Προγραμματισμός Η/Υ

Παύλος Πέππας

www.bma.upatras.gr/staff/pavlos/

Δυαδική Αναζήτηση

ΕΙΣΟΔΟΣ*:*

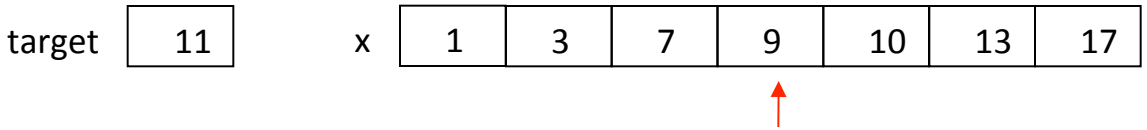
target	11

x

1	3	7	9	10	13	17

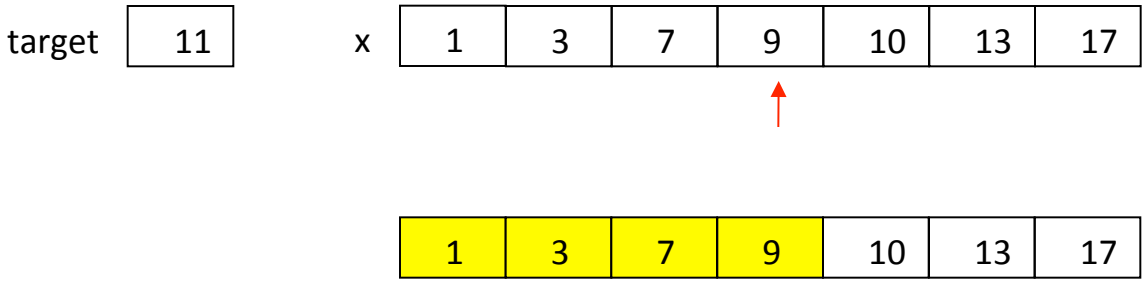
Δυαδική Αναζήτηση

ΕΙΣΟΔΟΣ*:*



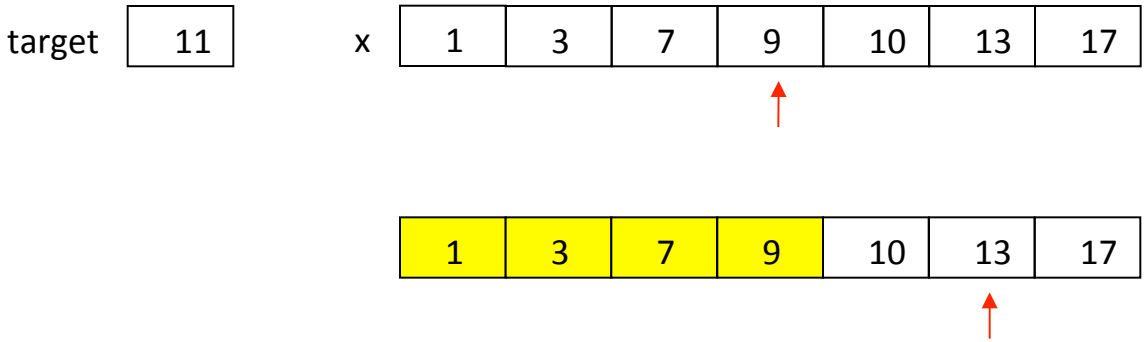
Δυαδική Αναζήτηση

ΕΙΣΟΔΟΣ*:*



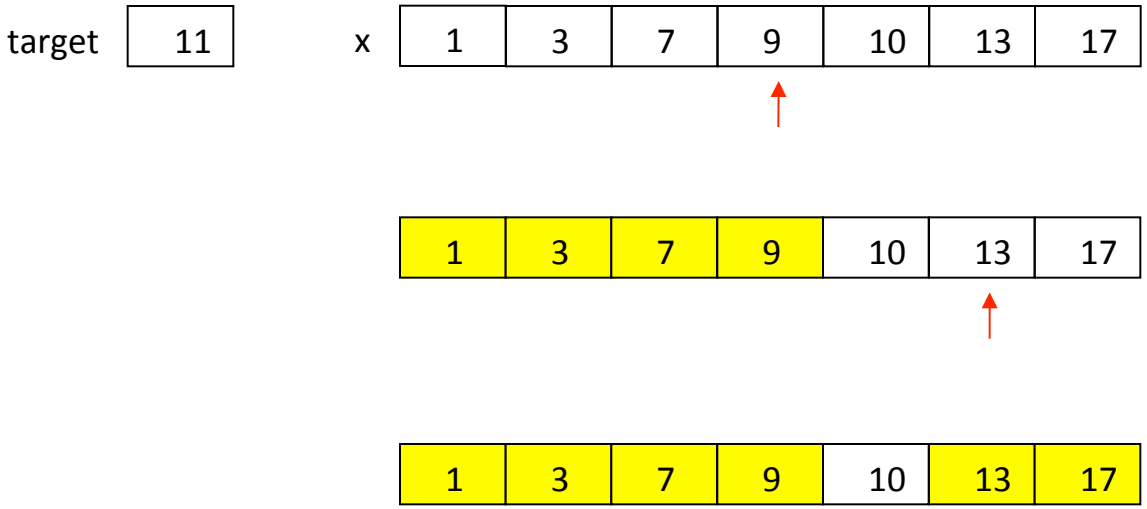
Δυαδική Αναζήτηση

ΕΙΣΟΔΟΣ*:*



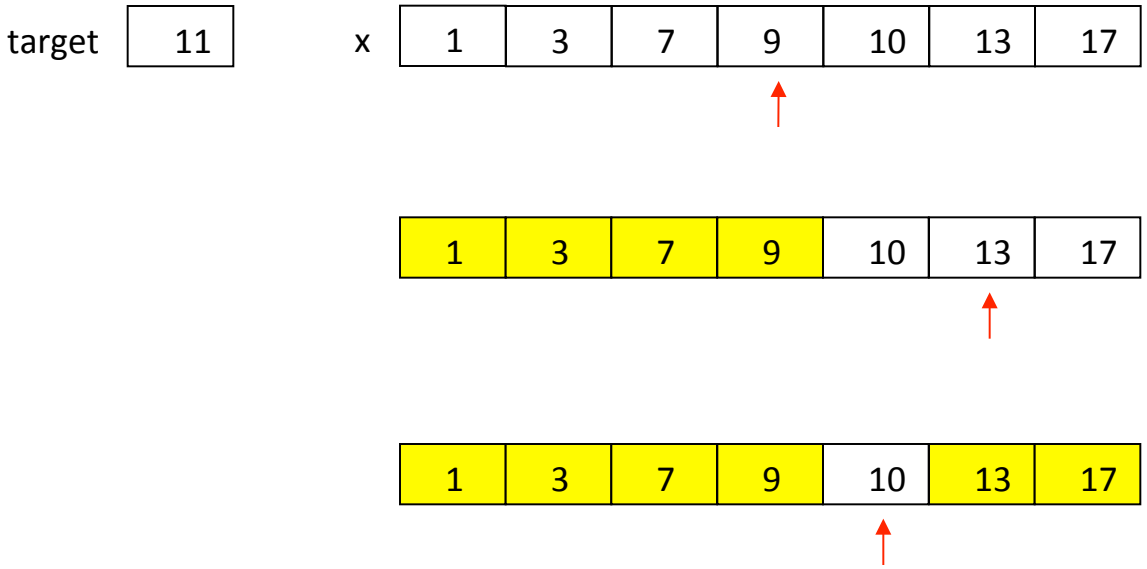
Δυαδική Αναζήτηση

ΕΙΣΟΔΟΣ:



