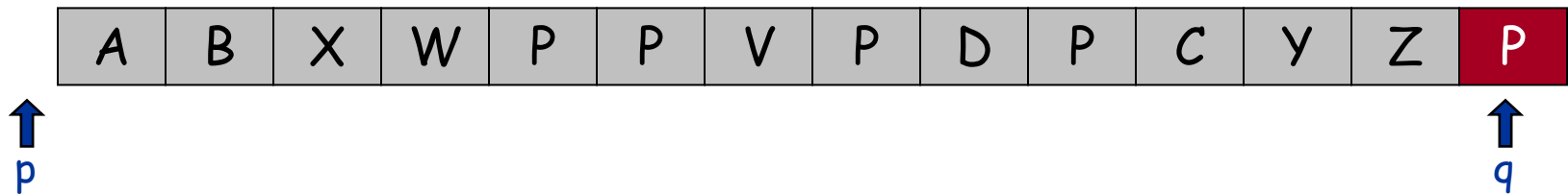


# 3-Way Partitioning

## 3-way partitioning.

- Choose partitioning element.
- Scan from left  $\geq$  element.
- Scan from right  $\leq$  element.
- Exchange.
- Move to left or right end if equal.
- Repeat until pointers cross.



partition element



unpartitioned

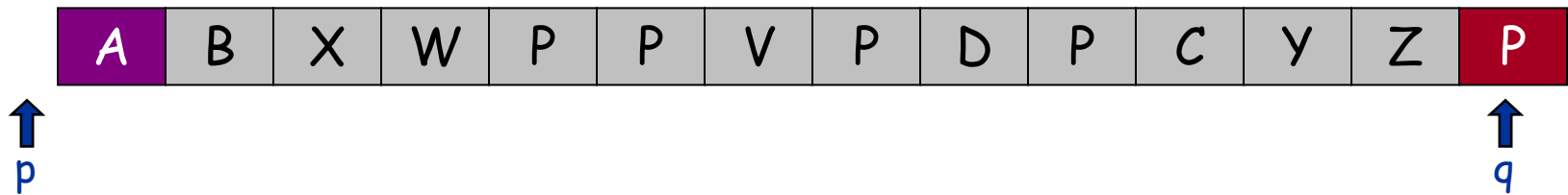


partitioned

## 3-Way Partitioning

### 3-way partitioning.

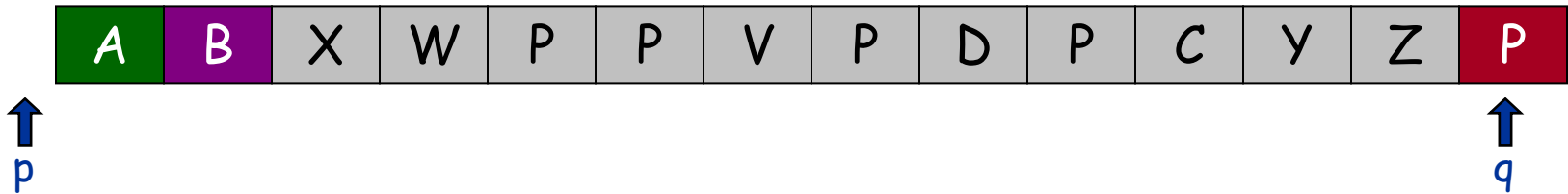
- Choose partitioning element.
- Scan from left  $\geq$  element.
- Scan from right for  $\leq$  element.
- Exchange.
- Move to left or right end if equal.
- Repeat until pointers cross.



## 3-Way Partitioning

### 3-way partitioning.

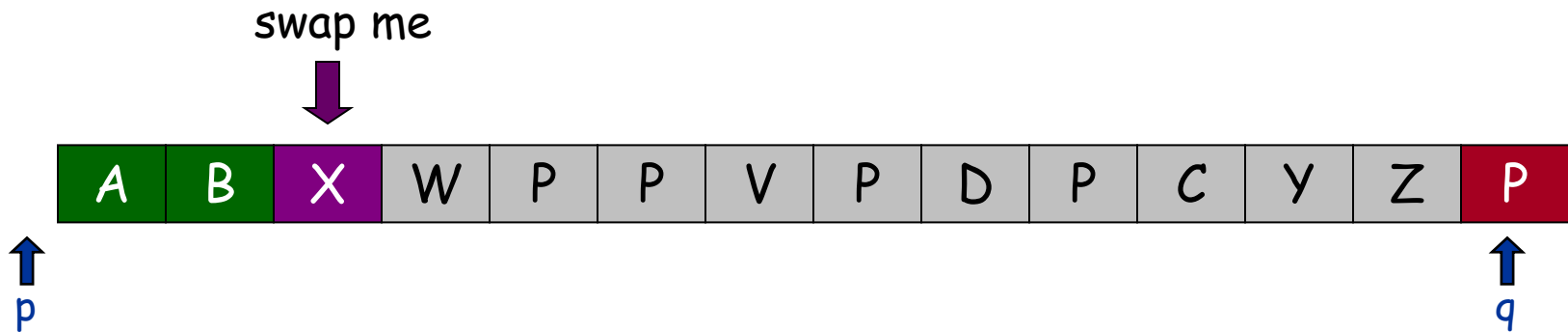
- Choose partitioning element.
- Scan from left  $\geq$  element.
- Scan from right for  $\leq$  element.
- Exchange.
- Move to left or right end if equal.
- Repeat until pointers cross.



# 3-Way Partitioning

## 3-way partitioning.

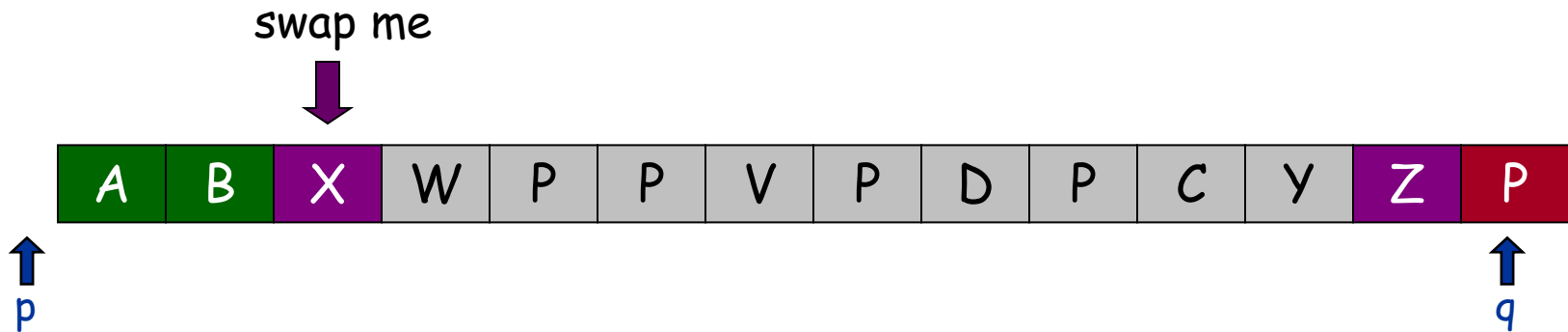
- Choose partitioning element.
- Scan from left  $\geq$  element.
- Scan from right for  $\leq$  element.
- Exchange.
- Move to left or right end if equal.
- Repeat until pointers cross.



