Algorithm 1: Randomized select algorithm

```
1: procedure RANDOMIZED-SELECT(A, l, r, i)
2:     if l == r then return A[l]
3:     q = RANDOMIZED-PARTITION(A, l, r)
4:     k = q - l + 1
5:     if i == k then                    ▷ the pivot value is the answer
6:         return A[q]
7:     else if i < k then
8:         return RANDOMIZED-SELECT(A, l, q - 1, i)
9:     else
10:        return RANDOMIZED-SELECT (A, q + 1, r, i - k)
```

Algorithm 2: Randomized partition algorithm

```
1: procedure RANDOMIZED-PARTITION(A, l, r)
2:     i = RANDOM(l, r)
3:     exchange A[r] with A[i]
4:     return PARTITION(A, l, r)
```

Algorithm 3: Partition algorithm

```
1: procedure PARTITION(A, l, r)
2:     x = A[r]
3:     i = l - 1
4:     for j = l to r - 1 do
5:         if A[j] ≤ x then
6:             i = i + 1
7:             exchange A[i] with A[j]
8:     exchange A[i + 1] with A[r]
9:     return i + 1
```