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⇒ SELECTION SORT

→ Find the minimum element in unsorted array and swap it with element at beginning.

NOTE: Array divided in 2 codes.
i: from first to second last
j: from i+1 to n;
then compare i and j

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Step ① & ② is same

Step ③: Creating sort:

```
for (int i=0; i<n-1; i++) {
    for(int j=i+1; j<n; j++) {
        if(arr[j] < arr[i])
        { int temp = arr[j];
          arr[j] = arr[i];
          arr[i] = temp; }
```

Step: ④ ~~cout~~ for (int i=0; i<n; i++)
{ cout << arr[i] << "Day.....";.....

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Imp

BUBBLE SORT

Repeatedly swap two adjacent elements if they are in wrong order.

→ Do n-1 iteration to get array sorted.
∴ i^{th} iteration → n-i

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(1) & (2) Step same

(3)
```
int counter = 1;
while (counter<n)
{ for(int i=0; i<counter; i++)
  { if(arr[i] > arr[i+1])
    { int temp = arr[i];
      arr[i] = arr[i+1];
      arr[i+1]= temp; }
  }
  counter++;
}
```

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⇒ INSERTION SORT

→ $O(n^2)$ worst case
→ In Place and stable
→ Used in practice for small arrays.
→ $O(n)$ Best case.

0 .... i-1 ---- n-1
Sorted. Unsorted.

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① & ② are same

③
```
for (int i=0 ; i<n ; i++)
{ int current = arr[i];
  int j = i-1;
  while (arr[j] <current && j>=0)
  { arr[j+1] = arr[j];
    j--;
  }
arr[j+1] = current;
}
```

④ Output ⇒
```
for (i=0; i<n; i++)
{ cout << arr[i] << "Day.....";.....}
cout << endl;
```

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⇒ SUB ARRAY

→ continous part of array.

→ No. of subarrays of an array with n elements:

$$n_{C_2+n} = \frac{n(n+1)}{2}$$

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Eg 1 0 2 7 2 0 2

↓

1 0 2

2 7 2 0

Subarray.

⇛ SUB SEQUENCE

→ A subsequence is a sequence that can be derived an array by selecting zero or more elements, without changing the order of remaining elements.

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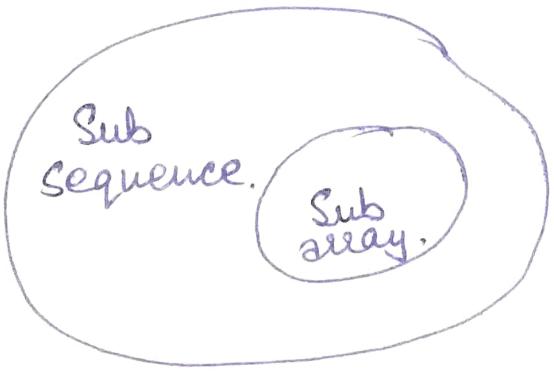
→ No. of subsequence of array = 2^n.



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