# Cormen Exercises 2.1

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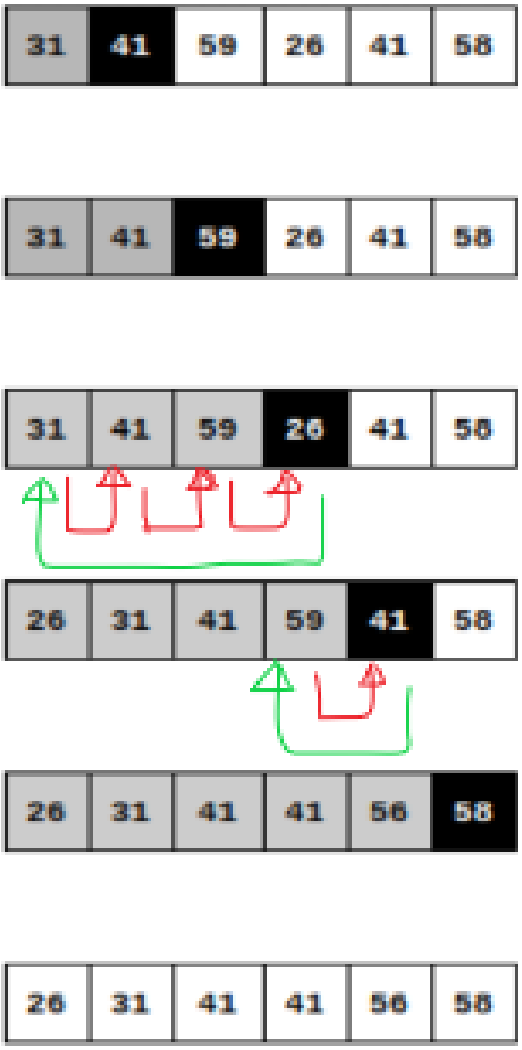
## 1 Insertion-Sort on the array

Using Figure 2.2 as a model, illustrate the operation of INSERTION-SORT on the array A = (31, 41, 59, 26, 41, 58).




## 2 Insertion-Sort instead decreasing order

```
procedure INSERTION-SORT(A)
    j=2
    while j < A.length do
        key = A.[j]
        i = j -1
        while i > 0 and A[i] > key do
```

```
            A[i+1] = [i]
            i = i-1
        A[i+1] = key
        j = j+1
```

## 3 Linear Search and Invariant Loop

```
procedure LINEAR-SEARCH(A,x)
    v = NIL
    i = 0
    while i < A.length do
        NIL : there is no index j < i such that A[j] == x
        if A[i] == x then
            v = i
        i = i+1
    NIL: found j < A.length, such that A[j] == x or in its absence there is no a
    return v
```

## 4 Adding two n-bit binary integers

```
procedure BINARYSUM(A,B)
    c = 0
    C = [n]
    for i = n to 1 do
        C[i+1] = (A[i] + B[i] + c)(mod 2)
        if A[i] + B[i] + c > 1 then
            c = 1
        else
            c = 0
    C[1] = c
    return C
```