Δυαδική Αναζήτηση

ΕΙΣΟΔΟΣ:



Δυαδική Αναζήτηση

ΕΙΣΟΔΟΣ:

target | 11 |

x

1	3	7	9	10	13	17

1	3	7	9	10	13	17

1	3	7	9	10	13	17

1	3	7	9	10	13	17

ΕΞΟΔΟΣ:

pos | -1 |

Δυαδική Αναζήτηση σε Java

```
public static void main (String[ ] args)
{
        Scanner input = new Scanner( System.in );
        int x[ ];
        int left, right, mid, found, target;
        final int n=7;

        x = new int[n];
        System.out.printf("Enter %d integers: ", n);

        for (i=0; i<n; i++)
                x[i] = input.nextInt();

        System.out.printf("Enter the target element: ");
        target = input.nextInt();
        found = 0;
        left = 0;
        right = n-1;

        if (found == 0)
                System.out.println("Target not found");
        else
                System.out.println("Position = " + mid);
}
```

Δυαδική Αναζήτηση σε Java

```
public static void main (String[ ] args)
{
        Scanner input = new Scanner( System.in );
        int x[ ];
        int left, right, mid, found, target;
        final int n=7;

        x = new int[n];
        System.out.printf("Enter %d integers: ", n);

        for (i=0; i<n; i++)
                x[i] = input.nextInt();

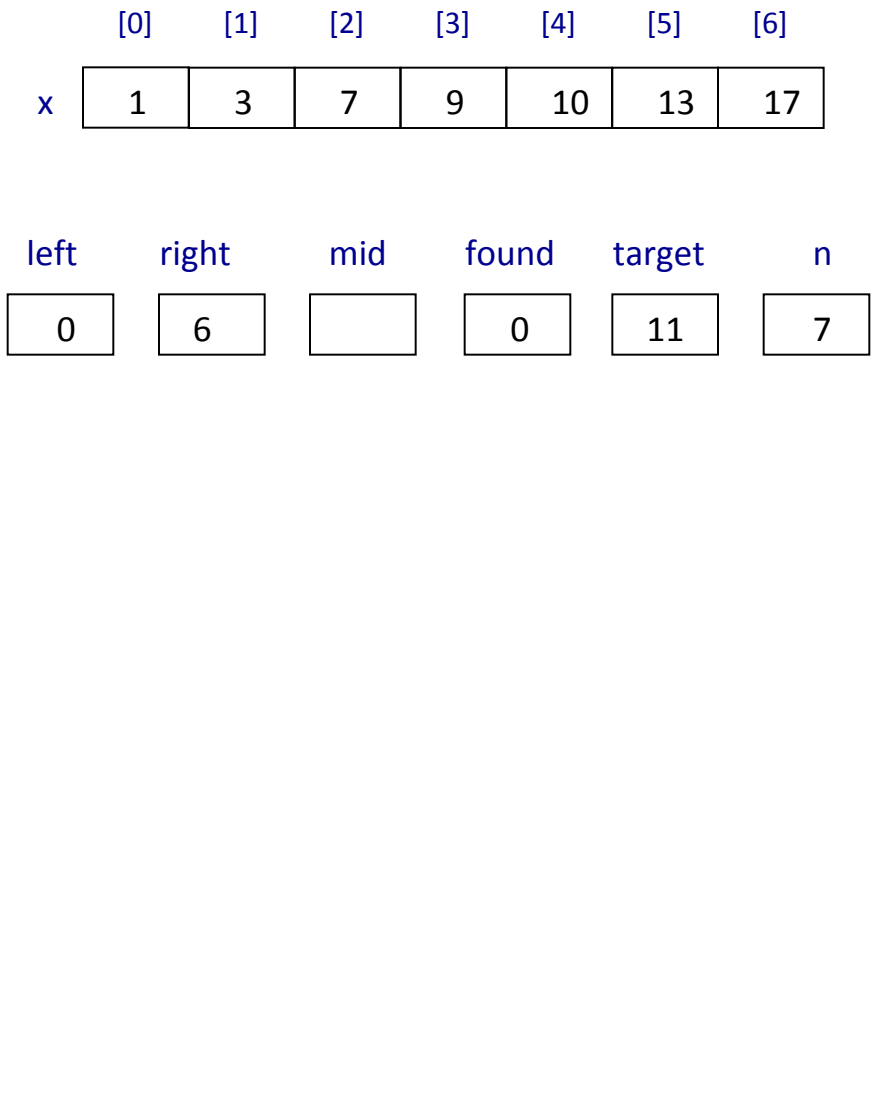
        System.out.printf("Enter the target element: ");
        target = input.nextInt();

        found = 0;
        left = 0;
        right = n-1;

        while ( (left <= right) && (found == 0) )
        {
                mid = (left+right)/2;
                if ( x[mid] == target )
                        found = 1;
                if ( x[mid] < target )
                        left = mid+1;
                if  ( x[mid] > target )
                        right = mid-1;
        }

        if (found == 0)
                System.out.println("Target not found");
        else
                System.out.println("Position = " + mid);
}
```

Δυαδική Αναζήτηση σε Java

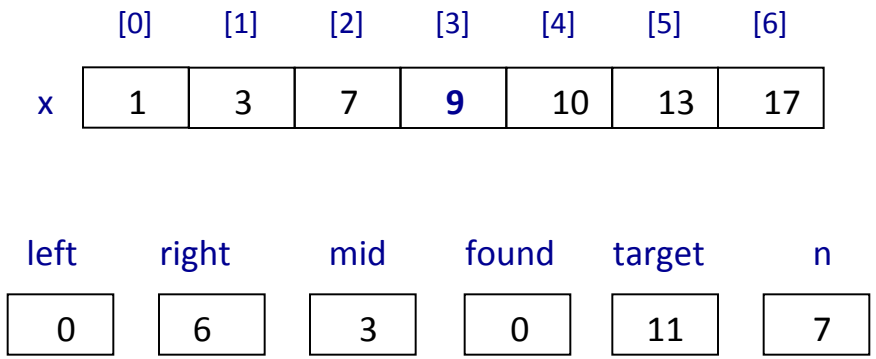



```
        found = 0;
        left = 0;
        right = n-1;

        while ( (left <= right) && (found == 0) )
        {
                mid = (left+right)/2;
                if ( x[mid] == target )
                        found = 1;
                if ( x[mid] < target )
                        left = mid+1;
                if  ( x[mid] > target )
                        right = mid-1;
        }

        if (found == 0)
                System.out.println("Target not found");
        else
                System.out.println("Position = " + mid);
}
```