# 3-Way Partitioning

## 3-way partitioning.

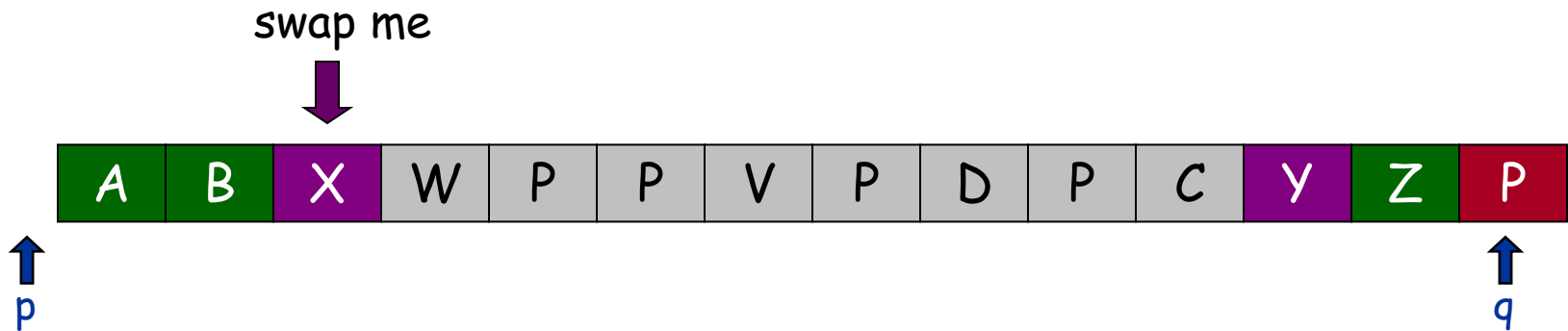
- Choose partitioning element.
- Scan from left  $\geq$  element.
- Scan from right  $\leq$  element.
- Exchange.
- Move to left or right end if equal.
- Repeat until pointers cross.



# 3-Way Partitioning

## 3-way partitioning.

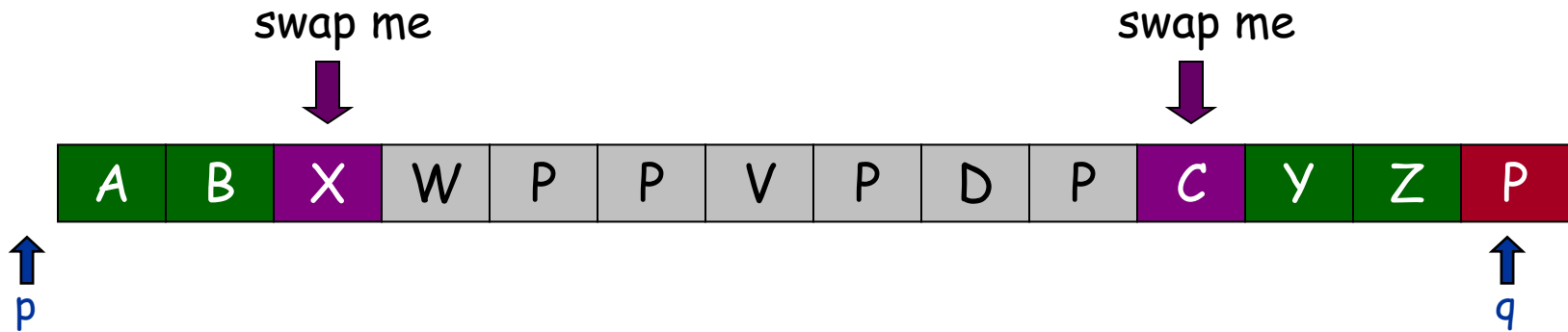
- Choose partitioning element.
- Scan from left  $\geq$  element.
- Scan from right  $\leq$  element.
- Exchange.
- Move to left or right end if equal.
- Repeat until pointers cross.



# 3-Way Partitioning

## 3-way partitioning.

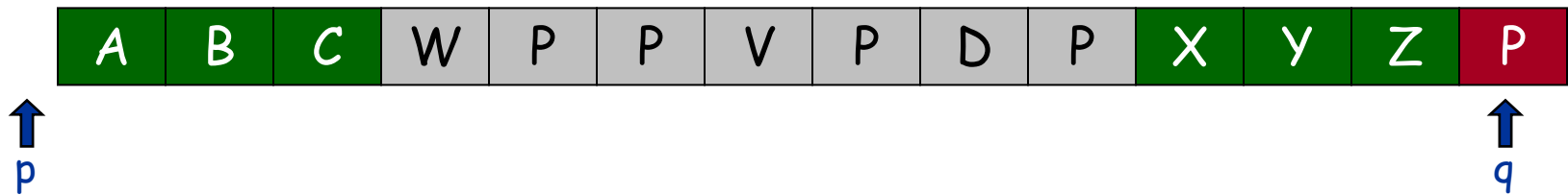
- Choose partitioning element.
- Scan from left  $\geq$  element.
- Scan from right  $\leq$  element.
- Exchange.
- Move to left or right end if equal.
- Repeat until pointers cross.



## 3-Way Partitioning

### 3-way partitioning.

- Choose partitioning element.
- Scan from left  $\geq$  element.
- Scan from right for  $\leq$  element.
- Exchange.
- Move to left or right end if equal.
- Repeat until pointers cross.

