

Search in a 2D Matrix

→ Using the Binary search

(1) Search the correct row/overlapping row. Find the mid

(2) midlow → target with

$$\text{mat}[\text{midR}][0] \leq \text{mat}[\text{midR}][n-1]$$

(3) $\text{tar} > \text{mat}[\text{midR}][n-1]$

$$\text{SR} = \text{mid} + 1$$

(4) $\text{tar} < \text{mat}[\text{midR}][n-1]$
~~SR~~ $\text{SR} = \text{mid} + 1$

(5) $\text{tar} < \text{mat}[\text{midR}][0]$
 $\text{SR} = \text{mid} - 1$

Another Logic

```
r = 0, c = n - 1
while (c >= 0 && r < m) {
    if (tar == m[r][c]) — True
    if (tar < m[r][c])
        c--
    if (tar > m[r][c])
        r++
}
```