Δυαδική Αναζήτηση σε Java

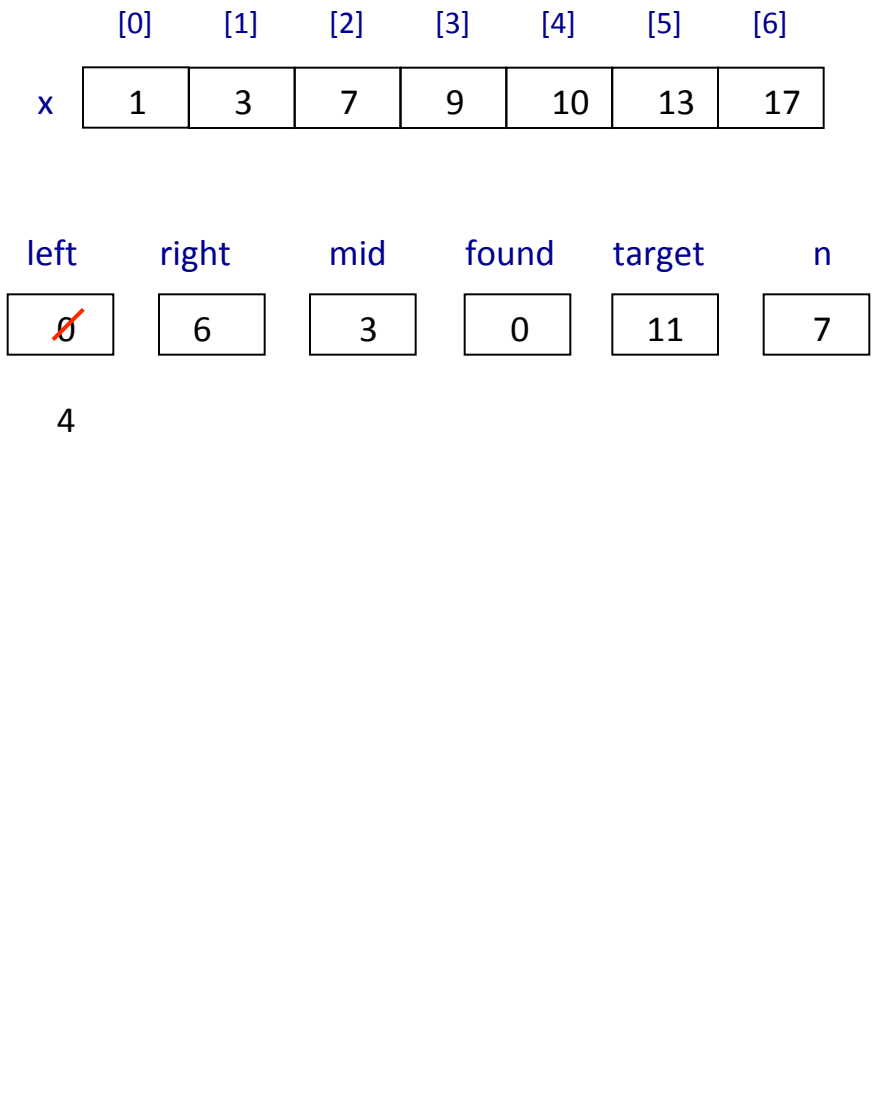



```
        found = 0;
        left = 0;
        right = n-1;

        while ( (left <= right) && (found == 0) )
        {
                mid = (left+right)/2;
                if ( x[mid] == target )
                        found = 1;
                if ( x[mid] < target )
                        left = mid+1;
                if  ( x[mid] > target )
                        right = mid-1;
        }

        if (found == 0)
                System.out.println("Target not found");
        else
                System.out.println("Position = " + mid);
}
```

Δυαδική Αναζήτηση σε Java

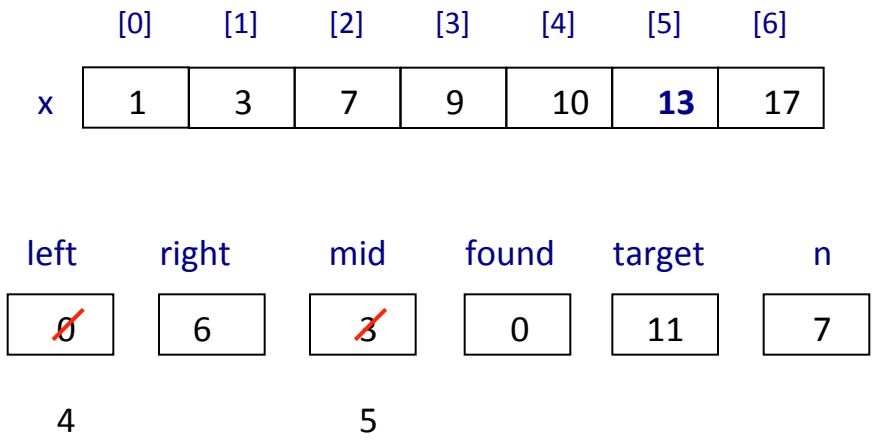



```
        found = 0;
        left = 0;
        right = n-1;

        while ( (left <= right) && (found == 0) )
        {
                mid = (left+right)/2;
                if ( x[mid] == target )
                        found = 1;
                if ( x[mid] < target )
                        left = mid+1;
                if  ( x[mid] > target )
                        right = mid-1;
        }

        if (found == 0)
                System.out.println("Target not found");
        else
                System.out.println("Position = " + mid);
}
```

Δυαδική Αναζήτηση σε Java

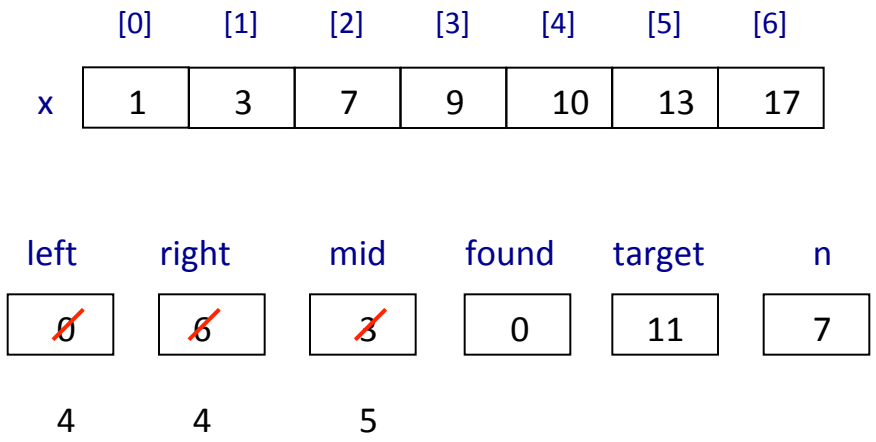



```
        found = 0;
        left = 0;
        right = n-1;

        while ( (left <= right) && (found == 0) )
        {
                mid = (left+right)/2;
                if ( x[mid] == target )
                        found = 1;
                if ( x[mid] < target )
                        left = mid+1;
                if  ( x[mid] > target )
                        right = mid-1;
        }

        if (found == 0)
                System.out.println("Target not found");
        else
                System.out.println("Position = " + mid);
}
```

Δυαδική Αναζήτηση σε Java

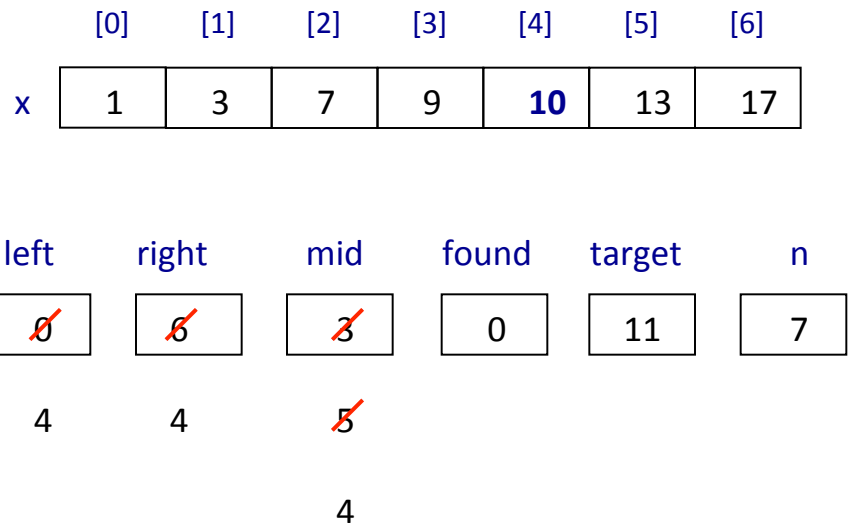



```
        found = 0;
        left = 0;
        right = n-1;

        while ( (left <= right) && (found == 0) )
        {
                mid = (left+right)/2;
                if ( x[mid] == target )
                        found = 1;
                if ( x[mid] < target )
                        left = mid+1;
                if  ( x[mid] > target )
                        right = mid-1;
        }

        if (found == 0)
                System.out.println("Target not found");
        else
                System.out.println("Position = " + mid);
}
```