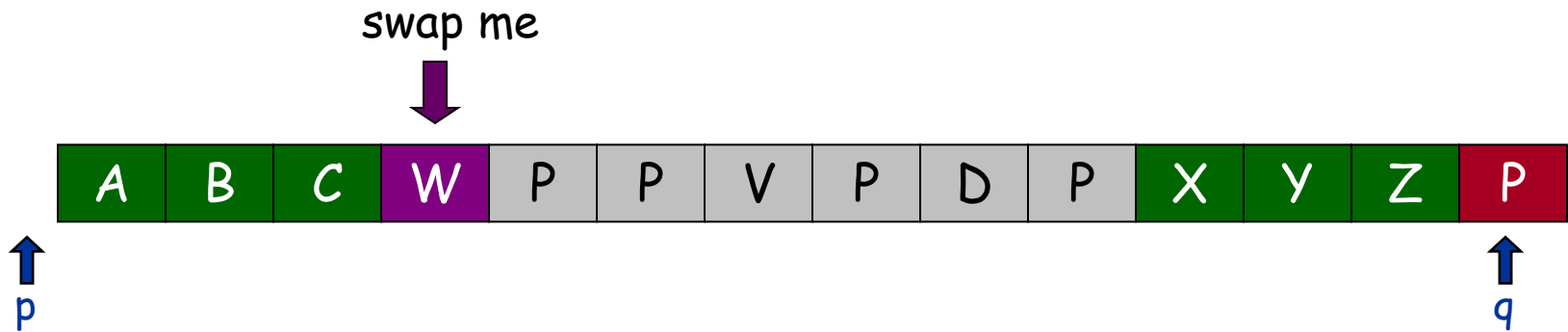




# 3-Way Partitioning

## 3-way partitioning.

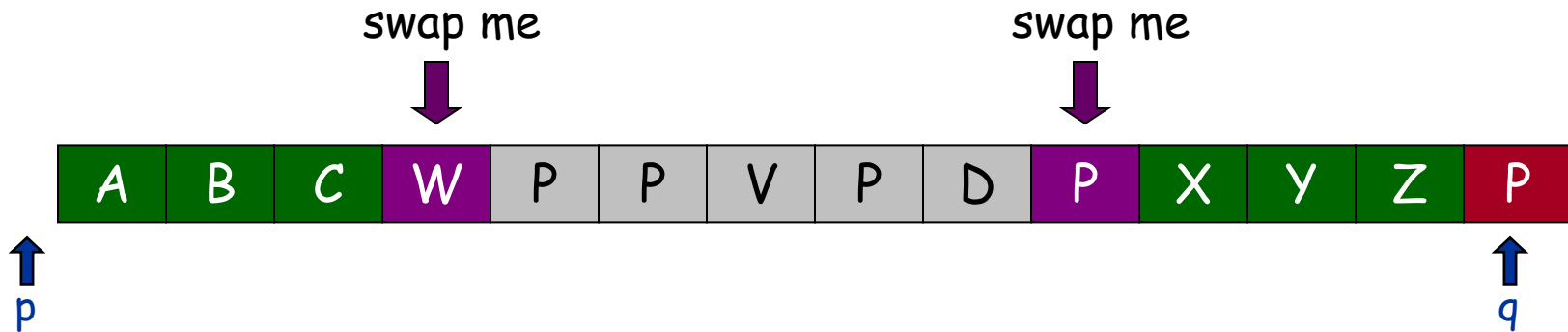
- Choose partitioning element.
- Scan from left  $\geq$  element.
- Scan from right  $\leq$  element.
- Exchange.
- Move to left or right end if equal.
- Repeat until pointers cross.



# 3-Way Partitioning

## 3-way partitioning.

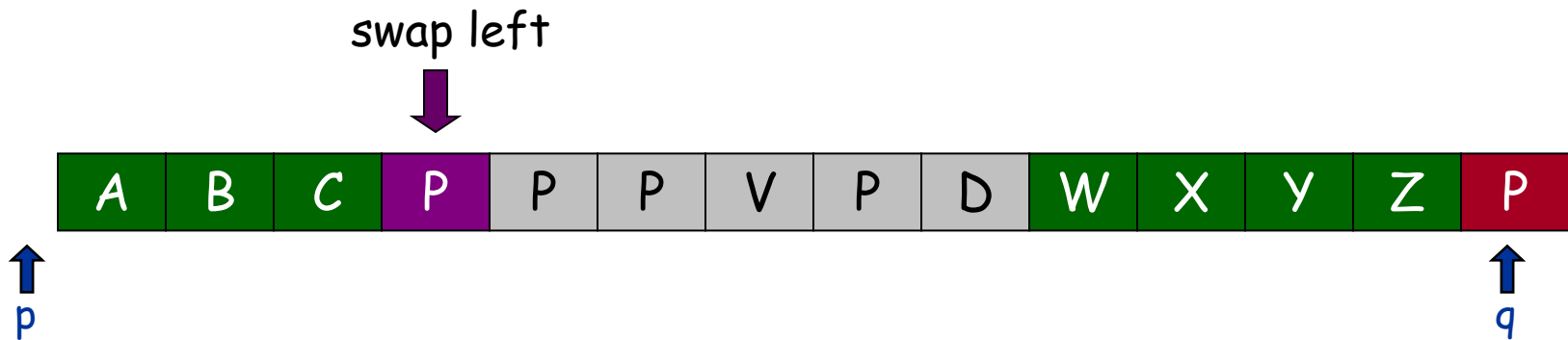
- Choose partitioning element.
- Scan from left  $\geq$  element.
- Scan from right  $\leq$  element.
- Exchange.
- Move to left or right end if equal.
- Repeat until pointers cross.



# 3-Way Partitioning

## 3-way partitioning.

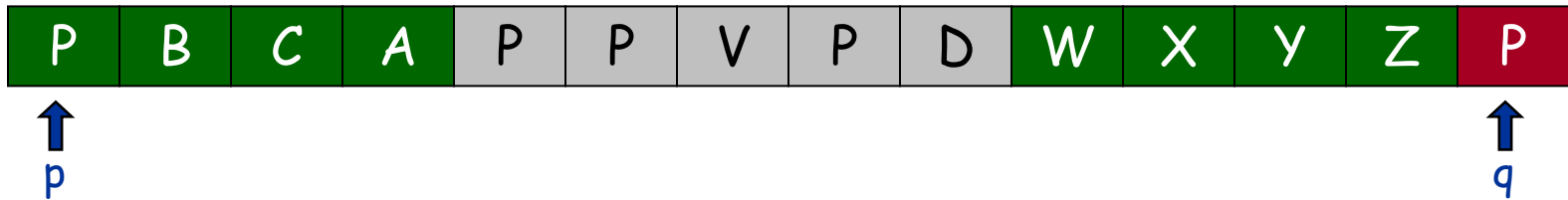
- Choose partitioning element.
- Scan from left  $\geq$  element.
- Scan from right  $\leq$  element.
- Exchange.
- Move to left or right end if equal.
- Repeat until pointers cross.



