



Binary Search

Searching for 3

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1	2	3	5	5	6	6	7	7	7	8	8	9	9	9



Binary Search

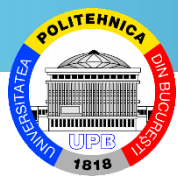
Searching for **3**

Interest area **0** **15**

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1	2	3	5	5	6	6	7	7	7	8	8	9	9	9



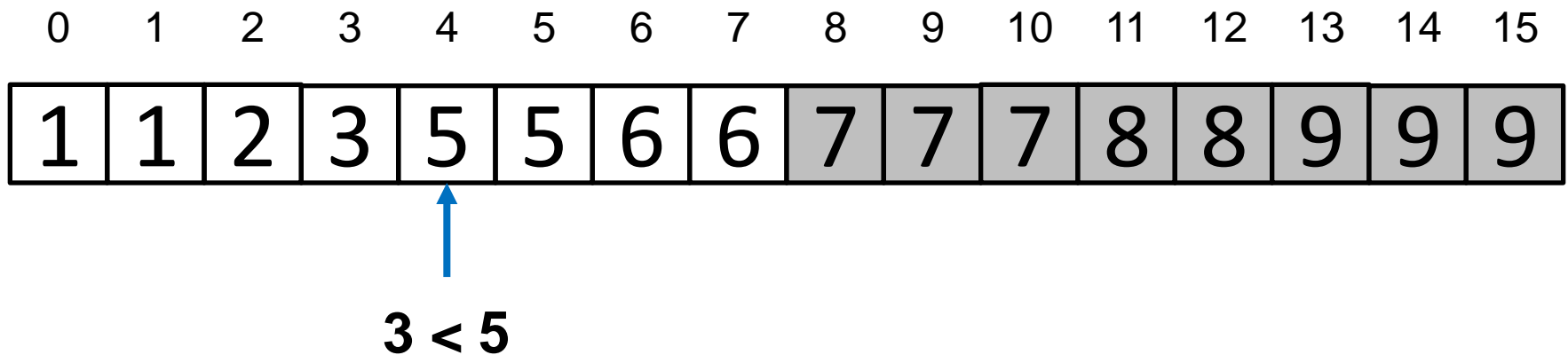
$3 < 7$



Binary Search

Searching for **3**

Interest area **0** **7**






Binary Search

Searching for 3

Interest area 0 3

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1	2	3	5	5	6	6	7	7	7	8	8	9	9	9


3 > 2

Binary Search

Searching for 3

Interest area 3 3

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1	2	3	5	5	6	6	7	7	7	8	8	9	9	9

3 = 3
end

$O(\log_2(n))$ time



Parallel Search

Searching for 3

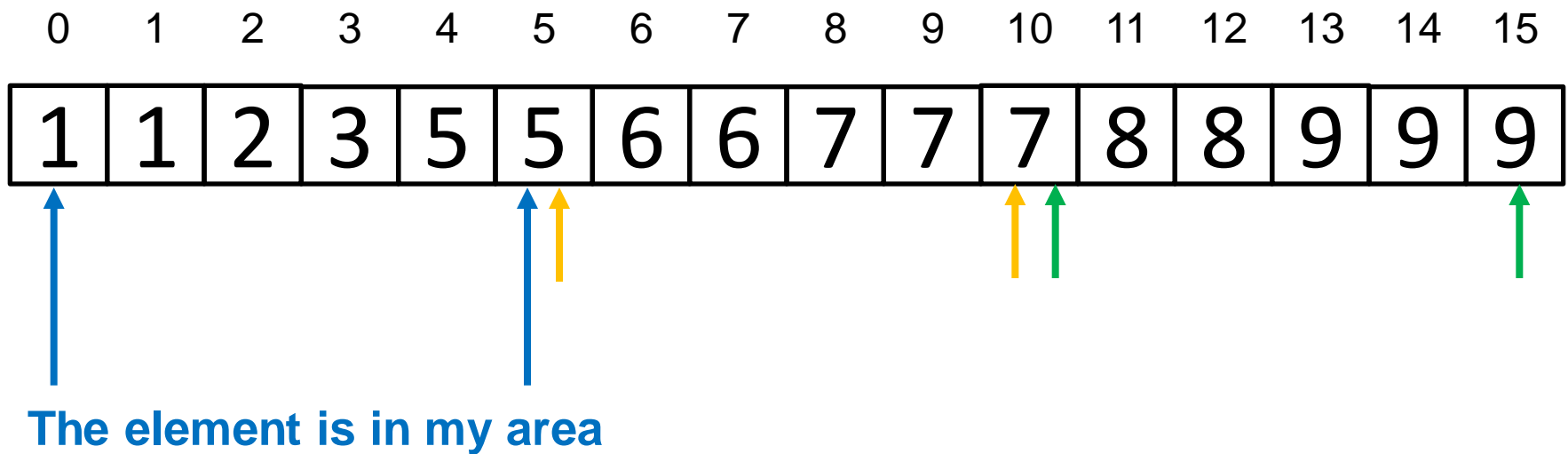
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1	2	3	5	5	6	6	7	7	7	8	8	9	9	9

