

① Key = 10

[0]	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
11	22	33	44	55	66	77	88	99

② $L = 0$ left
 $R = 8$
 $M = 4$

mid.

Right

③ $10 == 55$? no. Comp 1

[0]	[1]	[2]	[3]
11	22	33	44

left mid.

Right

② $L = 0$
 $R = \text{mid} - 1$
 $M = (0 + 3) / 2 = 1$

④ $10 < 55 \rightarrow \text{LSA}$
 $\text{LSA} \rightarrow 0 \text{ to } \text{mid} - 1$

Comp 2③ $10 == 22$? no.

④ $10 < 22 \rightarrow \text{consider LSA}$
 $0 \text{ to } \text{mid} - 1$

[0]
11

left
 Right
 mid.

② $L = 0$
 $R = \text{mid} - 1 = 0$
 $M = 0$

Comp 3③ $10 == 11$? no.④ $10 < 11 \rightarrow \text{LSA}$ $\text{LSA} \rightarrow \text{left to } \text{mid} - 1$

② $L = 0$
 $R = \text{mid} - 1 = 0 - 1 = -1$
 M

0 to -1 \rightarrow invalid array.

When right to crosses
 key not found.

log.

$\rightarrow O(\log n)$
 $\Theta(\log n)$