# 3-Way Partitioning

## 3-way partitioning.

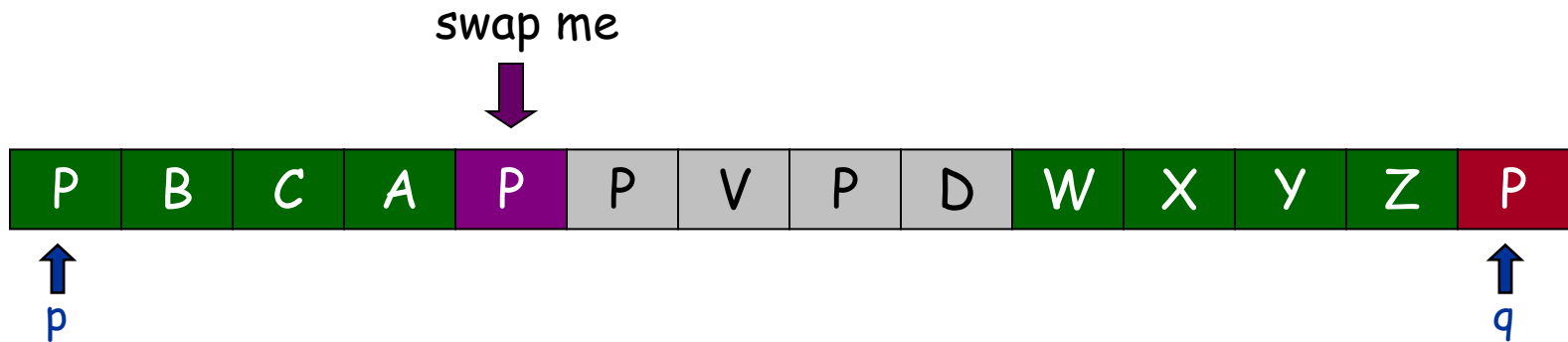
- Choose partitioning element.
- Scan from left  $\geq$  element.
- Scan from right for  $\leq$  element.
- Exchange.
- Move to left or right end if equal.
- Repeat until pointers cross.



# 3-Way Partitioning

## 3-way partitioning.

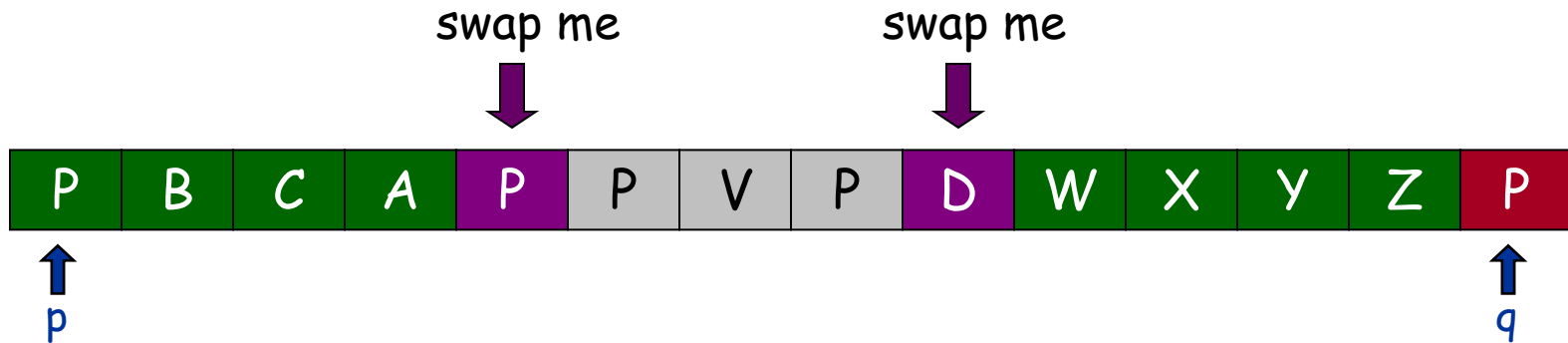
- Choose partitioning element.
- Scan from left  $\geq$  element.
- Scan from right  $\leq$  element.
- Exchange.
- Move to left or right end if equal.
- Repeat until pointers cross.



# 3-Way Partitioning

## 3-way partitioning.

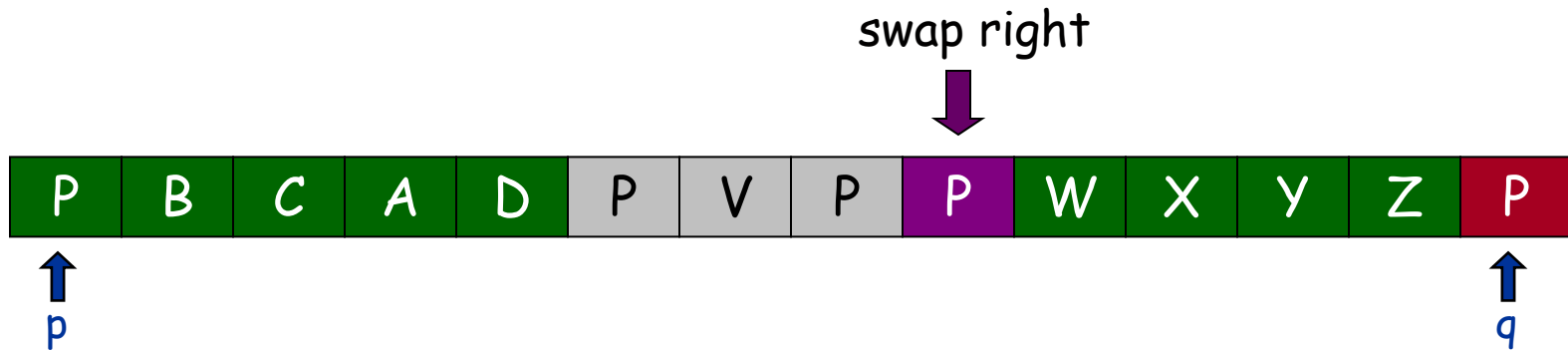
- Choose partitioning element.
- Scan from left  $\geq$  element.
- Scan from right  $\leq$  element.
- Exchange.
- Move to left or right end if equal.
- Repeat until pointers cross.



# 3-Way Partitioning

## 3-way partitioning.

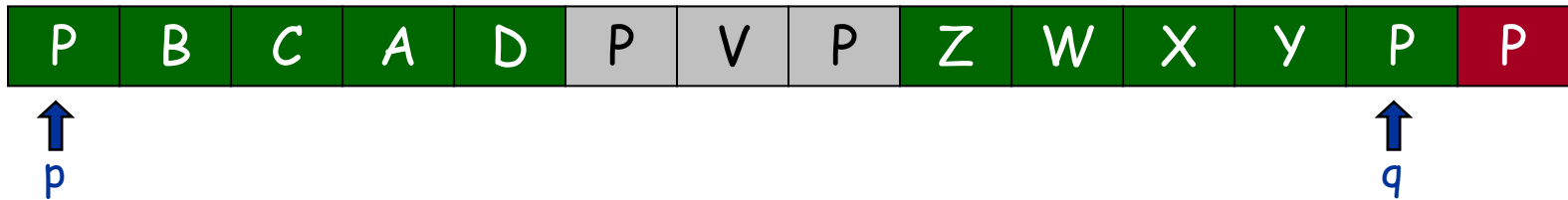
- Choose partitioning element.
- Scan from left  $\geq$  element.
- Scan from right for  $\leq$  element.
- Exchange.
- Move to left or right end if equal.
- Repeat until pointers cross.



