

STEP 1: First of all convert Each Letter to Its Alphabet Position

Letter Value

A	1
B	2
C	3
D	4
E	5
F	6
G	7
H	8
I	9
J	10
K	11
L	12

### **BUBBLE SORT ALGORITHM**

Given letters:

D K J G L E B H F I C A

Step 1: Convert to numbers

D(4), K(11), J(10), G(7), L(12), E(5), B(2), H(8), F(6), I(9), C(3), A(1)

→ [4, 11, 10, 7, 12, 5, 2, 8, 6, 9, 3, 1]

Step 2: Apply Bubble Sort

Bubble Sort compares adjacent elements and swaps them if they are out of order.

We'll show a few key passes:

Pass 1:

Compare and swap as needed from start to end: → [4, 10, 7, 11, 5, 2, 8, 6, 9, 3, 1, 12]

→ Largest element (12) bubbles to the end.

Pass 2:

→ [4, 7, 10, 5, 2, 8, 6, 9, 3, 1, 11, 12]

Pass 3:

→ [4, 7, 5, 2, 8, 6, 9, 3, 1, 10, 11, 12]

Pass 4:

→ [4, 5, 2, 7, 6, 8, 3, 1, 9, 10, 11, 12]

Pass 5:

→ [4, 2, 5, 6, 7, 3, 1, 8, 9, 10, 11, 12]

Pass 6:

→ [2, 4, 5, 6, 3, 1, 7, 8, 9, 10, 11, 12]

Pass 7:

→ [2, 4, 5, 3, 1, 6, 7, 8, 9, 10, 11, 12]

Pass 8:

→ [2, 4, 3, 1, 5, 6, 7, 8, 9, 10, 11, 12]

Pass 9:

→ [2, 3, 1, 4, 5, 6, 7, 8, 9, 10, 11, 12]

Pass 10:

→ [2, 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12]

Pass 11 (Final):

→ [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12]

Step 3: Convert back to letters

→ A B C D E F G H I J K L

Final Sorted Order (**Bubble Sort**): A B C D E F G H I J K L

## INSERTION SORT ALGORITHM

Given letters:

D B L K G J E A C H I F

Step 1: Convert to numbers

D(4), B(2), L(12), K(11), G(7), J(10), E(5), A(1), C(3), H(8), I(9), F(6)

→ [4, 2, 12, 11, 7, 10, 5, 1, 3, 8, 9, 6]

Step 2: Apply Insertion Sort

We insert each element into its proper place among the previous sorted ones.

Pass 1: (2 < 4)

→ [2, 4, 12, 11, 7, 10, 5, 1, 3, 8, 9, 6]

Pass 2: (12 is fine)

→ [2, 4, 12, 11, 7, 10, 5, 1, 3, 8, 9, 6]

Pass 3: (11 < 12)

→ [2, 4, 11, 12, 7, 10, 5, 1, 3, 8, 9, 6]

Pass 4: (7 < 11)

→ [2, 4, 7, 11, 12, 10, 5, 1, 3, 8, 9, 6]

Pass 5: (10 < 11)

→ [2, 4, 7, 10, 11, 12, 5, 1, 3, 8, 9, 6]

Pass 6: (5 < 10)

→ [2, 4, 5, 7, 10, 11, 12, 1, 3, 8, 9, 6]

Pass 7: (1 < all)

→ [1, 2, 4, 5, 7, 10, 11, 12, 3, 8, 9, 6]

Pass 8: (3 fits after 2)

→ [1, 2, 3, 4, 5, 7, 10, 11, 12, 8, 9, 6]

Pass 9: (8 < 12)

→ [1, 2, 3, 4, 5, 7, 8, 10, 11, 12, 9, 6]

Pass 10: (9 < 12, <11, <10)

→ [1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 6]

Pass 11: (6 < 7)

→ [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12]

Step 3: Convert back to letters

→ A B C D E F G H I J K L

Final Sorted Order (**Insertion Sort**): A B C D E F G H I J K L

#### FINAL ANSWER SUMMARY

Algorithm	Original Sequence	Sorted Sequence
<b>Bubble Sort</b>	D K J G L E B H F I C A	A B C D E F G H I J K L
<b>Insertion Sort</b>	D B L K G J E A C H I F	A B C D E F G H I J K L