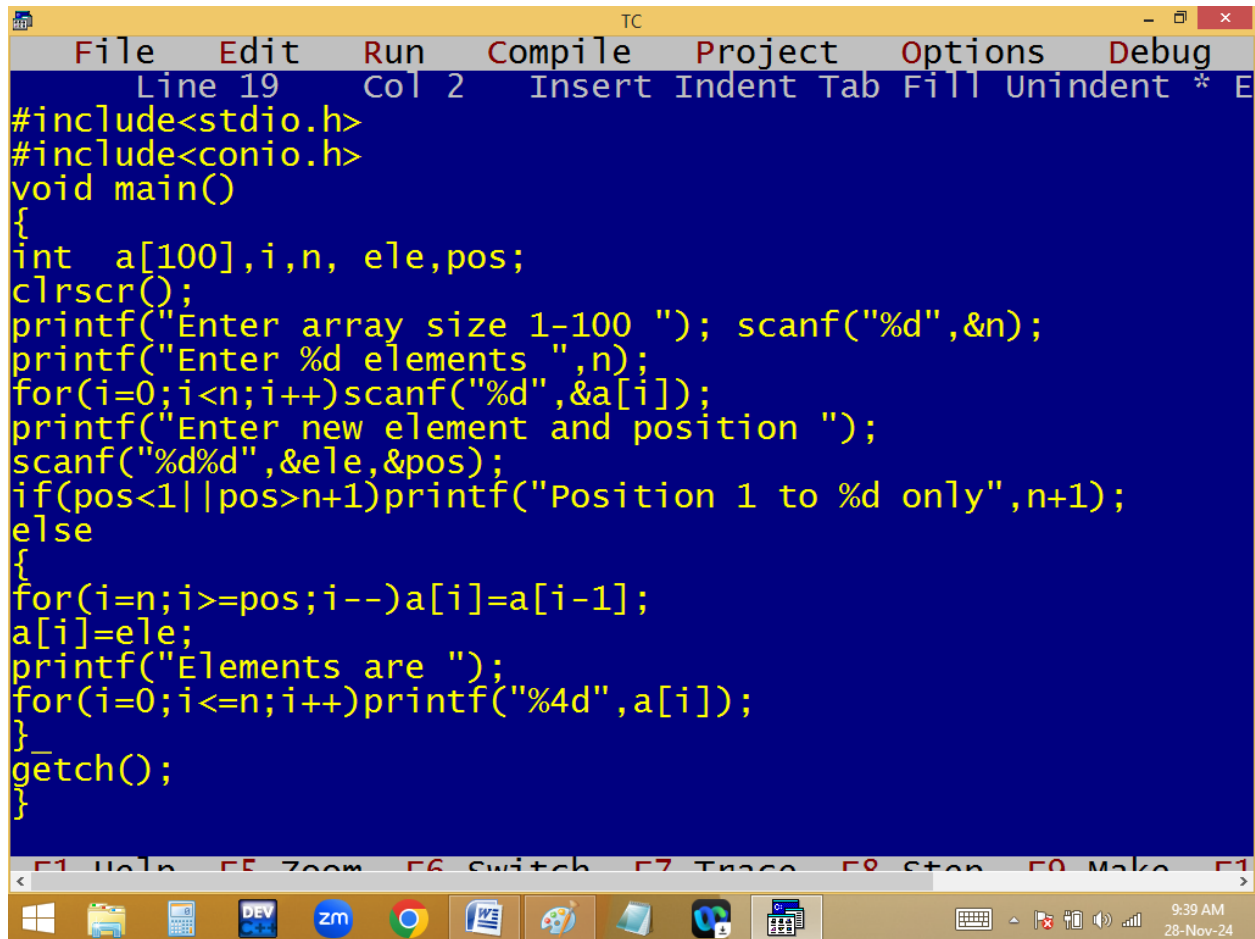
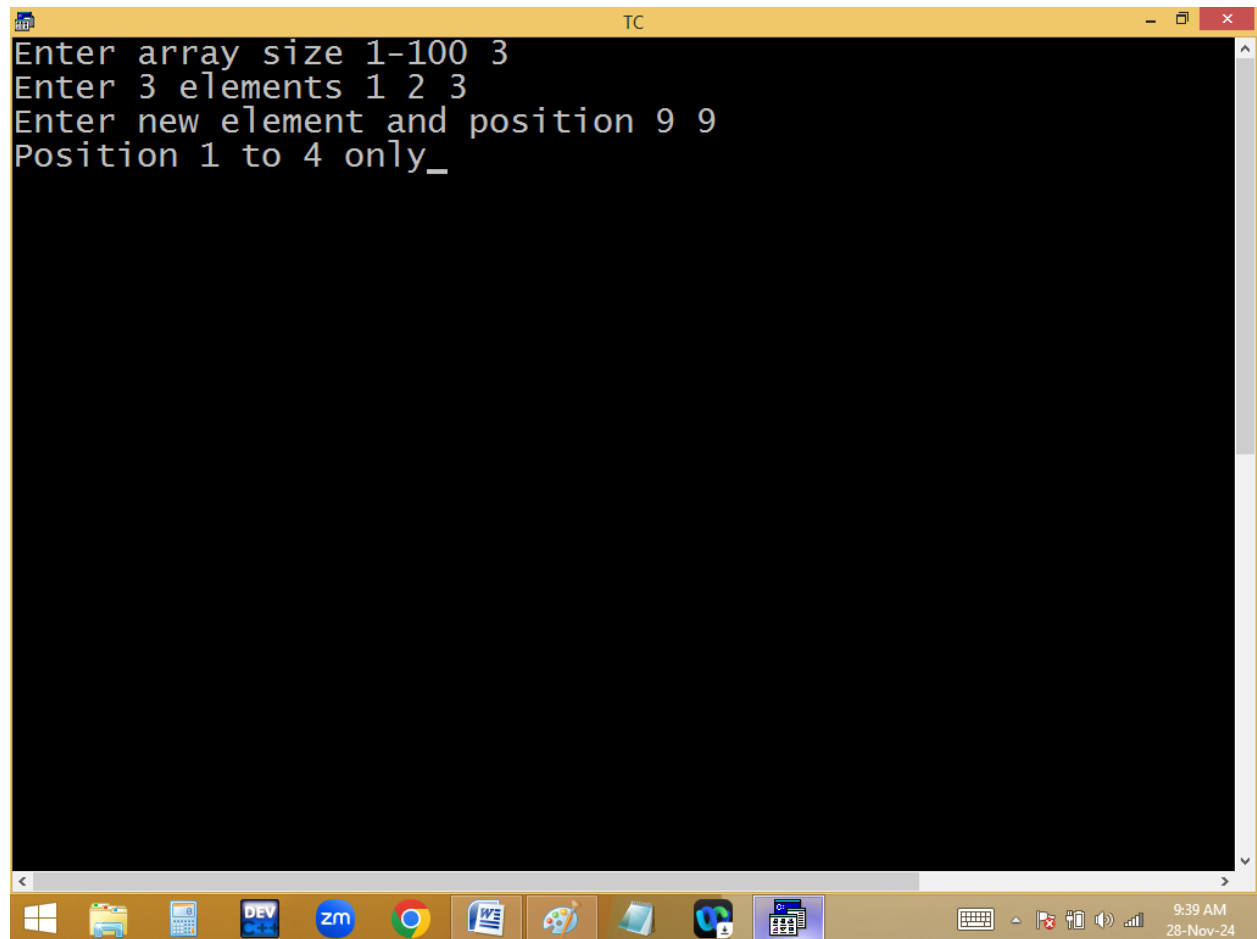


Inserting a new element in specified position of array [right shifting of array elements [push]]

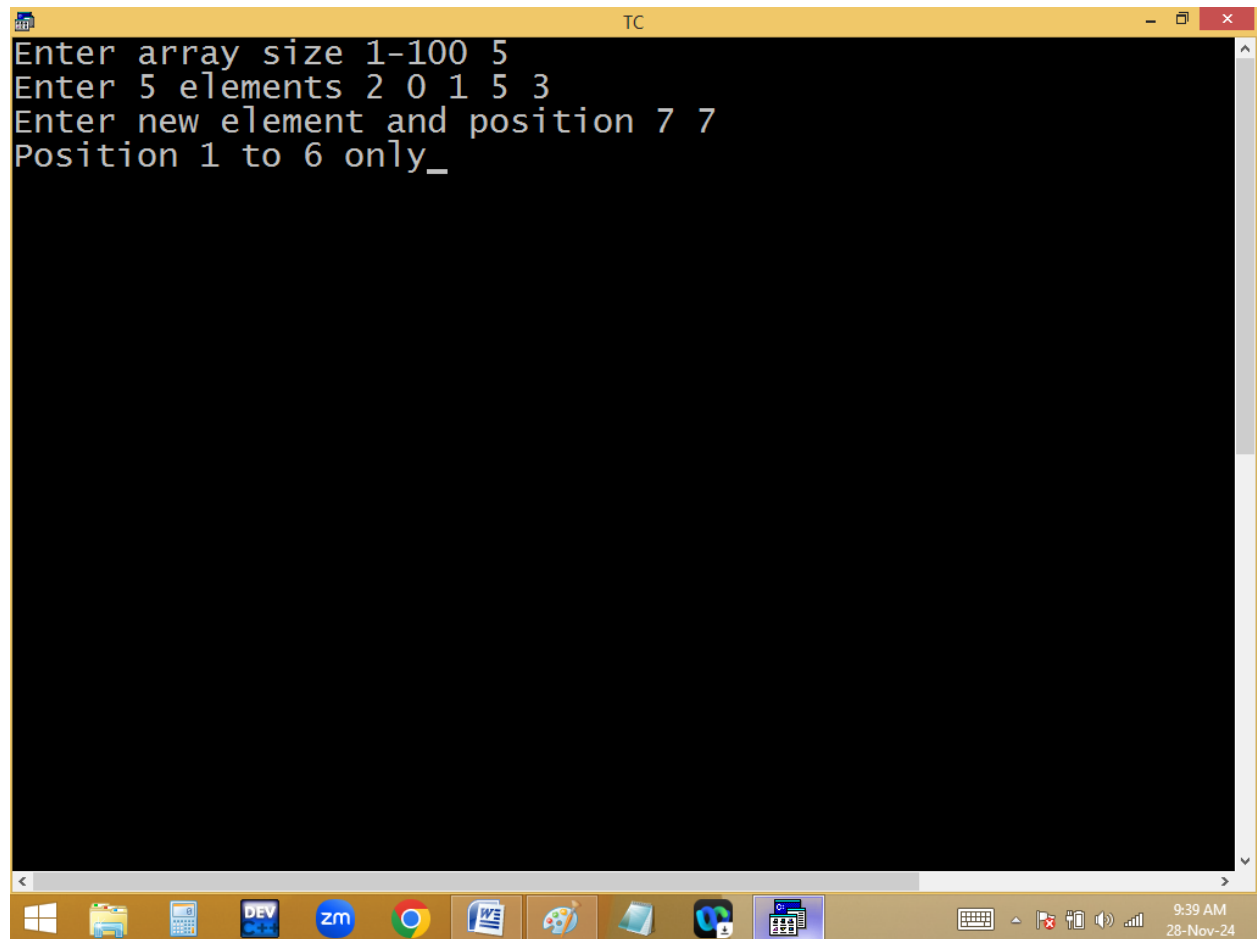


```
TC
File Edit Run Compile Project Options Debug
Line 19 Col 2 Insert Indent Tab Fill Unindent * E
#include<stdio.h>
#include<conio.h>
void main()
{
int a[100],i,n, ele,pos;