## 3-Way Partitioning

### 3-way partitioning.

- Choose partitioning element.
- Scan from left  $\geq$  element.
- Scan from right for  $\leq$  element.
- Exchange.
- Move to left or right end if equal.
- Repeat until pointers cross.

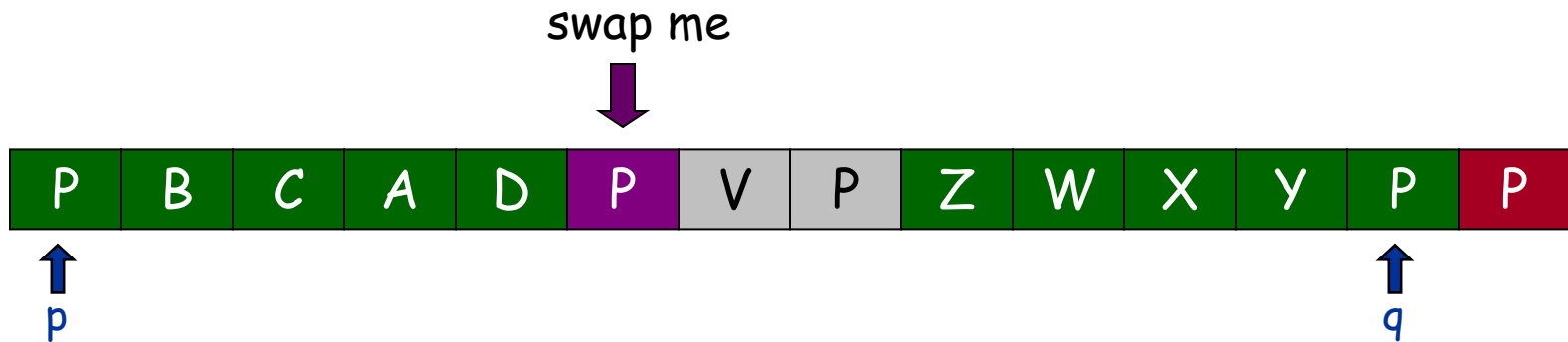




# 3-Way Partitioning

## 3-way partitioning.

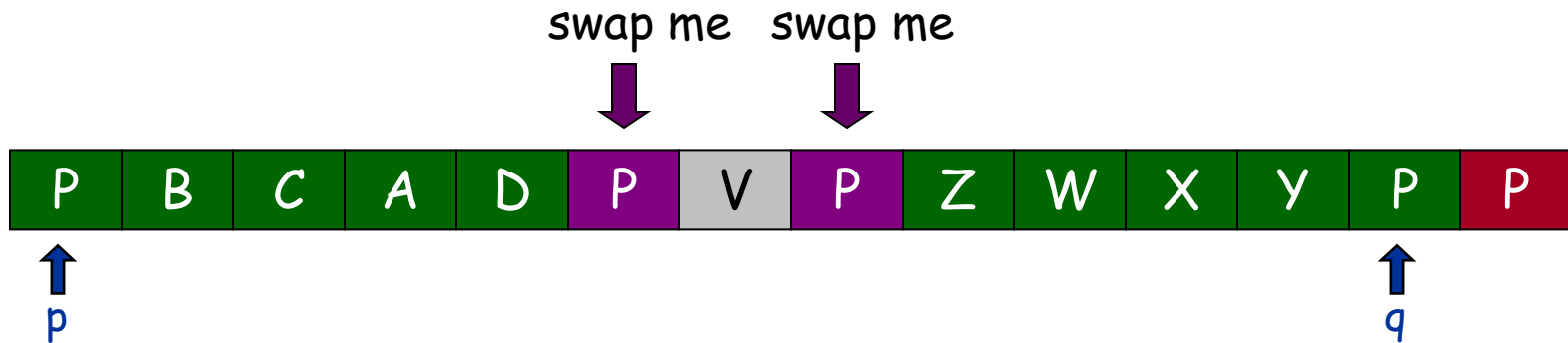
- Choose partitioning element.
- Scan from left  $\geq$  element.
- Scan from right  $\leq$  element.
- Exchange.
- Move to left or right end if equal.
- Repeat until pointers cross.



# 3-Way Partitioning

## 3-way partitioning.

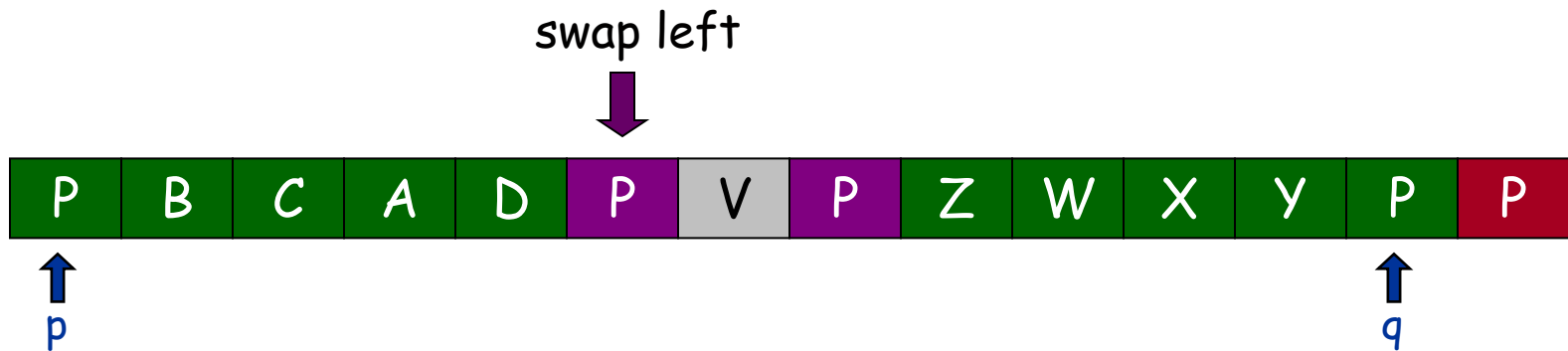
- Choose partitioning element.
- Scan from left  $\geq$  element.
- Scan from right  $\leq$  element.
- Exchange.
- Move to left or right end if equal.
- Repeat until pointers cross.



