PS0

February 16, 2018

a $A \subseteq \{0,1\}^*$ is only recursive iff $\exists$ an enumerator E which enumerates A in shortlex order.

Proof. i Suppose A is decidable by M
E: for x in $\{0,1\}^*$:

- Run M on x
- If M accepts. Enumerate. Else move on.

✓

ii Suppose E can enumerate A(in shortlex)
M on input w

- enumerate s
- if $s == w$ accept else if $s > w$ reject else if $s < w$ enumerate again(go back up to step 1)

□