Parallel Search

Searching for 3

Interest area

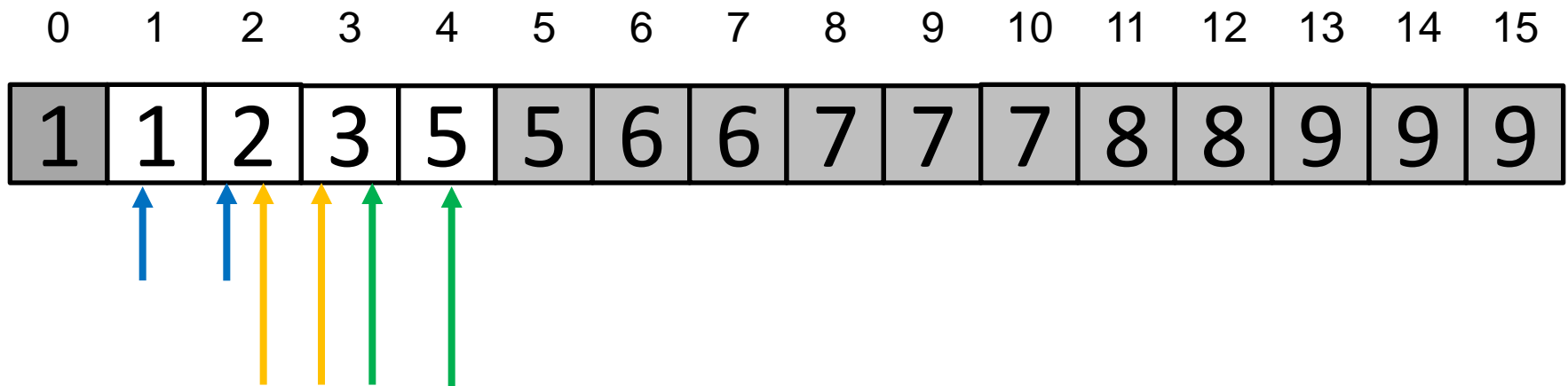
0	15
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Parallel Search