# 3-Way Partitioning

## 3-way partitioning.

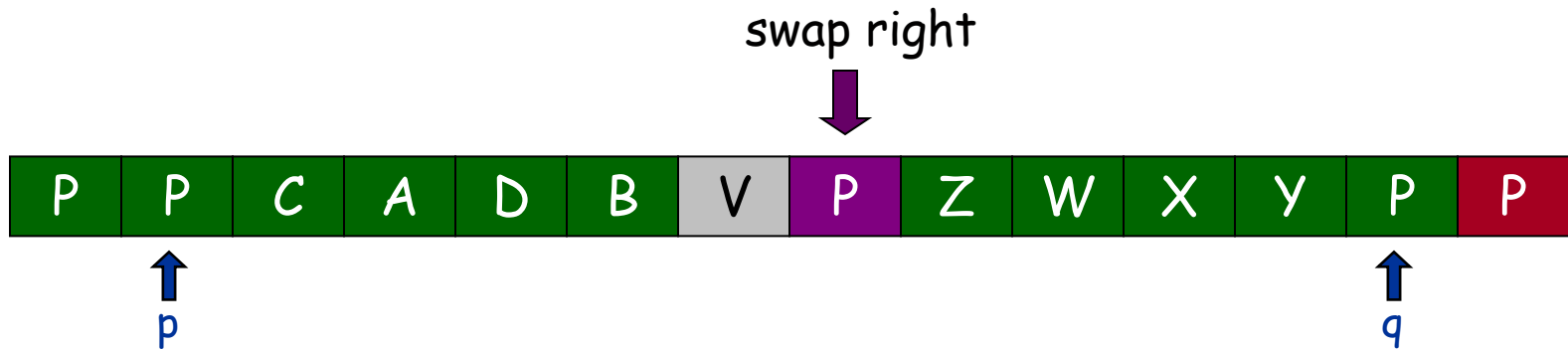
- Choose partitioning element.
- Scan from left  $\geq$  element.
- Scan from right for  $\leq$  element.
- Exchange.
- Move to left or right end if equal.
- Repeat until pointers cross.



# 3-Way Partitioning

## 3-way partitioning.

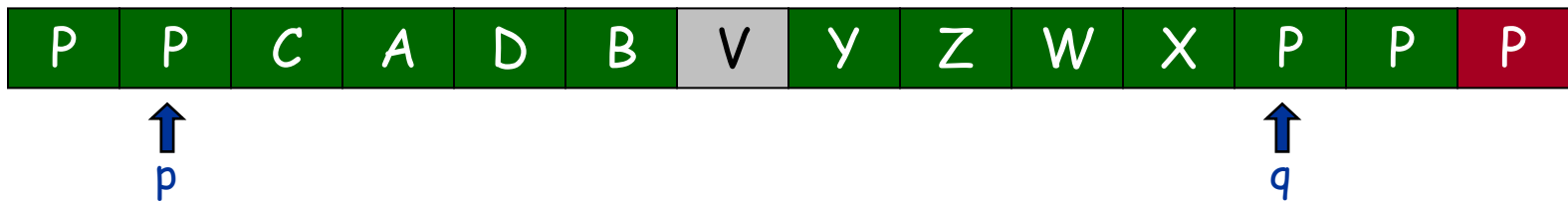
- Choose partitioning element.
- Scan from left  $\geq$  element.
- Scan from right  $\leq$  element.
- Exchange.
- Move to left or right end if equal.
- Repeat until pointers cross.



# 3-Way Partitioning

## 3-way partitioning.

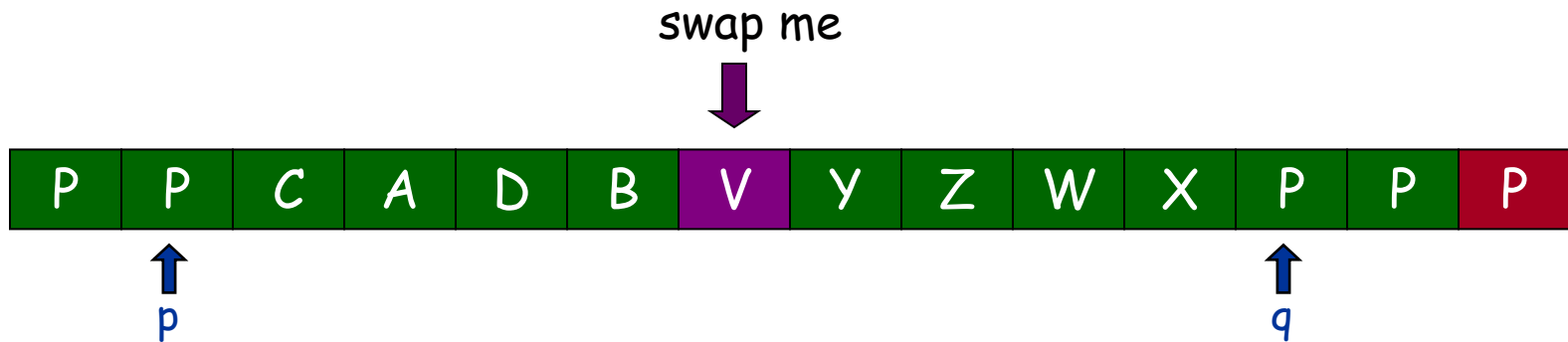
- Choose partitioning element.
- Scan from left  $\geq$  element.
- Scan from right for  $\leq$  element.
- Exchange.
- Move to left or right end if equal.
- Repeat until pointers cross.



# 3-Way Partitioning

## 3-way partitioning.

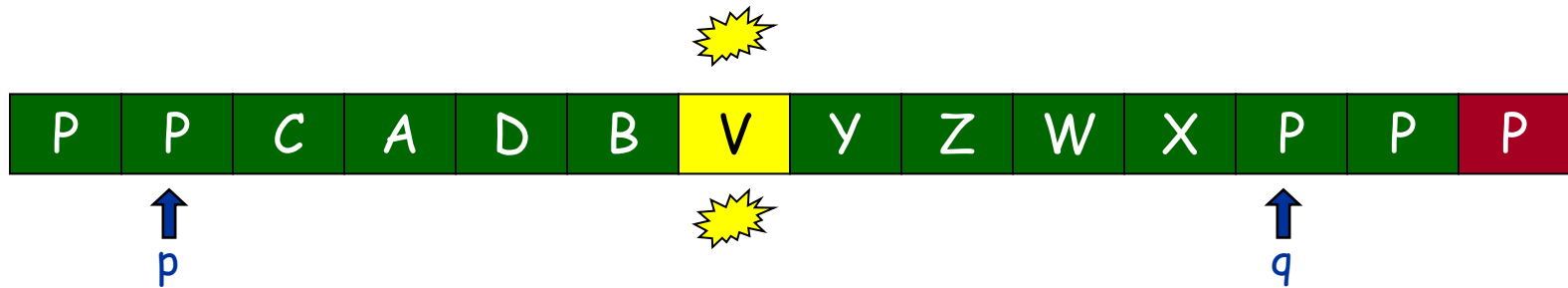
- Choose partitioning element.
- Scan from left  $\geq$  element.
- Scan from right  $\leq$  element.
- Exchange.
- Move to left or right end if equal.
- Repeat until pointers cross.



