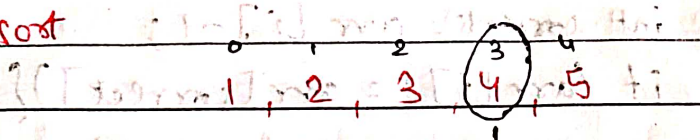
Cyclic sort

↳ When given nos. from range 1 to N ⇒ use cyclic sort
↳ i.e. continuous range

Given, 3, 5, 2, 1, 4

After sort

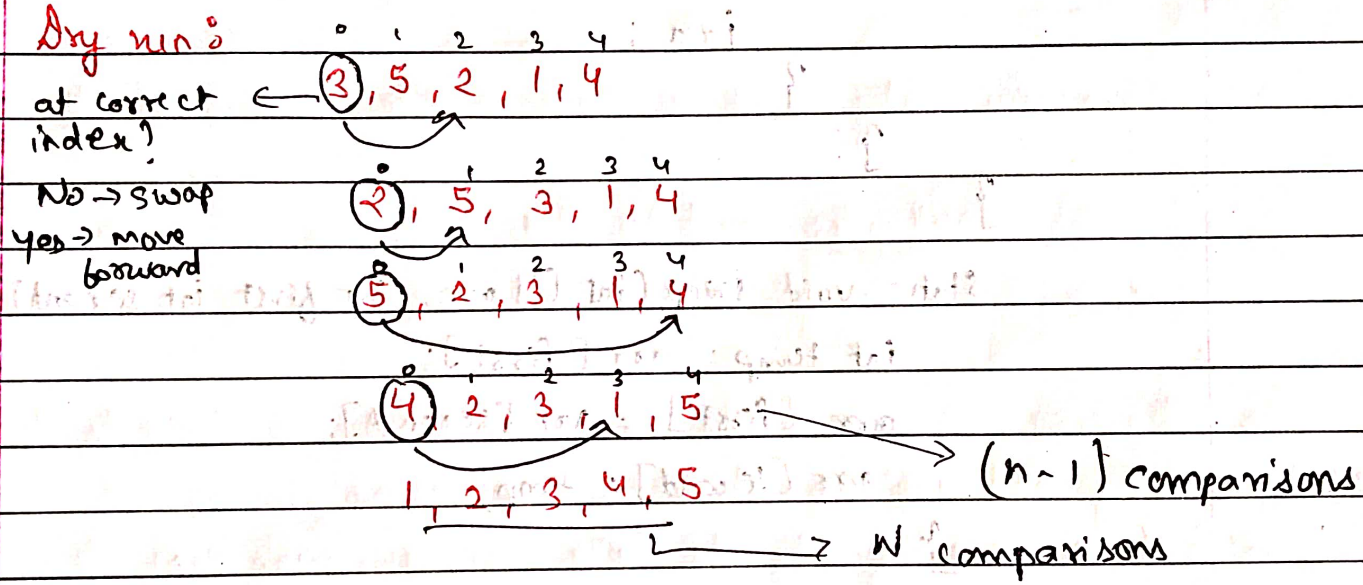


n = 5

↓

Notice ⇒ index = value − 1

Dry run:



Worst case: $(N-1) + N = 2(N-1)$

↳ $O(N)$ (const. ignored)

Best case: $O(N)$

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Code:

```
static void cyclicsort (int[] arr) {
    int i = 0;
    while (i < arr.length){
        int correct = arr[i] - 1;
        if (arr[i] != arr[correct]){
            swap (arr, i, correct);
        } else {
            i++;
        }
    }
}

static void swap (int[] arr, int first, int second) {
    int temp = arr[first];
    arr[first] = arr[second];
    arr[second] = temp;
}
```