Searching for 3

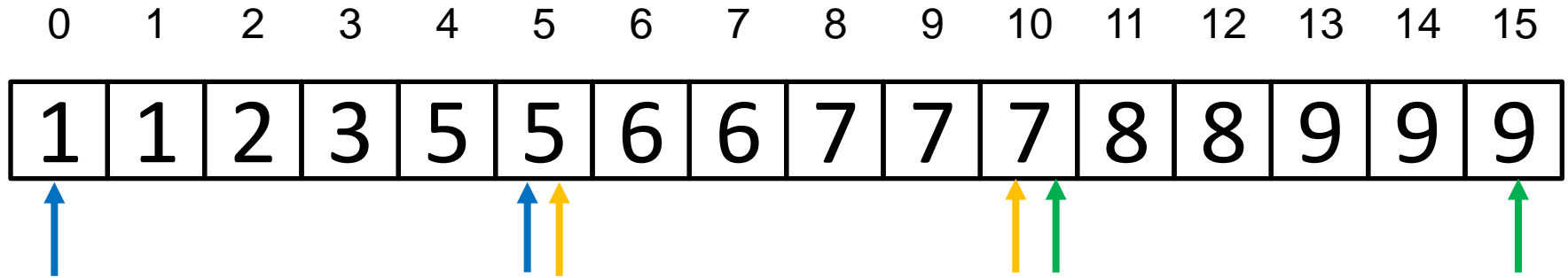
Interest area 1 4



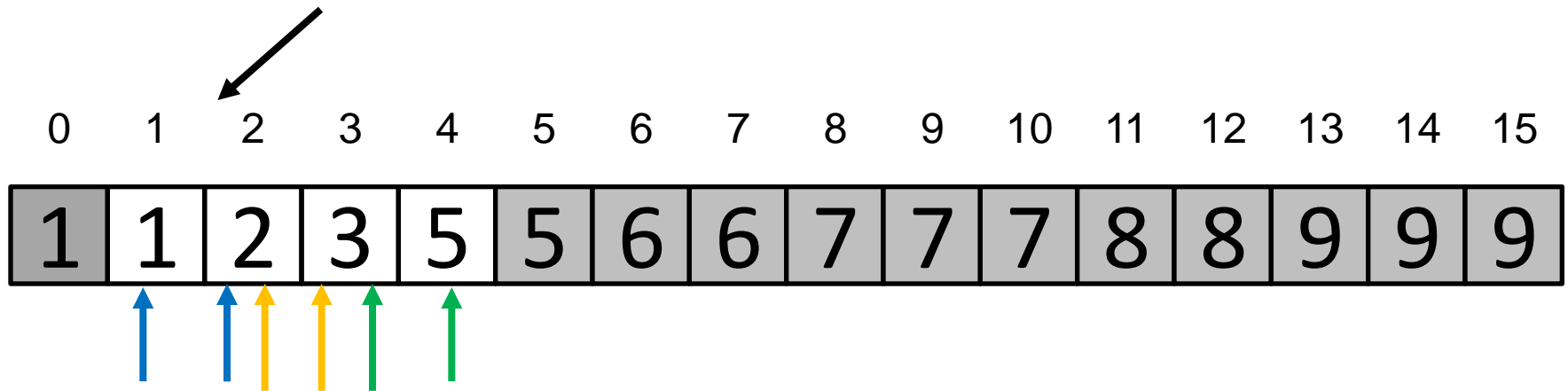
I found the element

I found the element

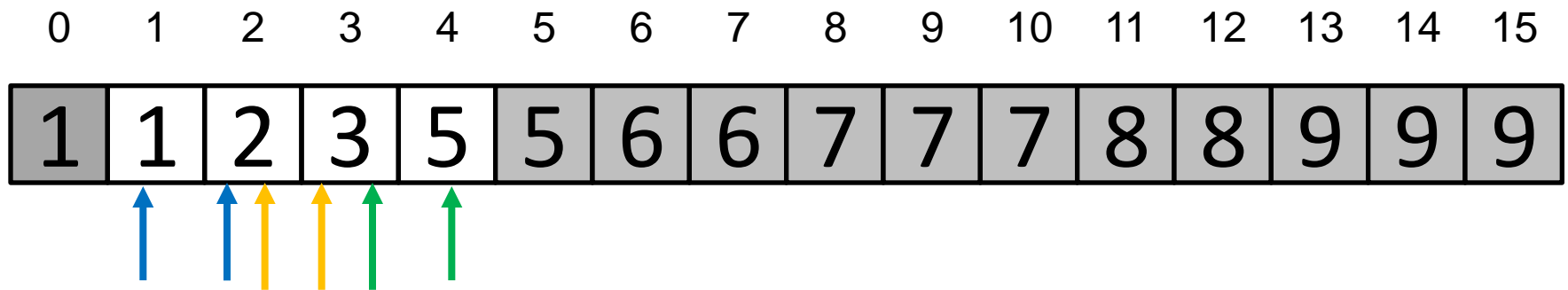
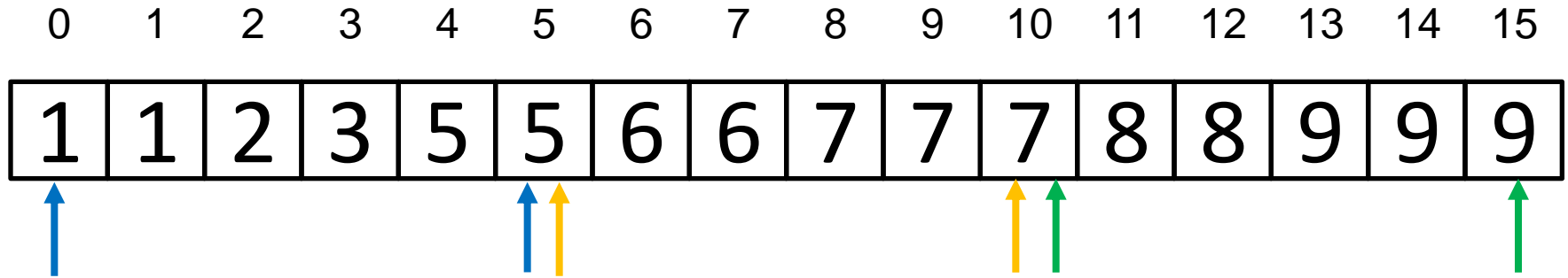
Parallel Search



