Homework, the 1st series

Deadline: 5 April, 2013, 23:59

Let *Mult* be the language of words over the alphabet $\{0, 1, *, =\}$ of the form $a * b = c$, where $a, b, c \in \{0, 1\}^*$ represent in binary some numbers $A, B, C \in \mathbb{N}$, such that $A * B = C$. For example $11 * 101 = 1111$ is in the language and $111 * 1 = 10$ is not.

Show that the language *Mult* can be recognized by a deterministic Turing machine working in space $S(n) = \mathcal{O}(\log n)$ (where n is the length of the input word).