clrscr();
printf("Enter array size 1-100 "); scanf("%d",&n);
printf("Enter %d elements ",n);
for(i=0;i<n;i++)scanf("%d",&a[i]);
printf("Enter new element and position ");
scanf("%d%d",&ele,&pos);
if(pos<1||pos>n+1)printf("Position 1 to %d only",n+1);
else
{
for(i=n;i>=pos;i--)a[i]=a[i-1];
a[i]=ele;
printf("Elements are ");
for(i=0;i<=n;i++)printf("%4d",a[i]);
}
getch();
}
```

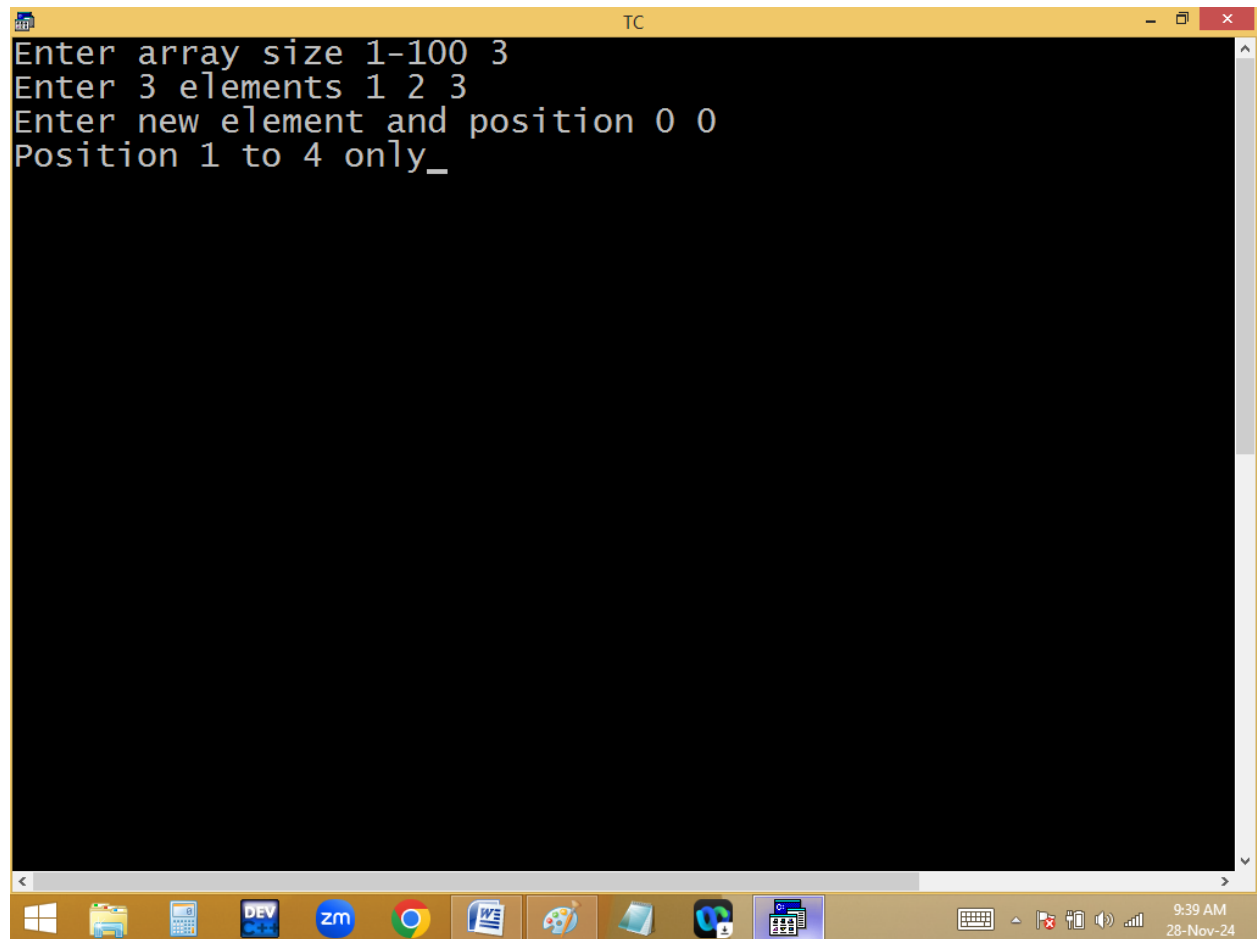
The screenshot shows a Turbo C++ IDE window titled 'TC'. The menu bar includes File, Edit, Run, Compile, Project, Options, and Debug. The status bar at the top indicates 'Line 19 Col 2' and provides shortcuts for Insert, Indent, Tab, Fill, Unindent, and * E. The code area contains a C program for inserting an element into an array. The program prompts the user for the array size (1-100), the number of elements, the elements themselves, a new element, and its position. It then shifts elements to the right starting from the specified position and inserts the new element. The output shows the elements with a space after the last one. The bottom of the screen shows a Windows taskbar with various application icons and a system clock indicating 9:39 AM on 28-Nov-24.