Δυαδική Αναζήτηση σε Java

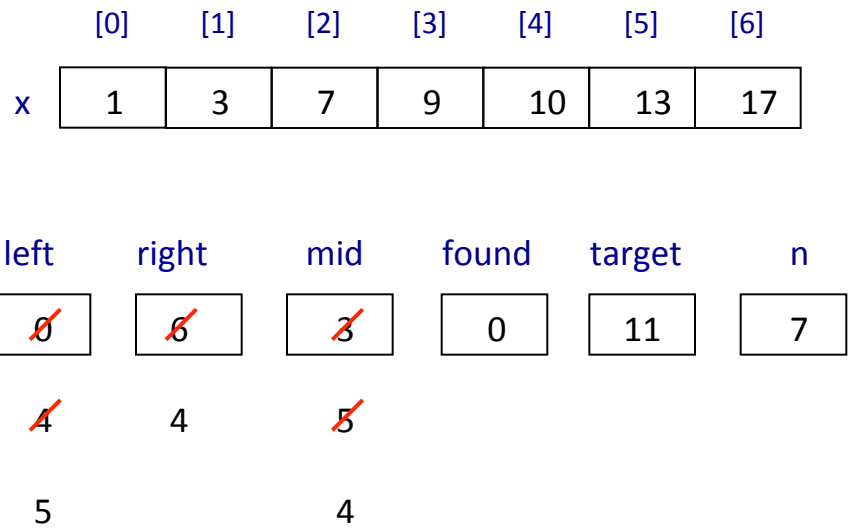



```
found = 0;
left = 0;
right = n-1;

while ( (left <= right) && (found == 0) )
{
        mid = (left+right)/2;
        if ( x[mid] == target )
                found = 1;
        if ( x[mid] < target )
                left = mid+1;
        if  ( x[mid] > target )
                right = mid-1;
}

if (found == 0)
        System.out.println("Target not found");
else
        System.out.println("Position = " + mid);
}
```

Δυαδική Αναζήτηση σε Java




```
found = 0;
left = 0;
right = n-1;

while ( (left <= right) && (found == 0) )
{
        mid = (left+right)/2;
        if ( x[mid] == target )
                found = 1;
        if ( x[mid] < target )
                left = mid+1;
        if  ( x[mid] > target )
                right = mid-1;
}

if (found == 0)
        System.out.println("Target not found");
else
        System.out.println("Position = " + mid);
}
```

Ταξινόμηση 3 Αριθμών σε Java

```
public static void main (String[ ] args)
{
        Scanner input = new Scanner( System.in );
        int x[ ];
        Int temp;
        final int n=3;

        x = new int[n];
        System.out.printf("Enter %d integers: ", n);

        for (i=0; i<n; i++)
                x[i] = input.nextInt();
```

```
        System.out.println("The sorted numbers are:");

        for (i=0; i<n; i++)
                System.out.printf("%d\t", x[i]);

}
```

Ταξινόμηση 3 Αριθμών σε Java

```
public static void main (String[ ] args)
{
        Scanner input = new Scanner( System.in );
        int x[ ];
        Int temp;
        final int n=3;

        x = new int[n];
        System.out.printf("Enter %d integers: ", n);

        for (i=0; i<n; i++)
                x[i] = input.nextInt();
```

```
        if (x[0] > x[1])
        {
                temp = x[0]; x[0] = x[1]; x[1] = temp;
        }

        if (x[1] > x[2])
        {
                temp = x[1]; x[1] = x[2]; x[2] = temp;
        }

        System.out.println("The sorted numbers are:");

        for (i=0; i<n; i++)
                System.out.printf("%d\t", x[i]);

}
```

Ταξινόμηση 3 Αριθμών σε Java

```
public static void main (String[ ] args)
{
        Scanner input = new Scanner( System.in );
        int x[ ];
        Int temp;
        final int n=3;

        x = new int[n];
        System.out.printf("Enter %d integers: ", n);

        for (i=0; i<n; i++)
                x[i] = input.nextInt();

        if (x[0] > x[1])
        {
                temp = x[0]; x[0] = x[1]; x[1] = temp;
        }

        if (x[1] > x[2])
        {
                temp = x[1]; x[1] = x[2]; x[2] = temp;
        }


        if (x[0] > x[1])
        {
                temp = x[0]; x[0] = x[1]; x[1] = temp;
        }

        System.out.println("The sorted numbers are:");

        for (i=0; i<n; i++)
                System.out.printf("%d\t", x[i]);


}
```

