

Sparse Table  $\leftarrow$  static DS  $O(n \log n)$

|       | 0  | 1  | 2  | 3 | 4 | 5  | 6 | 7  | 8  |
|-------|----|----|----|---|---|----|---|----|----|
|       | 5  | 1  | -3 | 2 | 0 | 1  | 2 | 5  | 10 |
| $2^0$ | 5  | 1  | -3 | 2 | 0 | 1  | 2 | 5  | 10 |
| $2^1$ | 6  | -2 | -1 | 2 | 1 | 3  | 7 | 15 |    |
| $2^2$ | 5  | 0  | 0  | 5 | 8 | 18 |   |    |    |
| $2^3$ | 13 | 18 |    |   |   |    |   |    |    |

$[L, R]$

$$\text{len} = R - L + 1 = 13$$

$$8 + 4 + 1$$

$$2^3 + 2^2 + 2^0$$

$$9 - 2 + 1$$

$$[2, 9] + [10, 13] + [14, 14]$$

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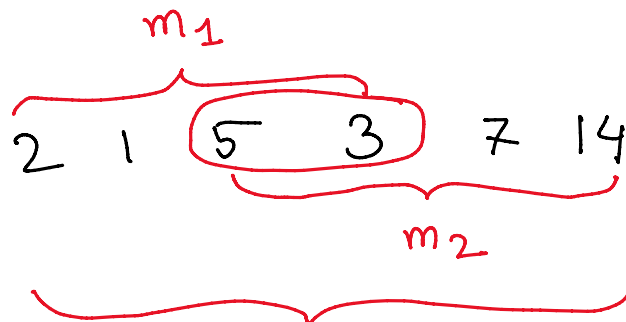
MIN/MAX/GCD

int spmin[N][20];

spmin[i][0] = arr[i];

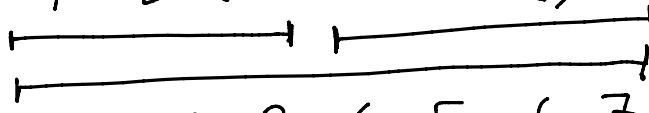
comin[i][j] = min(spmin[i][j-1],

min(m<sub>1</sub>, m<sub>2</sub>))



$$spmin[i][j] = \min(spmin[i][j-1], spmin[i + (1 \ll (j-i))][j-1])$$

$\min(m_1, m_2)$

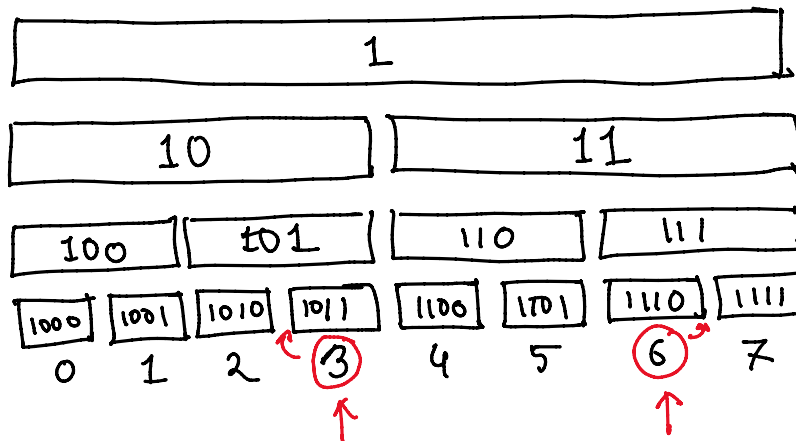


0 1 2 3 4 5 6 7

$\uparrow$   
 $spmin[0][3] = \min(spmin[0][2], spmin[0+2^2][2])$

DST (Disjoint Sparse Table)

$$N = 2^k$$



$L=3 \rightarrow 1011$   
 $L=6 \rightarrow 1110$