$R_{128}(s) = \sum_{i=0}^{i=r-1} 128^i \times \text{Ascii}(s[i])$

$R_{128}(s)\%m = (\sum_{i=0}^{i=r-1} 128^i \times \text{Ascii}(s[i]))\%m$

$R_{128}(s)\%m = (\sum_{i=0}^{i=r-1} (128\%m)^i \times (\text{Ascii}(s[i])\%m))\%m$

From this, we can develop a iteration method to calculate the hash value.

Algorithm

Input: string $s[0, 1, ..., r-1]$

$a \leftarrow 1$

$h \leftarrow 0$

for $i = 0$ to $r-1$

$h \leftarrow (h + a \times \text{Ascii}(s[i]))\%m$

// If m is too large, $a \times \text{Ascii}(s[i])$, or $h + a \times \text{Ascii}(s[i])$ could cause overflow.

// In that case, we use the following:

// $h \leftarrow (h + (a \times \text{Ascii}(s[i]))\%m)\%m$

$a \leftarrow (a \times 128)\%m$

//or $a \leftarrow (a \ll 7)\%m$

end

Output: h