Ταξινόμηση Πίνακα με Bubblesort

ΕΙΣΟΔΟΣ

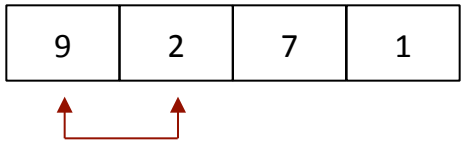
9	2	7	1

Ταξινόμηση Πίνακα με Bubblesort

ΕΙΣΟΔΟΣ

9	2	7	1

1ο Πέρασμα



Ταξινόμηση Πίνακα με Bubblesort

ΕΙΣΟΔΟΣ

9	2	7	1

1ο Πέρασμα

9	2	7	1

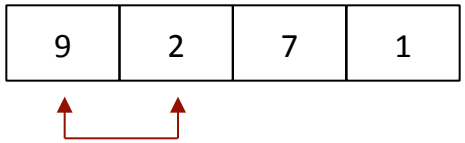
2	9	7	1

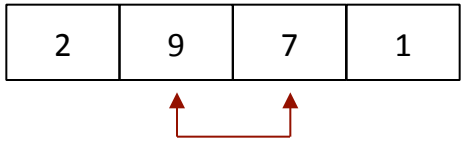
Ταξινόμηση Πίνακα με Bubblesort

ΕΙΣΟΔΟΣ

9	2	7	1

1ο Πέρασμα





Ταξινόμηση Πίνακα με Bubblesort

ΕΙΣΟΔΟΣ

9	2	7	1

1ο Πέρασμα

9	2	7	1

2	9	7	1

2	7	9	1

Ταξινόμηση Πίνακα με Bubblesort

ΕΙΣΟΔΟΣ

9	2	7	1

1ο Πέρασμα

9	2	7	1

2	9	7	1

2	7	9	1

Ταξινόμηση Πίνακα με Bubblesort

ΕΙΣΟΔΟΣ

9	2	7	1

1ο Πέρασμα

9	2	7	1

2	9	7	1

2	7	9	1

2	7	1	9

Ταξινόμηση Πίνακα με Bubblesort

ΕΙΣΟΔΟΣ

9	2	7	1

1ο Πέρασμα

9	2	7	1

2	9	7	1

2	7	9	1

2	7	1	9

2ο Πέρασμα

2	7	1	9

2	7	1	9

2	1	7	9

Ταξινόμηση Πίνακα με Bubblesort

ΕΙΣΟΔΟΣ

9	2	7	1

1ο Πέρασμα

9	2	7	1

2	9	7	1

2	7	9	1

2	7	1	9

2ο Πέρασμα

2	7	1	9

2	7	1	9

2	1	7	9

3ο Πέρασμα

2	1	7	9

1	2	7	9

Ταξινόμηση Πίνακα με Bubblesort

ΕΙΣΟΔΟΣ

9	2	7	1

Συγκρίσεις: 3 2 1

1ο Πέρασμα

9	2	7	1

2	9	7	1

2	7	9	1

2	7	1	9

2ο Πέρασμα

2	7	1	9

2	7	1	9

2	1	7	9

3ο Πέρασμα

2	1	7	9

1	2	7	9

Ταξινόμηση Πίνακα με Bubblesort

ΕΙΣΟΔΟΣ

9	2	7	1

Συγκρίσεις: 3 + 2 + 1 = **6**

1ο Πέρασμα

9	2	7	1

2	9	7	1

2	7	9	1

2	7	1	9

2ο Πέρασμα

2	7	1	9

2	7	1	9

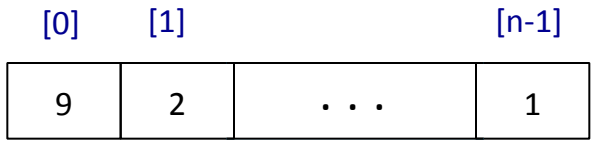
2	1	7	9

3ο Πέρασμα

2	1	7	9

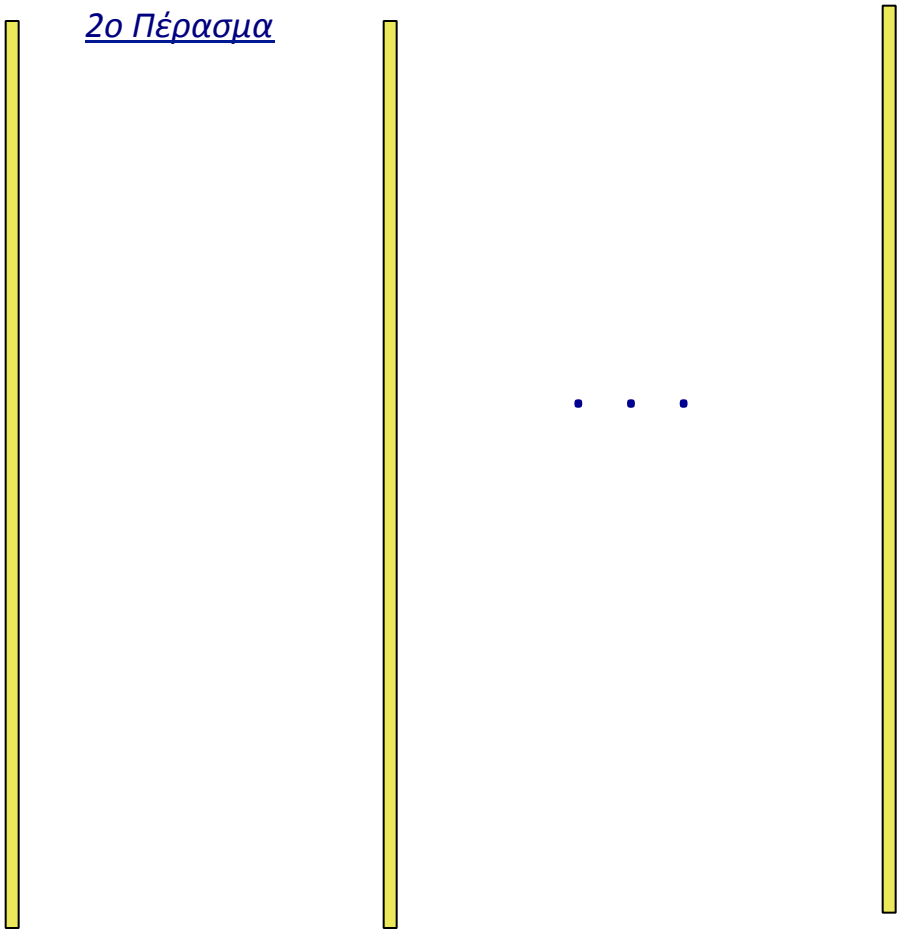
1	2	7	9

Ταξινόμηση Πίνακα με Bubblesort

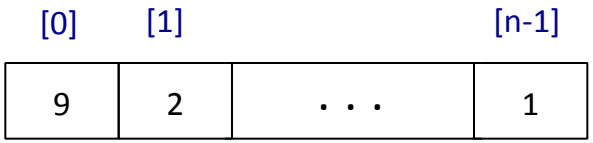


Συγκρίσεις: n-1 + n-2 + . . . + 1

1ο Πέρασμα *2ο Πέρασμα* *(n-1) Πέρασμα*

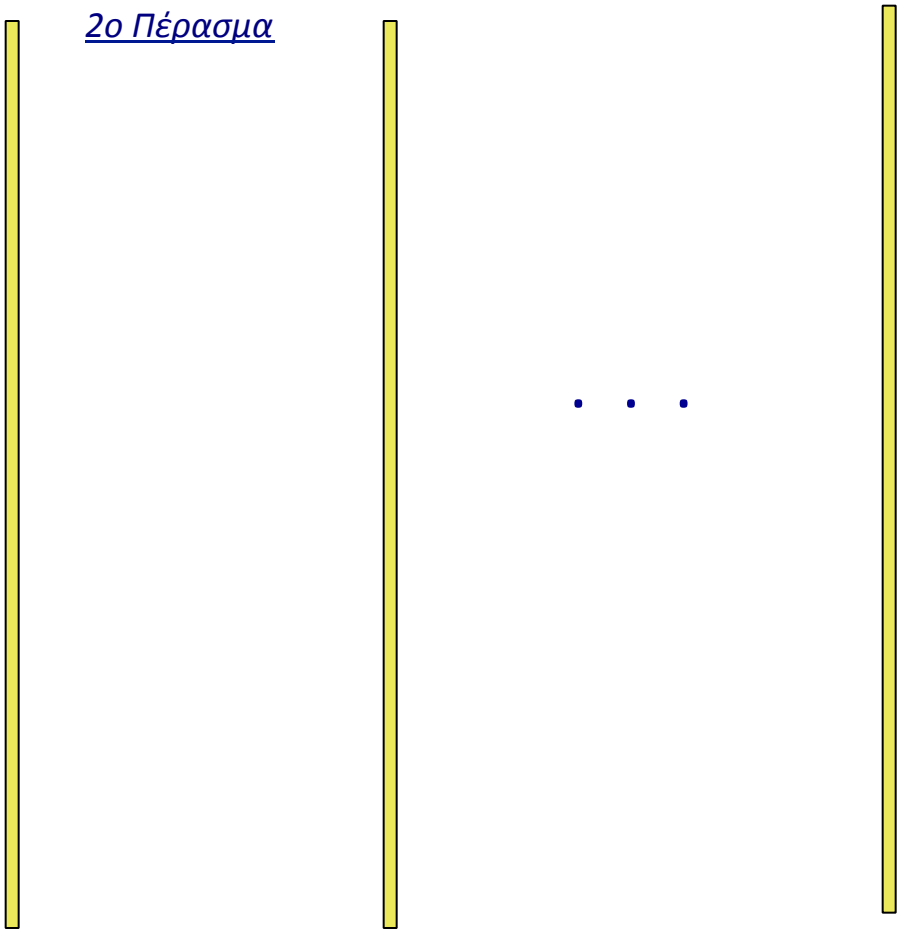


Ταξινόμηση Πίνακα με Bubblesort



Συγκρίσεις: n-1 + n-2 + . . . + 1 = **n(n-1)/2**

1ο Πέρασμα *2ο Πέρασμα* *(n-1) Πέρασμα*



Υλοποίηση BubbleSort σε Java

```
public static void main (String[ ] args)
{
        Scanner input = new Scanner( System.in );
        int x[ ];
        int i, pass, temp;
        final int n=4;

        x = new int[n];
        System.out.printf("Enter %d integers: ", n);

        for (i=0; i<n; i++)
                x[i] = input.nextInt();

        System.out.println("The sorted array is:");

        for (i=0; i<n; i++)
                System.out.printf("%d\t", x[i]);

}
```