# 3-Way Partitioning

## 3-way partitioning.

- Choose partitioning element.
- Scan from left  $\geq$  element.
- Scan from right  $\leq$  element.
- Exchange.
- Move to left or right end if equal.
- Repeat until pointers cross.

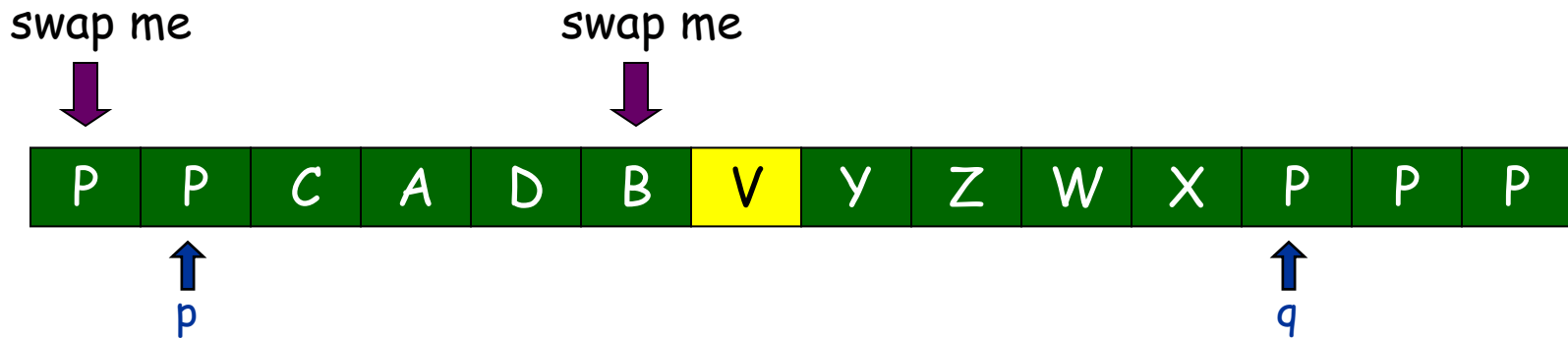


pointers cross

# 3-Way Partitioning

## 3-way partitioning.

- Swap elements on left with elements in middle.
- Swap elements on right with elements in middle.

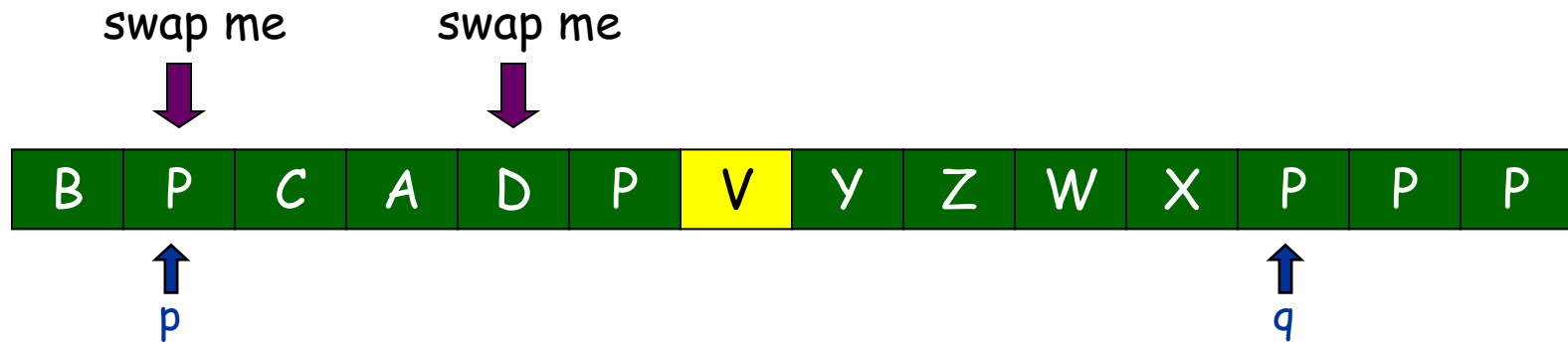




## 3-Way Partitioning

### 3-way partitioning.

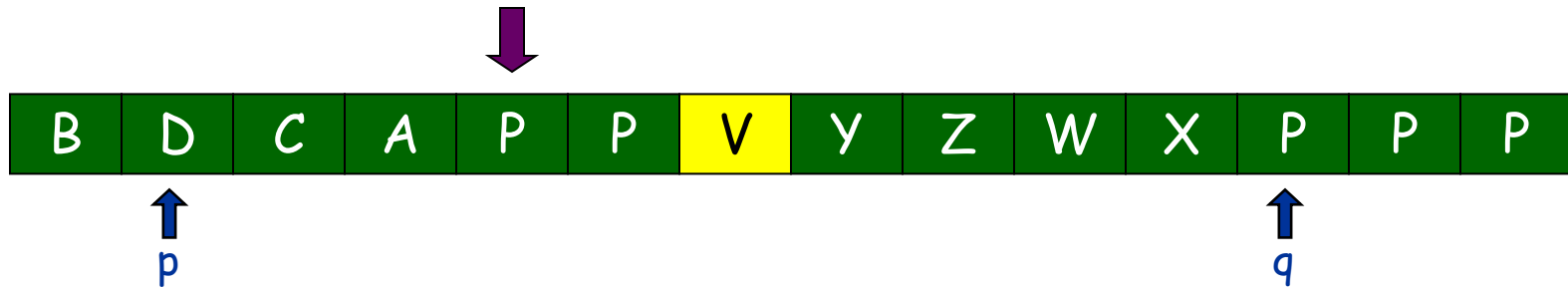
- Swap elements on left with elements in middle.
- Swap elements on right with elements in middle.



