

-NoValue-

thy.1 Computably Enumerable Sets

cmp:thy:ces:
sec

Definição thy.1. A set is *computably enumerable* if it is empty or the range of a computable function.

Observações históricas Computably enumerable sets are also called *recursively enumerable* instead. This is the original terminology, and today both are commonly used, as well as the abbreviations “c.e.” and “r.e.”

You should think about what the definition means, and why the terminology [explanation](#) is appropriate. The idea is that if S is the range of the computable function f , then

$$S = \{f(0), f(1), f(2), \dots\},$$

and so f can be seen as “enumerating” the elements of S . Note that according to the definition, f need not be an increasing function, O.s., the enumeration need not be in increasing order. In fact, f need not even be injective, O.s., repetitions in the enumeration $f(0), f(1), f(2), \dots$ of S are allowed. For instance, the constant function $f(x) = 0$ enumerates the set $\{0\}$.

Any computable set is computably enumerable. To see this, suppose S is computable. If S is empty, then by definition it is computably enumerable. Otherwise, let a be any element of S . Define f by

$$f(x) = \begin{cases} x & \text{if } \chi_S(x) = 1 \\ a & \text{otherwise.} \end{cases}$$

Then f is a computable function, and S is the range of f .

Créditos das Imagens

Referências Bibliográficas