Υλοποίηση BubbleSort σε Java

```
public static void main (String[ ] args)
{
        Scanner input = new Scanner( System.in );
        int x[ ];
        int i, pass, temp;
        final int n=4;

        x = new int[n];
        System.out.printf("Enter %d integers: ", n);

        for (i=0; i<n; i++)
                x[i] = input.nextInt();

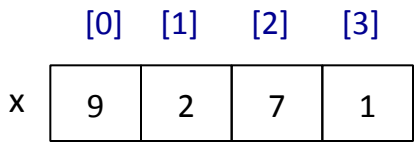
        for (pass = 1; pass<n; pass++)
                for (i=0; i<n-pass; i++)
                        if ( x[i] > x[i+1] )
                        {
                                temp = x[i];
                                x[i] = x[i+1];
                                x[i+1] = temp;
                        }

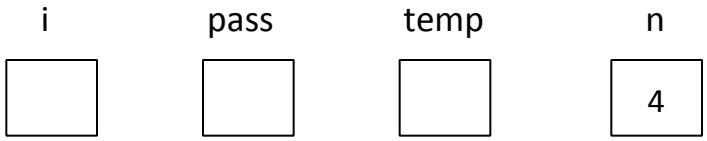
        System.out.println("The sorted array is:");

        for (i=0; i<n; i++)
                System.out.printf("%d\t", x[i]);

}
```

Υλοποίηση BubbleSort σε Java



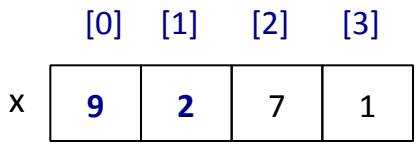


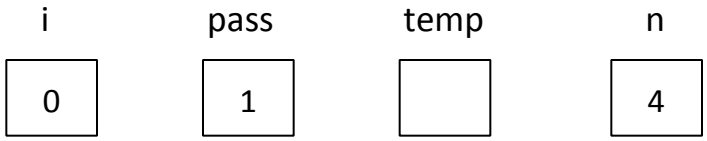

```
for (pass = 1; pass<n; pass++)
        for (i=0; i<n-pass; i++)
                if ( x[i] > x[i+1] )
                {
                        temp = x[i];
                        x[i] = x[i+1];
                        x[i+1] = temp;
                }

System.out.println("The sorted array is:");

for (i=0; i<n; i++)
        System.out.printf("%d\t", x[i]);
}
```

Υλοποίηση BubbleSort σε Java



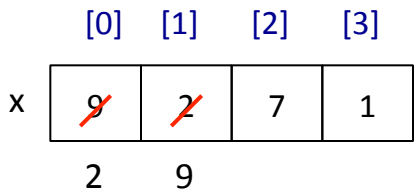


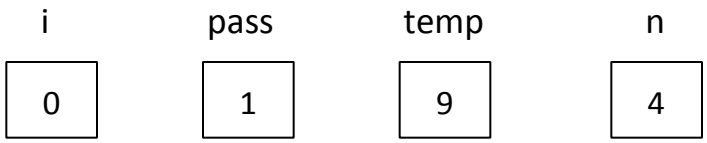

```
for (pass = 1; pass<n; pass++)
        for (i=0; i<n-pass; i++)
                if ( x[i] > x[i+1] )
                {
                        temp = x[i];
                        x[i] = x[i+1];
                        x[i+1] = temp;
                }

System.out.println("The sorted array is:");

for (i=0; i<n; i++)
        System.out.printf("%d\t", x[i]);
}
```

Υλοποίηση BubbleSort σε Java



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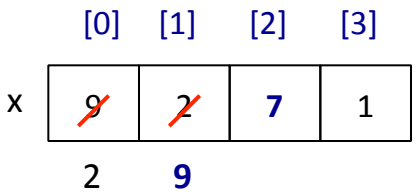

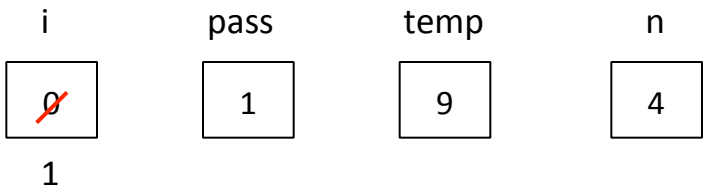


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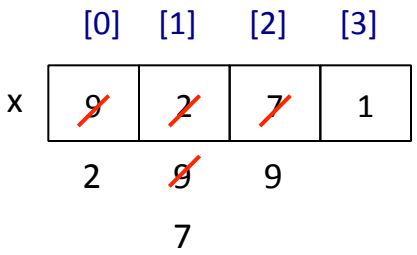

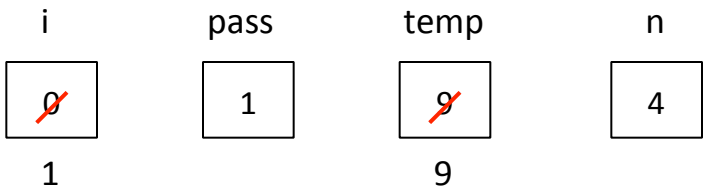


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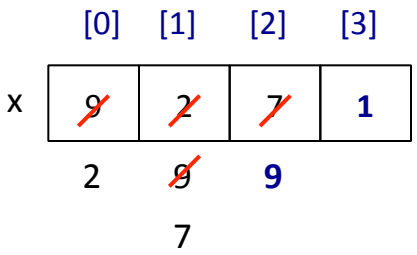

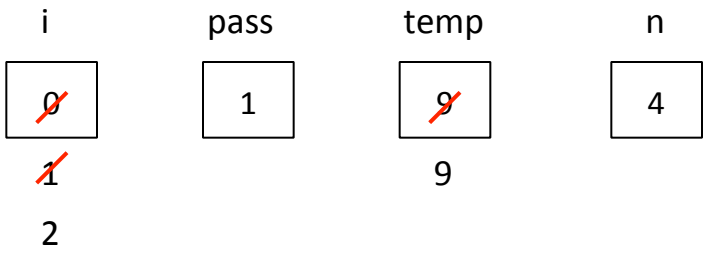


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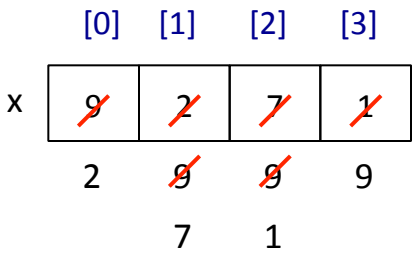

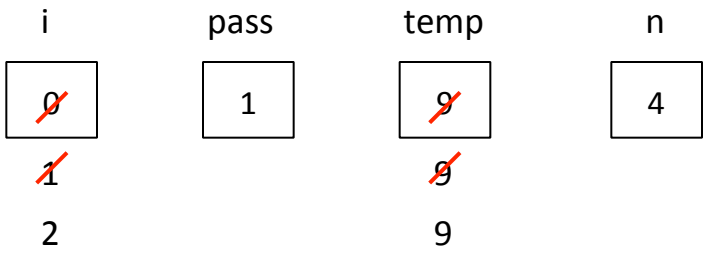


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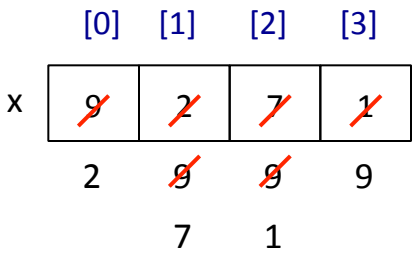