Operations can**NOT** be executed in parallel



Parallel Search



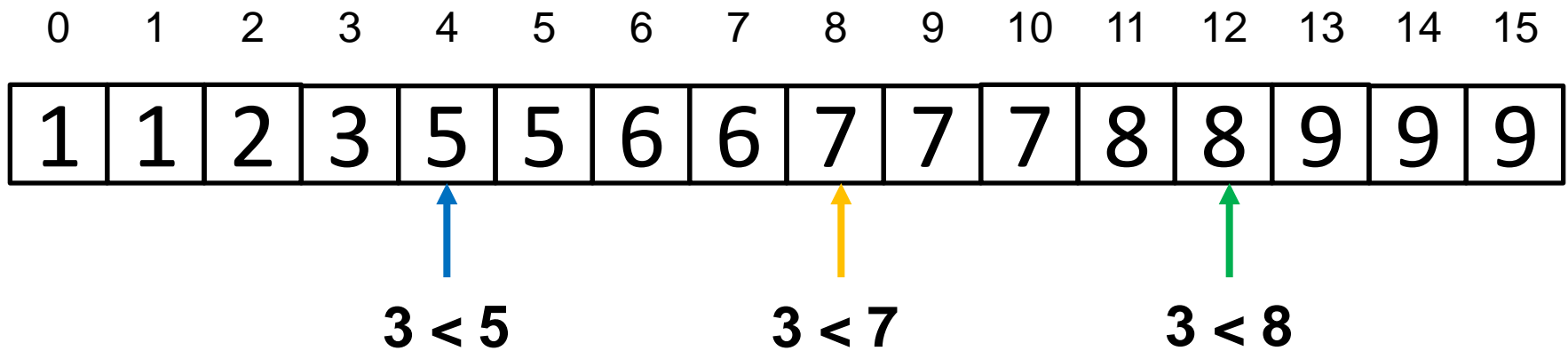


Parallel Search – solution 2 (fewer threads)

Parallel Search – solution 2 (fewer threads)

