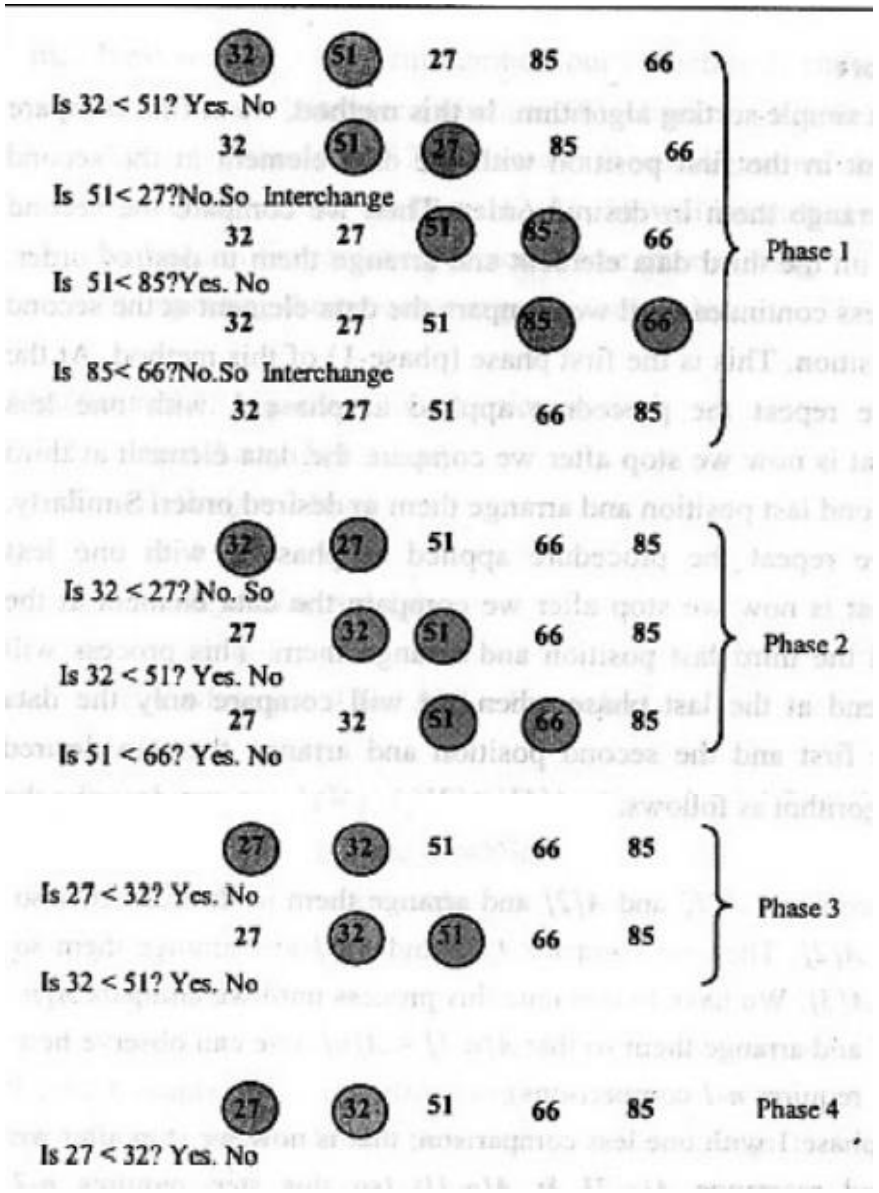
Bubble Sort



Big one at the most right

```
Given array
32 51 27 85 66

Phase 1
32 51 27 85 66
32 27 51 85 66
32 27 51 85 66
32 27 51 66 85

Phase 2
27 32 51 66 85
27 32 51 66 85
27 32 51 66 85

Phase 3
27 32 51 66 85
27 32 51 66 85

Phase 4
27 32 51 66 85

Sorted array
27 32 51 66 85
```

