Insertion Sort:-

Workflow:-

Worstcase Example:-

{4, 3, 2, 1}

⇒ 4 | 3 2 1

3 4 | 2 1

2 3 4 | 1

1 2 3 4 |

↳ finally we got Sorted Arrayooo

Thought process Behind Coding implementation

for worst case outer loop ko run karna hai n-1 Baar Aur har loop k Ander j wala element Apni Sahi location per pahuchega and fir j ka Value Shift hoga...

for i=1   4 $\boxed{3}$ 2 1   if(arr[j]< arr[j-1])→ swap

Initial j=1   j   ✓   And shift j

for i=2   3 4 $\boxed{2}$ 1   if(arr[j]< arr[j-1])→ swap

Initial j=2   j   ✓   And shift j

3 $\boxed{2}$ 4 1   if(arr[j]< arr[j-1])→ swap

j   ✓   And shift j

$\boxed{2}$ 3 4 1   if(arr[j]< arr[j-1])→ swap

j   ✓   And shift j

→ the element have correctly reached its place...

for i=3   2 3 4 $\boxed{1}$ if(arr[j]< arr[j-1])→ swap

Initial j=3   j   ✓   And shift j

2 3 $\boxed{1}$ 4   if(arr[j]< arr[j-1])→ swap

j   ✓   And shift j

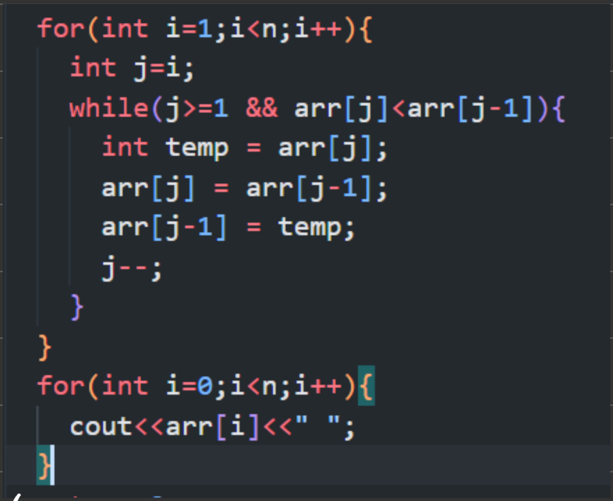
2 $\boxed{1}$ 3 4   if(arr[j]< arr[j-1])→ swap

j   ✓   And shift j

1 2 3 4   if(arr[j]< arr[j-1])-> SWAP

j   ✗   And shift j

And here's how the Code of insertion Sort Should work Correctly Also here is the code Snippet...



```
for(int i=1;i<n;i++){
  int j=i;
  while(j>=1 && arr[j]<arr[j-1]){
    int temp = arr[j];
    arr[j] = arr[j-1];
    arr[j-1] = temp;
    j--;
  }
}
for(int i=0;i<n;i++){
  cout<<arr[i]<<" ";
}
```

The loop work's on the principle of insertion Sort..