```c
#include<stdio.h>
#include<conio.h>
void main()
{
int a[100],n,i,j,t;
clrscr();
printf("Enter array size 1-100 "); scanf("%d",&n);
printf("Enter %d elements ",n);for(i=0;i<n;i++)scanf("%d",&a[i]);
for(i=0;i<=n-2;i++)
{
for(j=i+1;j<=n-1;j++)
{
if(a[i]>a[j]){t=a[i];a[i]=a[j];a[j]=t;
}
}
}
printf("Sorted elements are ");
for(i=0;i<n;i++)printf("%4d",a[i]);
getch();
}
```
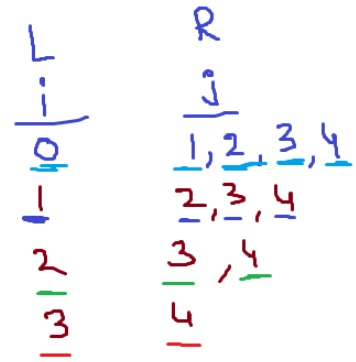
```
Enter array size 1-100 9
Enter 9 elements 9 0 3 7 -3 6 4 -5 9
Sorted elements are   -5  -3   0   3   4   6   7   9   9
```

```
for(i=0;i<=n-2;i++)
{
for( j=i+1; j<=n-1; j++)
{   L    R
if(a[i]>a[ j ])
{
t=a[i];
a[i]=a[ j];
a[j]=t;
}
}
}
```
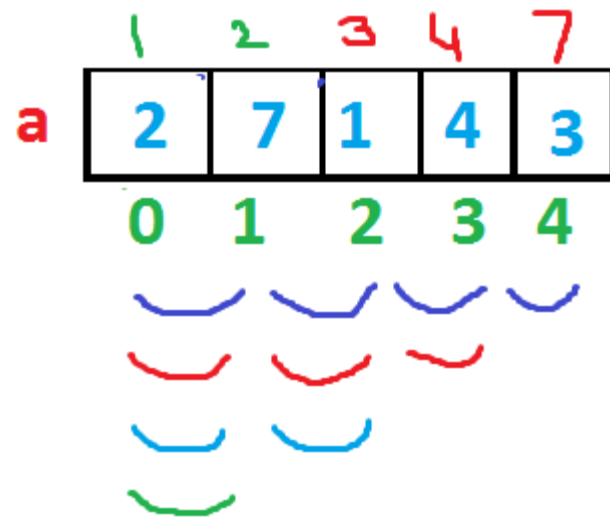
a | 2 | 7 | 5 | 4 | 3 |
  | 0 | 1 | 2 | 3 | 4 |

L

i

0
1
2
3

R

j

1,2,3,4
2,3,4
3,4
4

Bubble sort:

```
2   7   1   4   3              1   2   3   4   7
2   1   7   4   3         a  | 2 | 7 | 1 | 4 | 3 |
2   1   4   7   3              0   1   2   3   4
2   1   4   3   7
1   2   4   3   7
1   2   3   4   7
```

i	j, j+1
0	0-1, 1-2, 2-3, 3-4
1	0-1, 1-2, 2-3
2	0-1, 1-2,
3	0-1

```c
#include<stdio.h>
#include<conio.h>
void main()
{
int a[100],n,i,j,t;
clrscr();
printf("Enter array size 1-100 "); scanf("%d",&n);
printf("Enter %d elements ",n);for(i=0;i<n;i++)scanf("%d",&a[i]);
for(i=0;i<=n-2;i++)
{
for(j=0;j<=n-i-2;j++)
{
if(a[j]>a[j+1]){t=a[j];a[j]=a[j+1];a[j+1]=t;
}
}
}
printf("Sorted elements are ");
for(i=0;i<n;i++)printf("%4d",a[i]);
getch();
}
```

```
Enter array size 1-100 7
Enter 7 elements 3 8 1 5 -3 7 3
Sorted elements are   -3   1   3   3   5   7   8
```

```
for( i=0;i<=n-2;i++)
{
for(j=0; j<=n-i-2;j++)
{    L    R
if(a[j]>a[j+1])
{
t=a[j];
a[j]=a[j+1];
a[j+1]=t;
}
}
}
```

a | 2 7 1 4 3 |
   0 1 2 3 4

$$j <= n-i-2$$

$$0 \qquad 5-0-2=3$$

$$0 \qquad 5-1-2=2$$

$$0 \qquad 5-2-2=1$$

$$0 \qquad 5-3-2=0$$

i	j, j+1
0	0-1, 1-2, 2-3, 3-4
1	0-1, 1-2, 2-3
2	0-1, 1-2,
3	0-1

Descending order:

```c
#include<stdio.h>
#include<conio.h>
void main()
{
int a[100],n,i,j,t;
clrscr();
printf("Enter array size 1-100 "); scanf("%d",&n);
printf("Enter %d elements ",n);for(i=0;i<n;i++)scanf("%d",&a[i]);
for(i=0;i<=n-2;i++)
{
for(j=0;j<=n-i-2;j++)
{
if(a[j]<a[j+1]){t=a[j];a[j]=a[j+1];a[j+1]=t;
}
}
}
printf("Sorted elements are ");
for(i=0;i<n;i++)printf("%4d",a[i]);
getch();
}
```
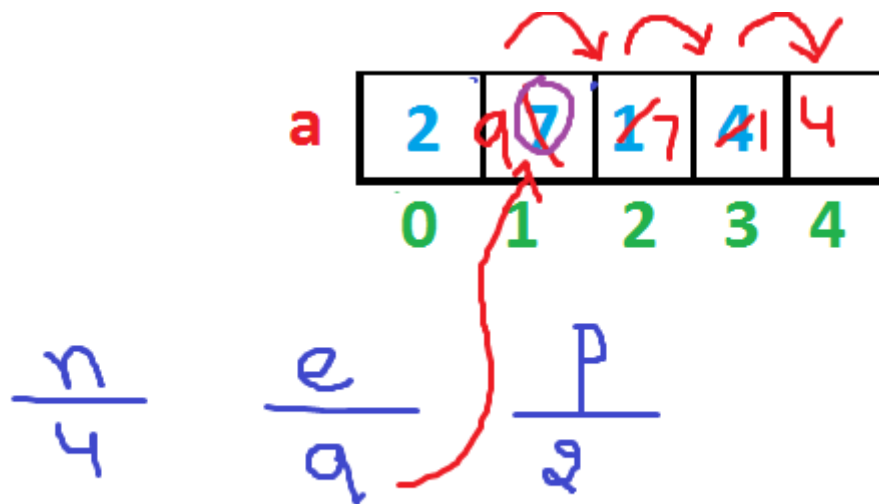
```
Enter array size 1-100 9
Enter 9 elements 3 0 1 7 -3 7 1 4 5
Sorted elements are    7   7   5   4   3   1   1   0  -3
```

Inserting a new element into array: [push]

Right shifting of array elements

$$\frac{n}{4} \qquad \frac{e}{9} \qquad \frac{p}{2}$$

Deleting array element - POP

Left shifting of array elements:

$$\frac{n}{4} \qquad \frac{e}{7}$$