Insertion Sort

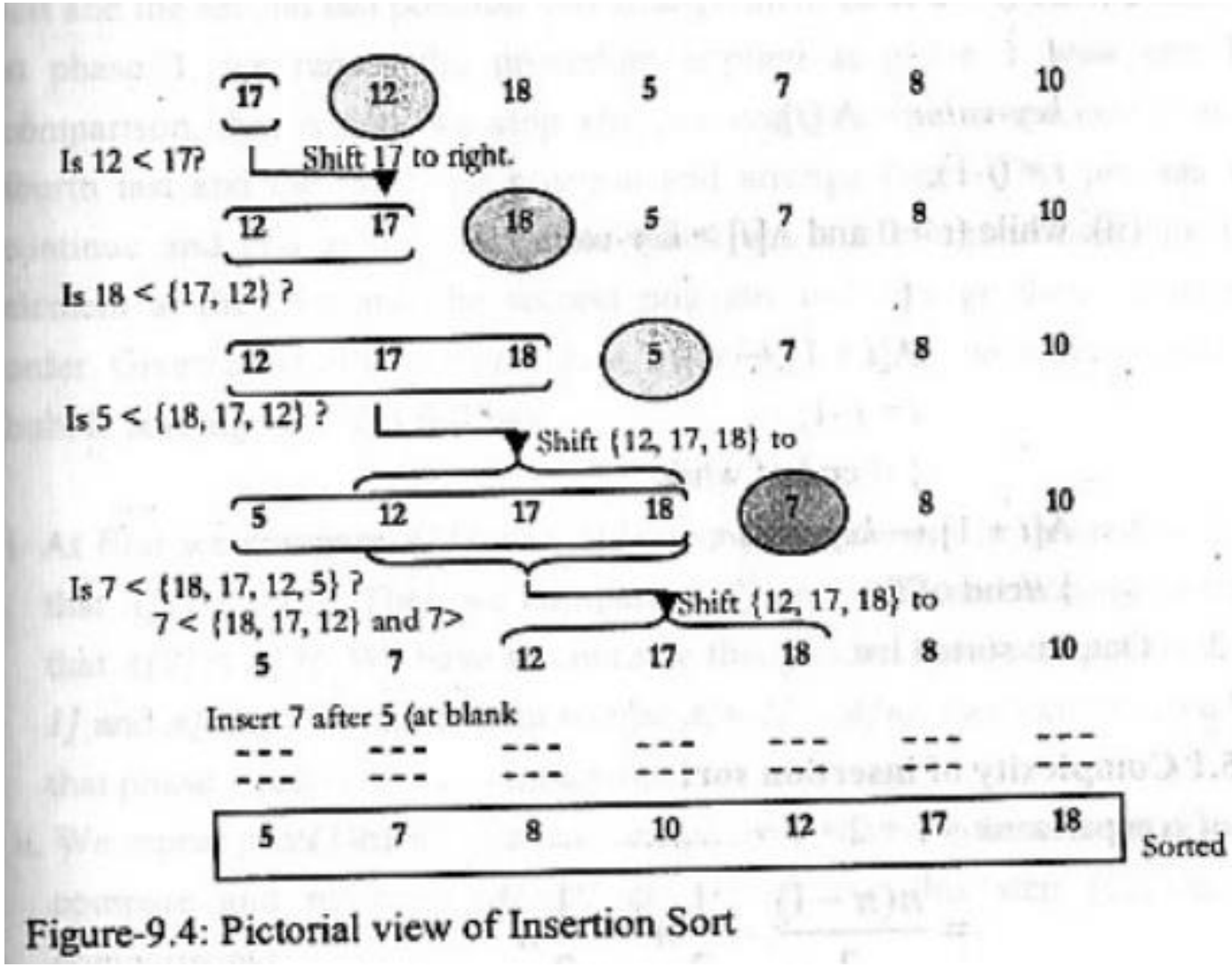


Figure-9.4: Pictorial view of Insertion Sort

```
Given array: 17 12 18 5 7 8 10

key: 12
cycle 0: 17 17 18 5 7 8 10
Phase 1: 12 17 18 5 7 8 10

key: 18
Phase 2: 12 17 18 5 7 8 10

key: 5
cycle 2: 12 17 18 18 7 8 10
cycle 1: 12 17 17 18 7 8 10
cycle 0: 12 12 17 18 7 8 10
Phase 3: 5 12 17 18 7 8 10

key: 7
cycle 3: 5 12 17 18 18 8 10
cycle 2: 5 12 17 17 18 8 10
cycle 1: 5 12 12 17 18 8 10
Phase 4: 5 7 12 17 18 8 10

key: 8
cycle 4: 5 7 12 17 18 18 10
cycle 3: 5 7 12 17 17 18 10
cycle 2: 5 7 12 12 17 18 10
Phase 5: 5 7 8 12 17 18 10

key: 10
cycle 5: 5 7 8 12 17 18 18
cycle 4: 5 7 8 12 17 17 18
cycle 3: 5 7 8 12 12 17 18
Phase 6: 5 7 8 10 12 17 18

Sorted array: 5 7 8 10 12 17 18
```

