

Let consider the number  $n = \overline{a_{m-1} a_{m-2} \dots a_0}$

# of positive number  $\leq n$  include

- (1) # of positive number created by digits have length  $< m$
- (2) If # of positive number created by digit 1 have length  $= m$

$$(1) = \sum_{i=1}^{m-1} l^i \quad (l = \text{len(digits)})$$

$$(2) = k * l^{m-1} + \# \text{ of positive } \leq \overline{a_{m-2} \dots a_0} \quad (\text{if } a_{m-1} \text{ in digit})$$

$k = \# \text{ of element in digit } < a_{m-1}$ .

So we need to compute, # of  $\text{len}(m-i) \leq \overline{a_{m-2} \dots a_0}$

Let  $dp[i] = \# \text{ of positive number length } i+1 \leq \overline{a_i \dots a_0}$

$$dp[i] = k * l^i \quad (k = \# \text{ of element in digit } < a_i)$$

$$+ dp[i-1] \quad \text{if } a_i \text{ in digits}$$

$$\Rightarrow \text{Answer} = dp[m-1] + \sum_{i=1}^{m-1} l^i$$