M_2, computes the concatenation of the two lists and puts it in the memory cell M_3.

7. Consider a list `Dictionary` that contains pairs of $(\texttt{word}, \texttt{definition})$ stored in the memory cell M_1, and a specific `word` stored in the memory cell M_2. Specify a SBTM that in the end of its execution contains in the memory cell M_3 the value `definition` corresponding to the `word` stored in M_2, or `null` if the `word` is not in the `Dictionary`.