Selection Sort

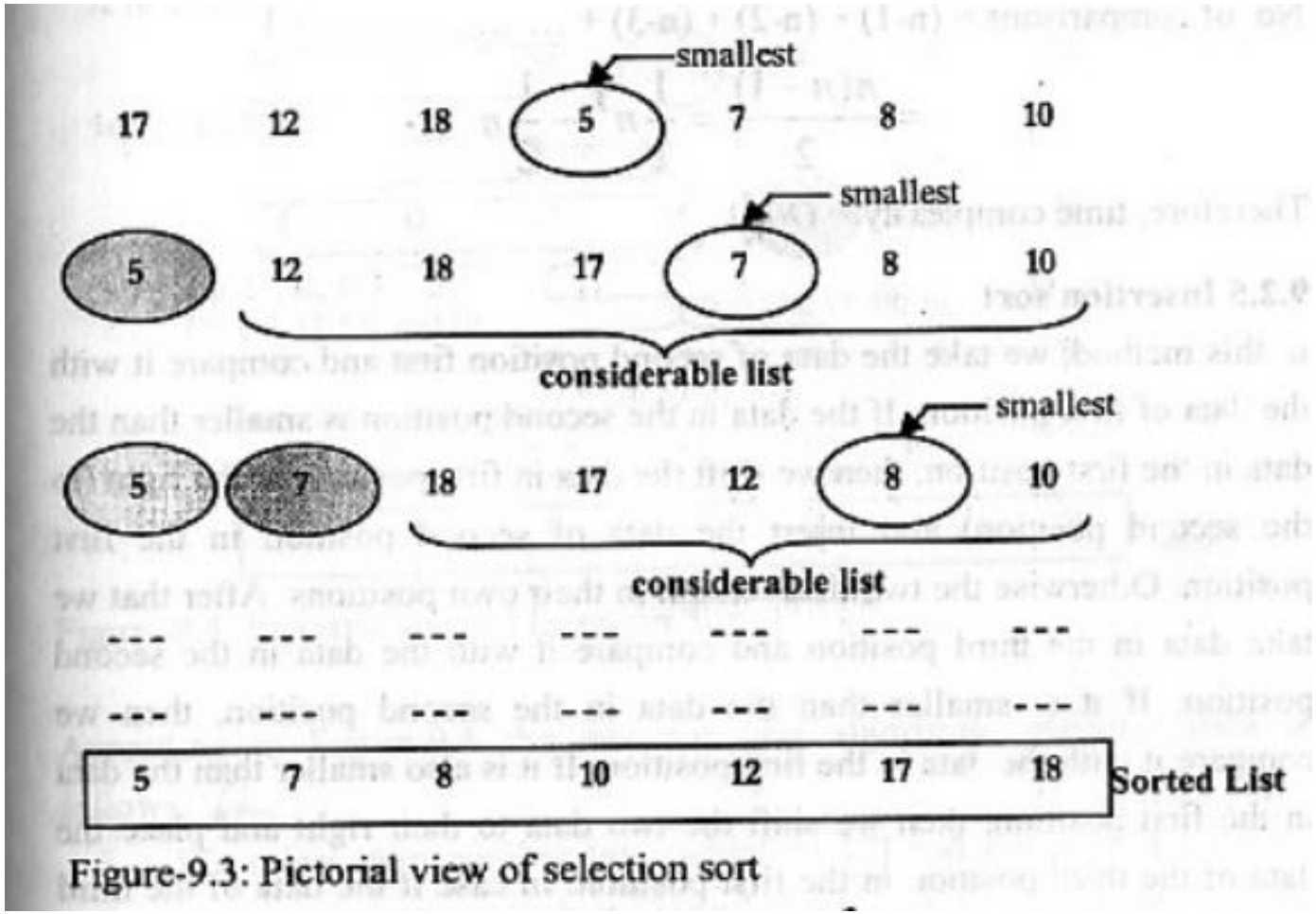