Searching for 3

Interest area 0 15



Operations can be executed in parallel



Parallel Search

Searching for 3

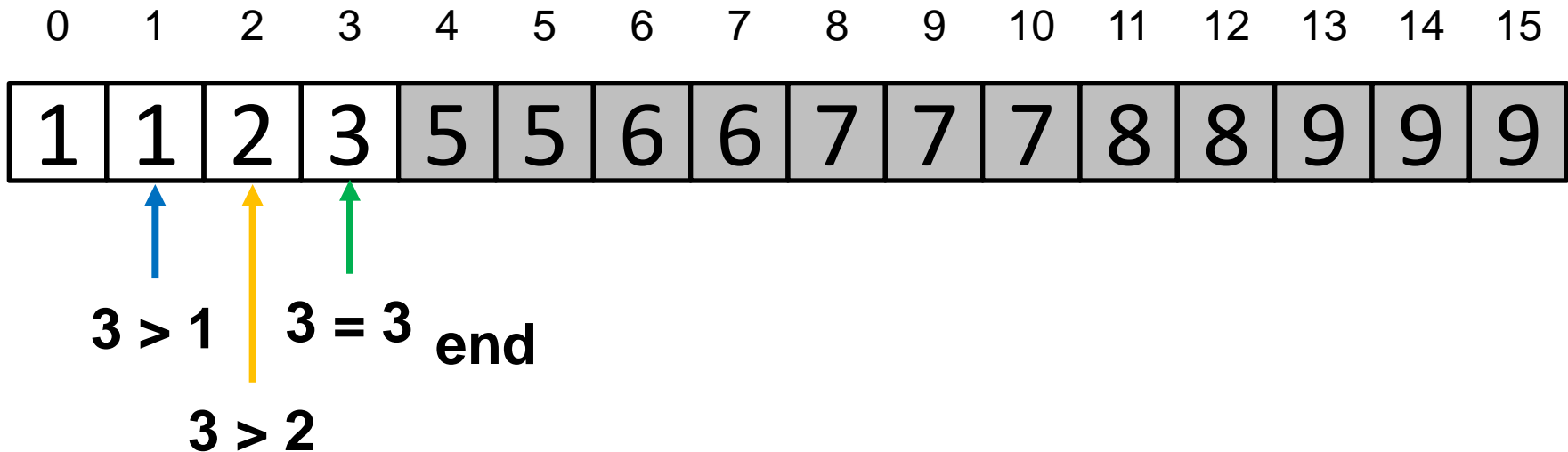
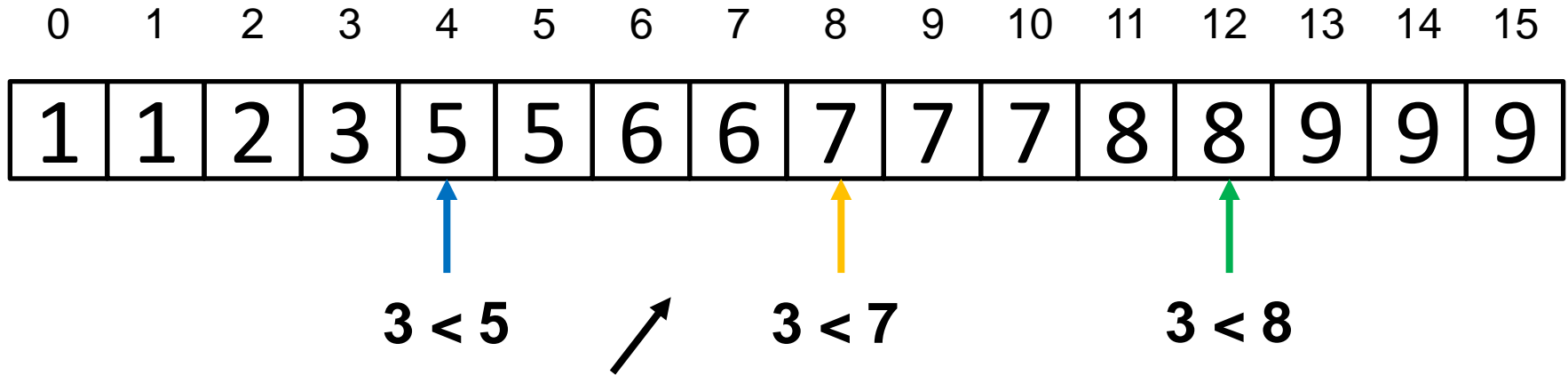
Interest area 0 3

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1	2	3	5	5	6	6	7	7	7	8	8	9	9	9

$3 > 1$
 $3 > 2$
 $3 = 3$ end

$O(\log_p(n))$ time

Parallel Search



Parallel Search

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1	2	3	5	5	6	6	7	7	7	8	8	9	9	9



$3 < 5$



$3 < 7$



$3 < 8$



0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1	2	3	5	5	6	6	7	7	7	8	8	9	9	9



$3 > 1$



$3 = 3$



$3 > 2$