1 Exercises

Exercise 1. Consider partitioning an array `a[]` containing the following keys, by calling the `partition()` function (shown below) from quick sort, as `partition(a, 0, a.length - 1)`:

P A R T I O N E X M L

```
private static int partition(Comparable[] a, int lo, int hi) {
    int i = lo;
    int j = hi + 1;
    Comparable v = a[lo];
    while (true) {
        while (less(a[++i], v)) {
            if (i == hi) {
                break;
            }
        }
        while (less(v, a[--j])) {
            if (j == lo) {
                break;
            }
        }
        if (i >= j) {
            break;
        }
        exchange(a, i, j);
    }
    exchange(a, lo, j);
    return j;
}
```

a. What is the value of the pivot element `v`?

b. What is the value returned by the function call, ie, what is the destination index of the pivot?

c. What is the state of the array after the call?

2 Solutions

Solution 1.

a. `P`

b. `7`

c. `E A L M I O N P X T R`