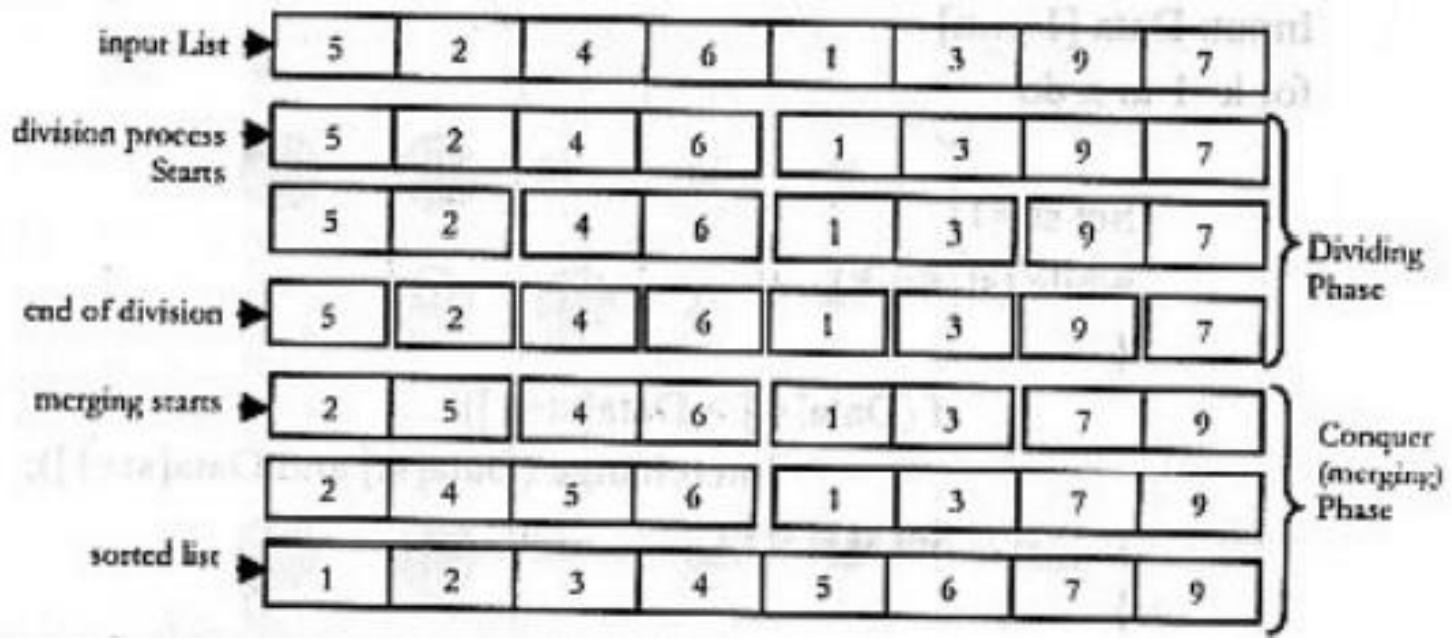