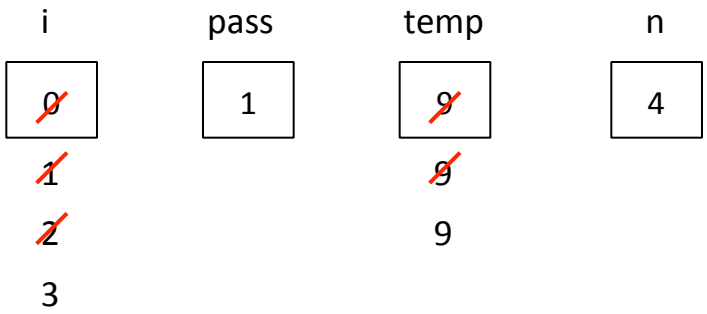


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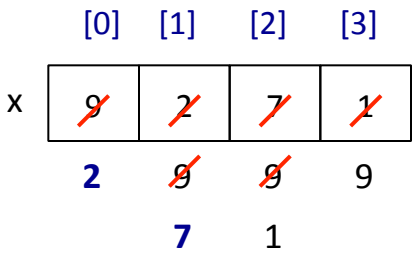

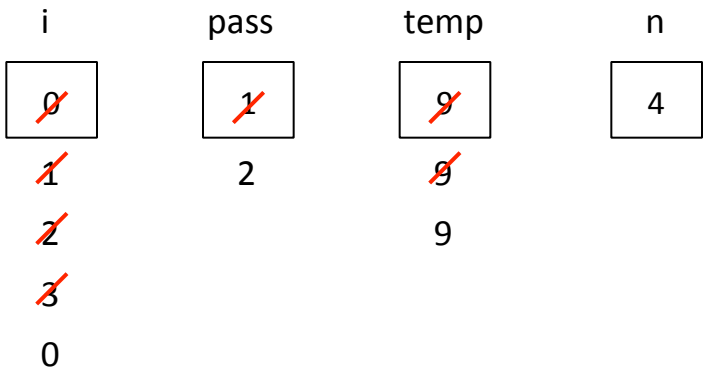


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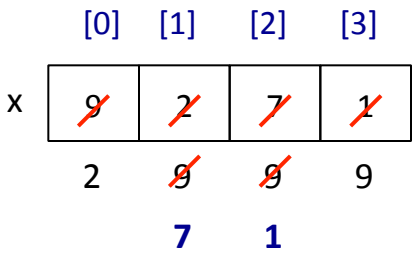

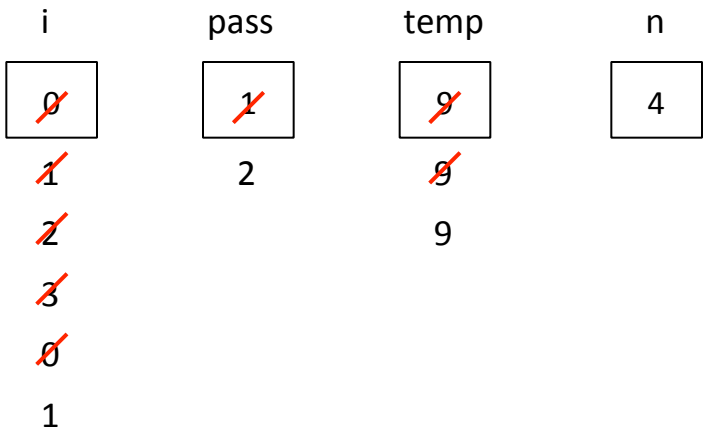


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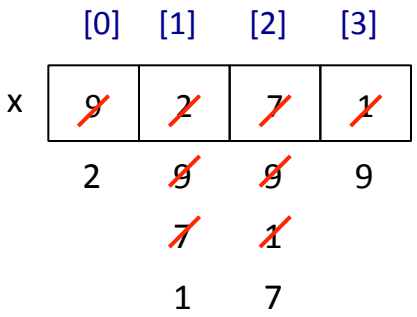

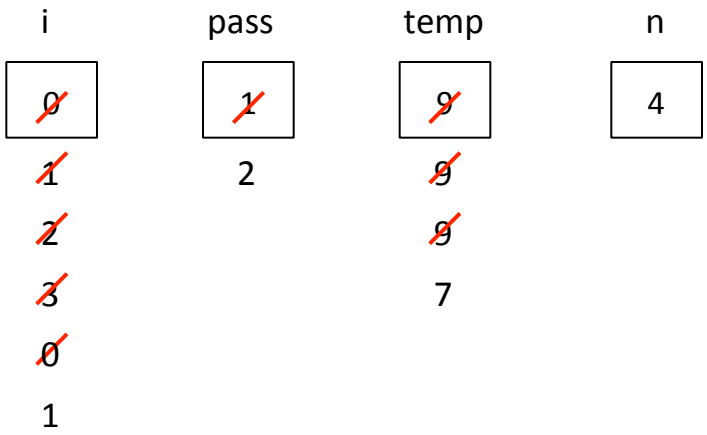


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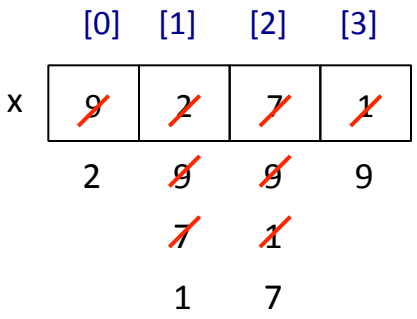

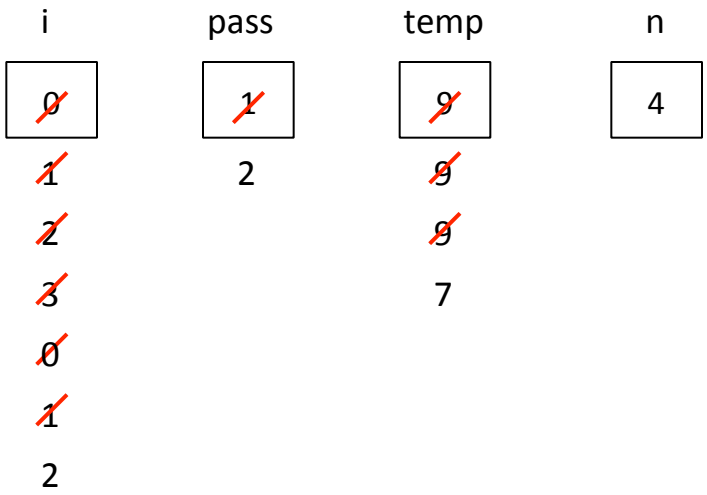


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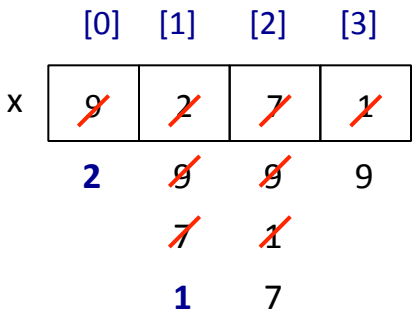