## 3-Way Partitioning

### 3-way partitioning.

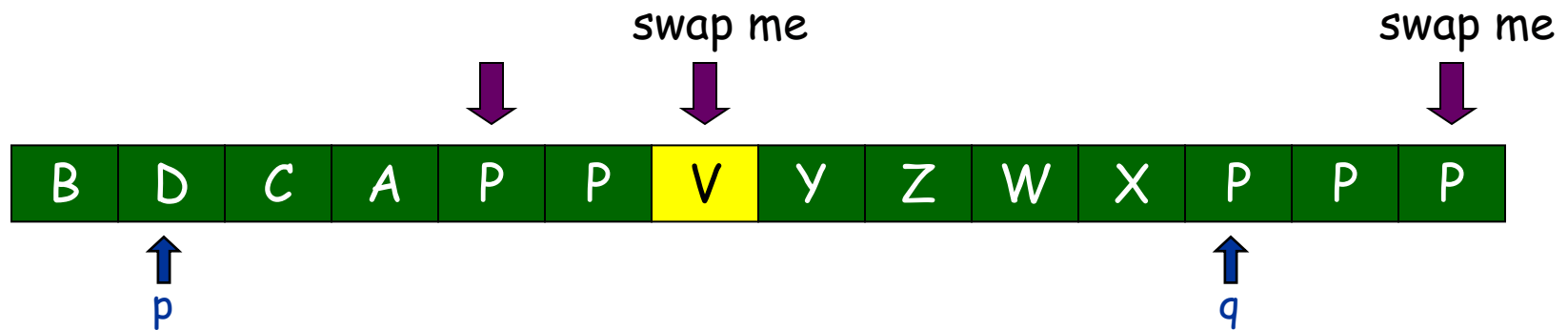
- Swap elements on left with elements in middle.
- Swap elements on right with elements in middle.



# 3-Way Partitioning

## 3-way partitioning.

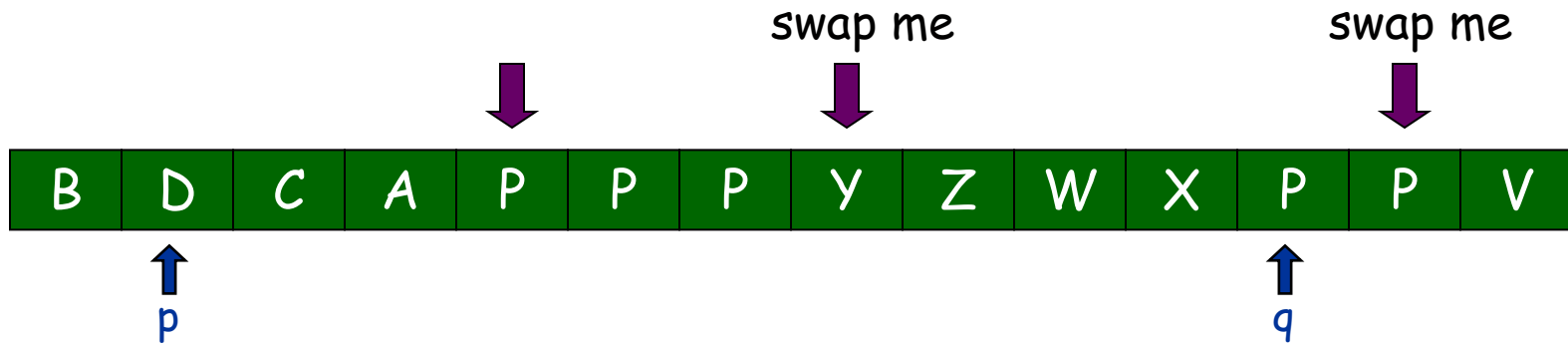
- Swap elements on left with elements in middle.
- Swap elements on right with elements in middle.



## 3-Way Partitioning

### 3-way partitioning.

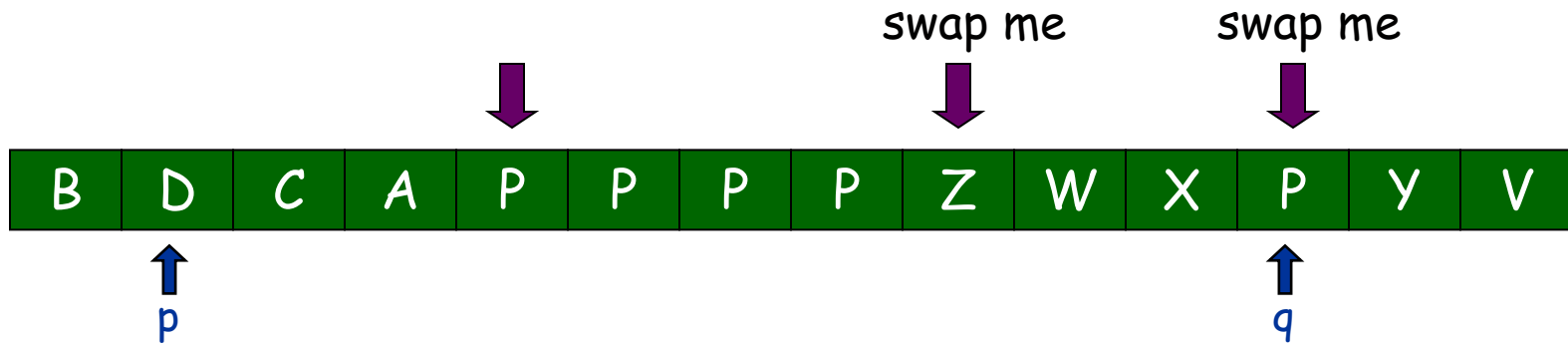
- Swap elements on left with elements in middle.
- Swap elements on right with elements in middle.



# 3-Way Partitioning

## 3-way partitioning.

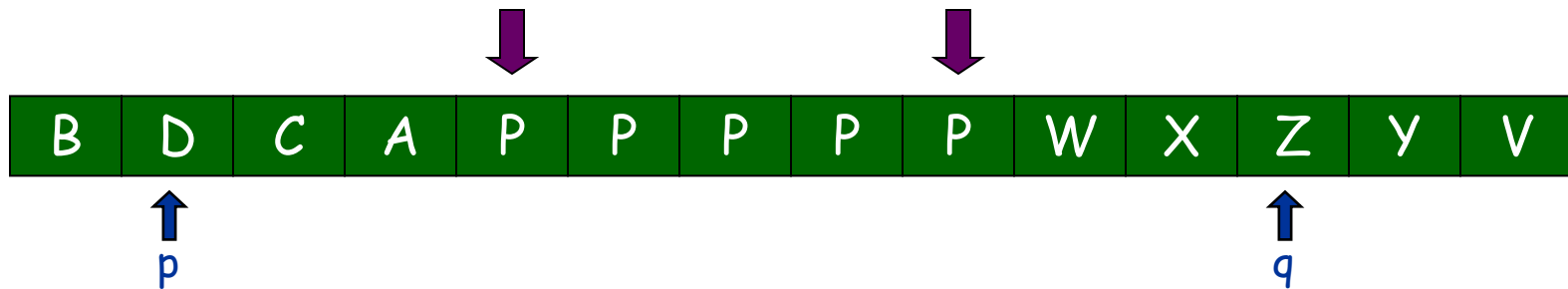
- Swap elements on left with elements in middle.
- Swap elements on right with elements in middle.



## 3-Way Partitioning

### 3-way partitioning.

- Swap elements on left with elements in middle.
- Swap elements on right with elements in middle.



3-way partitioned!