

Search a 2D Matrix II

Medium

Write an efficient algorithm that searches for a value in an $m \times n$ matrix. This matrix has the following properties:

- Integers in each row are sorted in ascending from left to right.
- Integers in each column are sorted in ascending from top to bottom.

Example:

Consider the following matrix:

```
[
  [1,   4,   7, 11, 15],
  [2,   5,   8, 12, 19],
  [3,   6,   9, 16, 22],
  [10, 13, 14, 17, 24],
  [18, 21, 23, 26, 30]
]
```

Given target = 5, return `true`.

Given target = 20, return `false`.