Figure-9.3: Pictorial view of selection sort

```
Givven array
17 12 18 5 7 8 10

key: 17
smallest: 5
Phase 1: 5 12 18 17 7 8 10

key: 12
smallest: 7
Phase 2: 5 7 18 17 12 8 10

key: 18
smallest: 8
Phase 3: 5 7 8 17 12 18 10

key: 17
smallest: 10
Phase 4: 5 7 8 10 12 18 17

key: 12
smallest: 12
Phase 5: 5 7 8 10 12 18 17

key: 18
smallest: 17
Phase 6: 5 7 8 10 12 17 18

key: 12
smallest: 12
Phase 5: 5 7 8 10 12 18 17

key: 18
smallest: 17
Phase 6: 5 7 8 10 12 17 18

Selection Sort
5 7 8 10 12 17 18
```

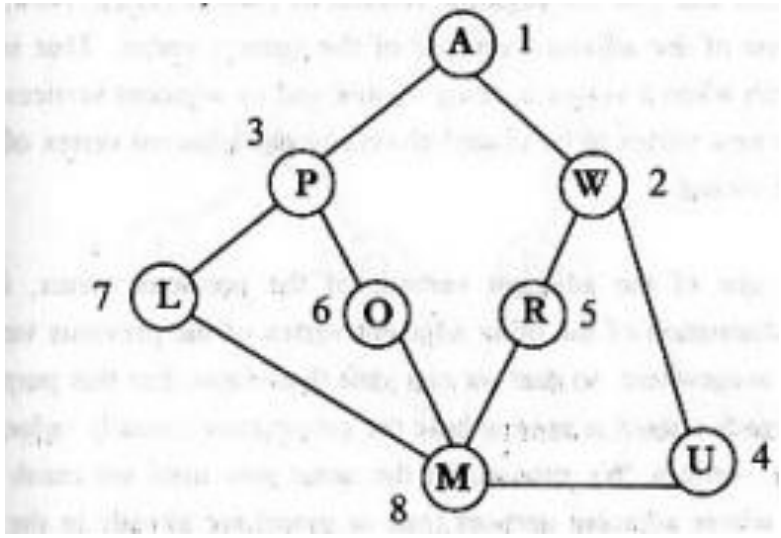
Merge Sort




```
Given Array
5 2 4 6 1 3 9 7

Merge: 2 5 4 6 1 3 9 7
Merge: 2 5 4 6 1 3 9 7
Merge: 2 4 5 6 1 3 9 7
Merge: 2 4 5 6 1 3 9 7
Merge: 2 4 5 6 1 3 7 9
Merge: 2 4 5 6 1 3 7 9
Merge: 1 2 3 4 5 6 7 9

Sorted array
1 2 3 4 5 6 7 9
```

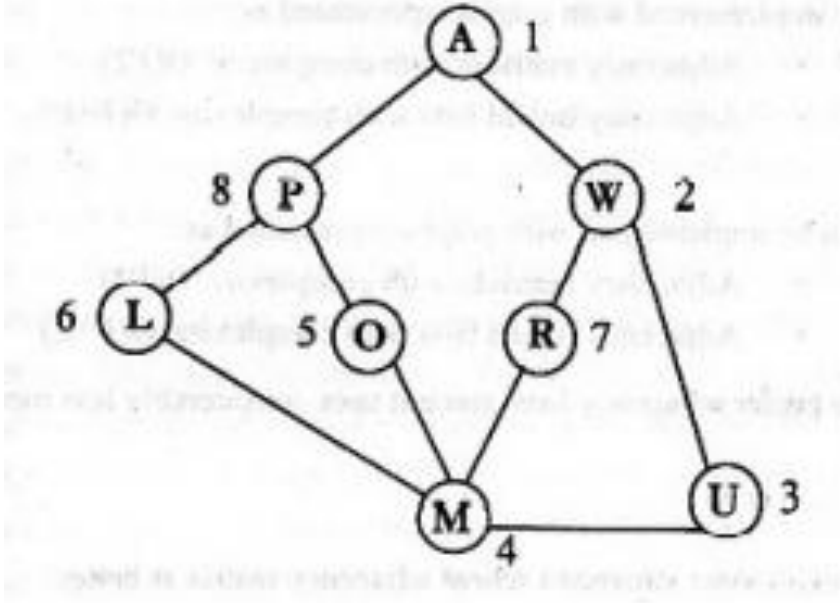
BFS & DFS

Vertices visited	Vertices in queue	Vertex traversal done
A, W, P	W, P	A
A, W, P, U, R	P, U, R	W
A, W, P, U, R, O, L	U, R, O, L	P
A, W, P, U, R, O, L, M	R, O, L, M	U
	O, L, M	R
	L, M	O
	M	L
		M



Breadth First Search:
A P W L O R U M

Vertices visited	Vertices in stack	Vertex traversal done
A, P, W	P,W	A
A, P, W, R, U	P, R, U	W
A, P, W, R, U, M	P, R, M	U
A, P, W, R, U, M, L, O, R	P, R, L, O	M
	P, R, L	O
	P, R	L
	P	R
		P



Depth First Search
A P L M O R W U