

$BITS = \{0,1\}$

$BYTES = BITS^8$

$B = \{x \mid x \in N \wedge 0 \leq x \leq 255\}$

$byteValue : BYTES \rightarrow B$

$byteValue(b) = b_7 \cdot 2^7 + b_6 \cdot 2^6 + b_5 \cdot 2^5 + b_4 \cdot 2^4 + b_3 \cdot 2^3 + b_2 \cdot 2^2 + b_1 \cdot 2^1 + b_0 \cdot 2^0$

by enumeration of all possible bytes we can prove that the invese of $byteValue$ is a function

$byteValue^{-1} : B \rightarrow BYTES$

observe that any sequence of $BYTES$ can be converted into a

corresponding sequence of B and vice versa

$hdd \in B^*$

$substr : B^* \times N \times N \rightarrow B^*$

for all $hdd, start, finish : substr(hdd, start, finish) = chunk$ if and only if

$(hdd \in B^*) \wedge (start \in N) \wedge (finish \in N) \wedge (0 \leq start \leq |hdd|) \wedge (start \leq finish \leq hdd) \wedge$

$(\text{for all } k : \text{if } (k \in N \wedge 0 \leq k \leq finish - start) \text{ then } chunk_k = hdd_{(start+k)})$

$|hdd|$ is the number of elements in hdd - the number of bytes on the disk

$sectors : B^* \times N \rightarrow B^*$

$sectors(hdd, sectorNumber) = substr(hdd, sectorNumber \cdot 512, (sectorNumber + 1) \cdot 512)$

$allSubstrings : B^* \rightarrow 2^{(B^*)}$

for all $hdd : allSubstrings(hdd) = \{b \mid b \in B^* \wedge \text{there exist } start \text{ and } finish \text{ such}$

that $b = substr(hdd, start, finish)\}$

$KEYWORDS = \{(g,u,n), (k,i,l,l), (m,a,r,y), \dots\}$ the set of keywords we are looking for

if we look for any human readable keywords, then we can could construct the set for

example by typing in words from all dictionaries or by some algorithm.

$KEYWORDS_ON_HDD = KEYWORDS \cap allSubstrings(hdd)$