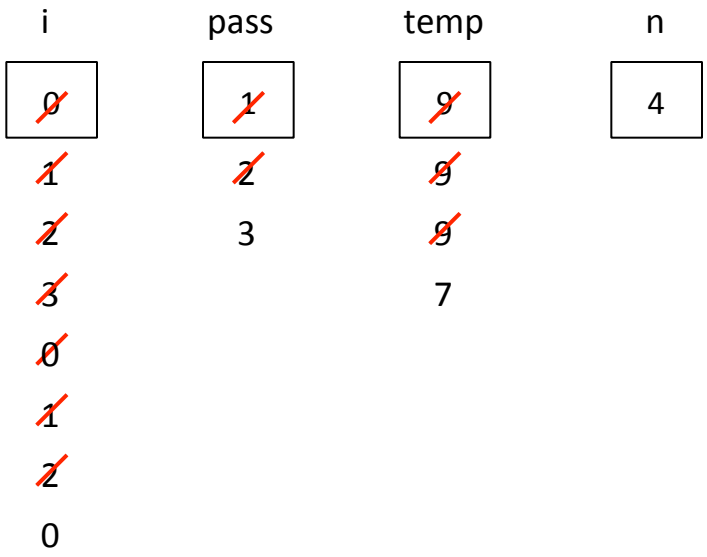


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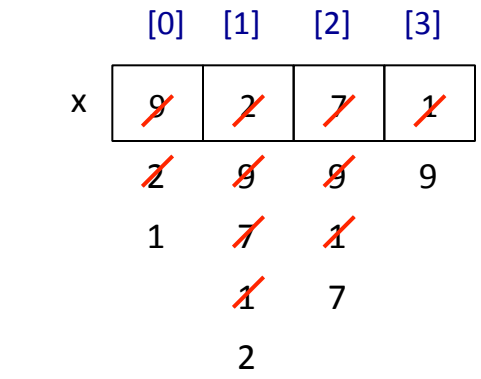

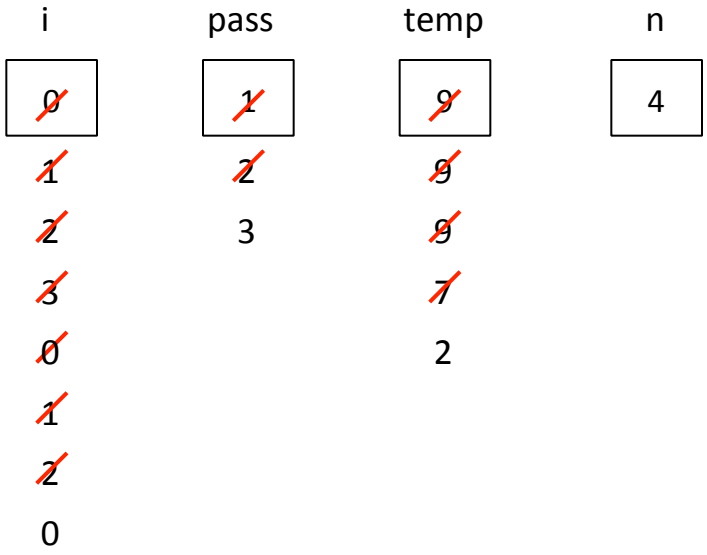


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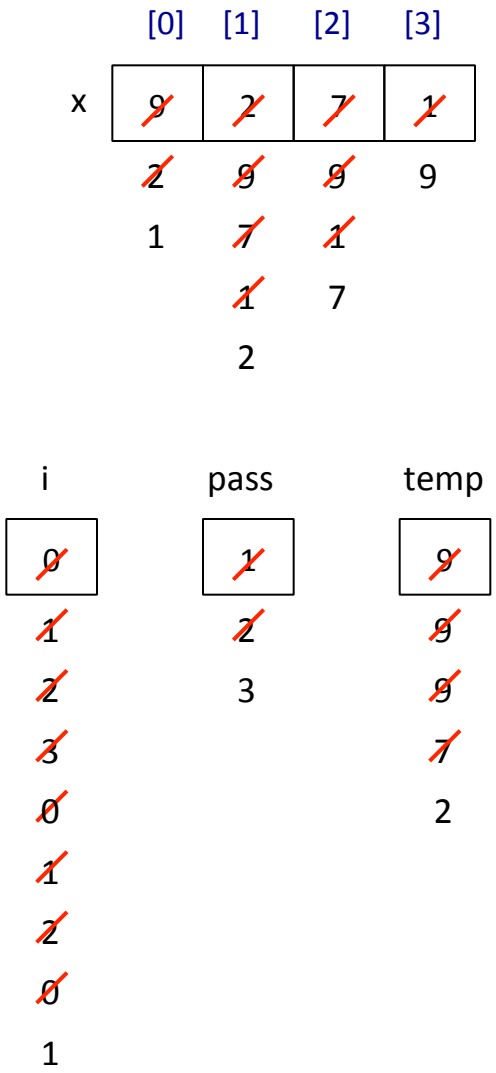


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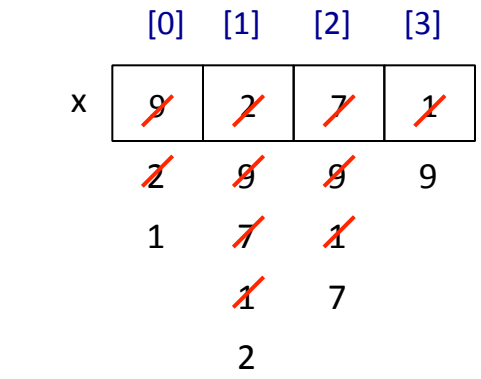

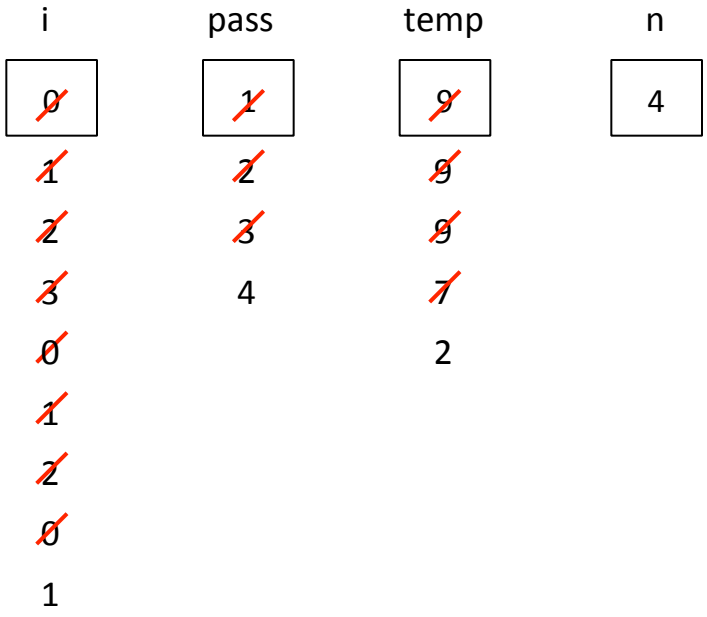


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BubbleSort με Αντίστροφη Διαπέραση

```
public static void main (String[ ] args)
{
        Scanner input = new Scanner( System.in );
        int x[ ];
        int i, pass, temp;
        final int n=4;

        x = new int[n];
        System.out.printf("Enter %d integers: ", n);

        for (i=0; i<n; i++)
                x[i] = input.nextInt();

        for (pass = 1; pass<n; pass++)
                for (i=n-2; i>=pass-1; i--)
                        if ( x[i] > x[i+1] )
                        {
                                temp = x[i];
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        System.out.println("The sorted array is:");

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Ταξινομήστε Πίνακα σε Φθίνουσα Σειρά

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