

244 (digit sum) Write a program to find the sum of the digits in the decimal representation of a given natural number.

After trying the question, scroll down to the solution.

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Define

$$R = s' = \sum i: \text{nat} \cdot \text{mod}(\text{div } n \ 10^i) \ 10$$

$$Q = s' = s + \sum i: \text{nat} \cdot \text{mod}(\text{div } n \ 10^i) \ 10$$

Refine

$$R \Leftarrow s := 0. \ Q$$

$$Q \Leftarrow \mathbf{if} \ n=0 \ \mathbf{then} \ \mathit{ok} \ \mathbf{else} \ s := s + \text{mod } n \ 10. \ n := \text{div } n \ 10. \ Q \ \mathbf{fi}$$