

## Linear Search

列号

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

1 3 5 7 9 11 13 15 17 19 21 23 25 27 29

待搜元素每次减1

Searching for 2.

```

1  3  5  7  9 11 13 15 17 19 21 23 25 27 29
  3  5  7  9 11 13 15 17 19 21 23 25 27 29
    5  7  9 11 13 15 17 19 21 23 25 27 29
      7  9 11 13 15 17 19 21 23 25 27 29
        9 11 13 15 17 19 21 23 25 27 29
          11 13 15 17 19 21 23 25 27 29
            13 15 17 19 21 23 25 27 29
              15 17 19 21 23 25 27 29
                17 19 21 23 25 27 29
                  19 21 23 25 27 29
                    21 23 25 27 29
                      23 25 27 29
                        25 27 29
                          27 29
                            29
  
```

Number 2 NOT found.

## Linear Search

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

1 3 5 7 9 11 13 15 17 19 21 23 25 27 29

Searching for 27.

```

1  3  5  7  9 11 13 15 17 19 21 23 25 27 29
  3  5  7  9 11 13 15 17 19 21 23 25 27 29
    5  7  9 11 13 15 17 19 21 23 25 27 29
      7  9 11 13 15 17 19 21 23 25 27 29
        9 11 13 15 17 19 21 23 25 27 29
          11 13 15 17 19 21 23 25 27 29
            13 15 17 19 21 23 25 27 29
              15 17 19 21 23 25 27 29
                17 19 21 23 25 27 29
                  19 21 23 25 27 29
                    21 23 25 27 29
                      23 25 27 29
                        25 27 29
                          27 29
  
```

Number 27 found in position 13.

## Binary Search

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

规模减半

Searching for 27.

1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 left= 0 right=14  
17 19 21 23 25 27 29 left= 8 right=14  
25 27 29 left=12 right=14

Number 27 found in position 13.

## Binary Search

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

Searching for 2.

1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 left= 0 right=14  
1 3 5 7 9 11 13 left= 0 right= 6  
1 3 5 left= 0 right= 2  
1 left= 0 right= 0

Number 2 NOT found.

## Quick Find

	0	1	2	3	4	5	6	7	8	9
( 3- 2) !=	0	1	2	2	4	5	6	7	8	9
( 6- 4) !=	0	1	2	2	4	5	4	7	8	9
( 3- 4) !=	0	1	4	4	4	5	4	7	8	9
( 5- 2) !=	0	1	4	4	4	4	4	7	8	9
( 6- 2) =	0	1	4	4	4	4	4	7	8	9
( 0- 8) !=	8	1	4	4	4	4	4	7	8	9
( 9- 1) !=	8	1	4	4	4	4	4	7	8	1
( 3- 8) !=	8	1	8	8	8	8	8	7	8	1
( 6- 4) =	8	1	8	8	8	8	8	7	8	1
( 0- 5) =	8	1	8	8	8	8	8	7	8	1

## Quick Union

	0	1	2	3	4	5	6	7	8	9
( 0- 2) !=	2	1	2	3	4	5	6	7	8	9
( 2- 4) !=	2	1	4	3	4	5	6	7	8	9
( 5- 1) !=	2	1	4	3	4	1	6	7	8	9
( 4- 8) !=	2	1	4	3	8	1	6	7	8	9
( 7- 3) !=	2	1	4	3	8	1	6	3	8	9
( 5- 9) !=	2	9	4	3	8	1	6	3	8	9
( 9- 4) !=	2	9	4	3	8	1	6	3	8	8
( 5- 6) !=	2	9	4	3	8	1	6	3	6	8
( 6- 3) !=	2	9	4	3	8	1	3	3	6	8
( 3- 5) =	2	9	4	3	8	1	3	3	6	8

# Quick Union Weighted

			0	1	2	3	4	5	6	7	8	9	
(	0-	2)	!=	0	1	0	3	4	5	6	7	8	9
(	2-	4)	!=	0	1	0	3	0	5	6	7	8	9
(	5-	1)	!=	0	5	0	3	0	5	6	7	8	9
(	4-	8)	!=	0	5	0	3	0	5	6	7	0	9
(	7-	3)	!=	0	5	0	7	0	5	6	7	0	9
(	5-	9)	!=	0	5	0	7	0	5	6	7	0	5
(	9-	4)	!=	0	5	0	7	0	0	6	7	0	5
(	5-	6)	!=	0	5	0	7	0	0	0	7	0	5
(	6-	3)	!=	0	5	0	7	0	0	0	0	0	5
(	3-	5)	=	0	5	0	7	0	0	0	0	0	5