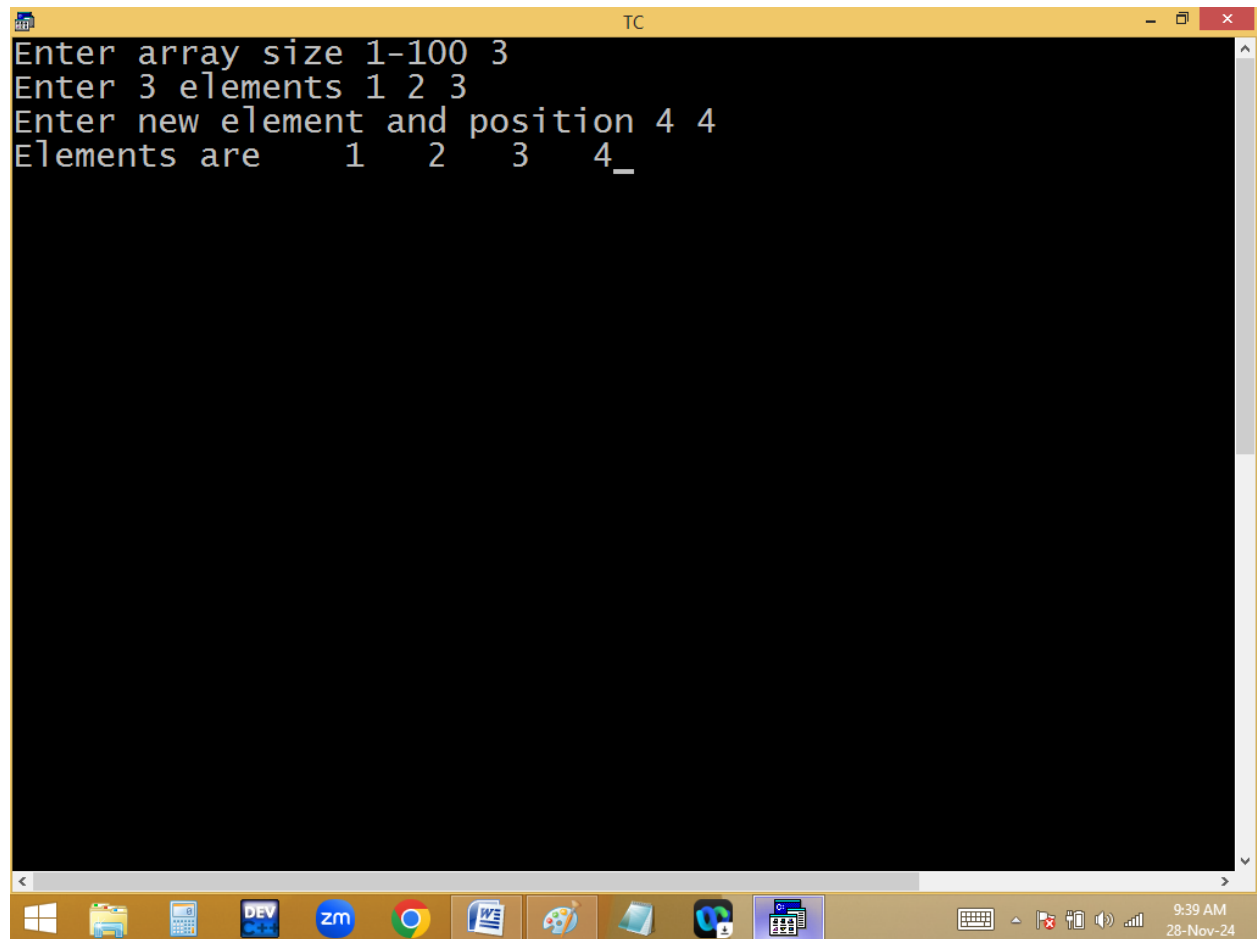
```
TC
Enter array size 1-100 5
Enter 5 elements 2 0 1 5 3
Enter new element and position 7 7
Position 1 to 6 only_
```



```
TC
Enter array size 1-100 3
Enter 3 elements 1 2 3
Enter new element and position 0 0
Position 1 to 4 only_
```

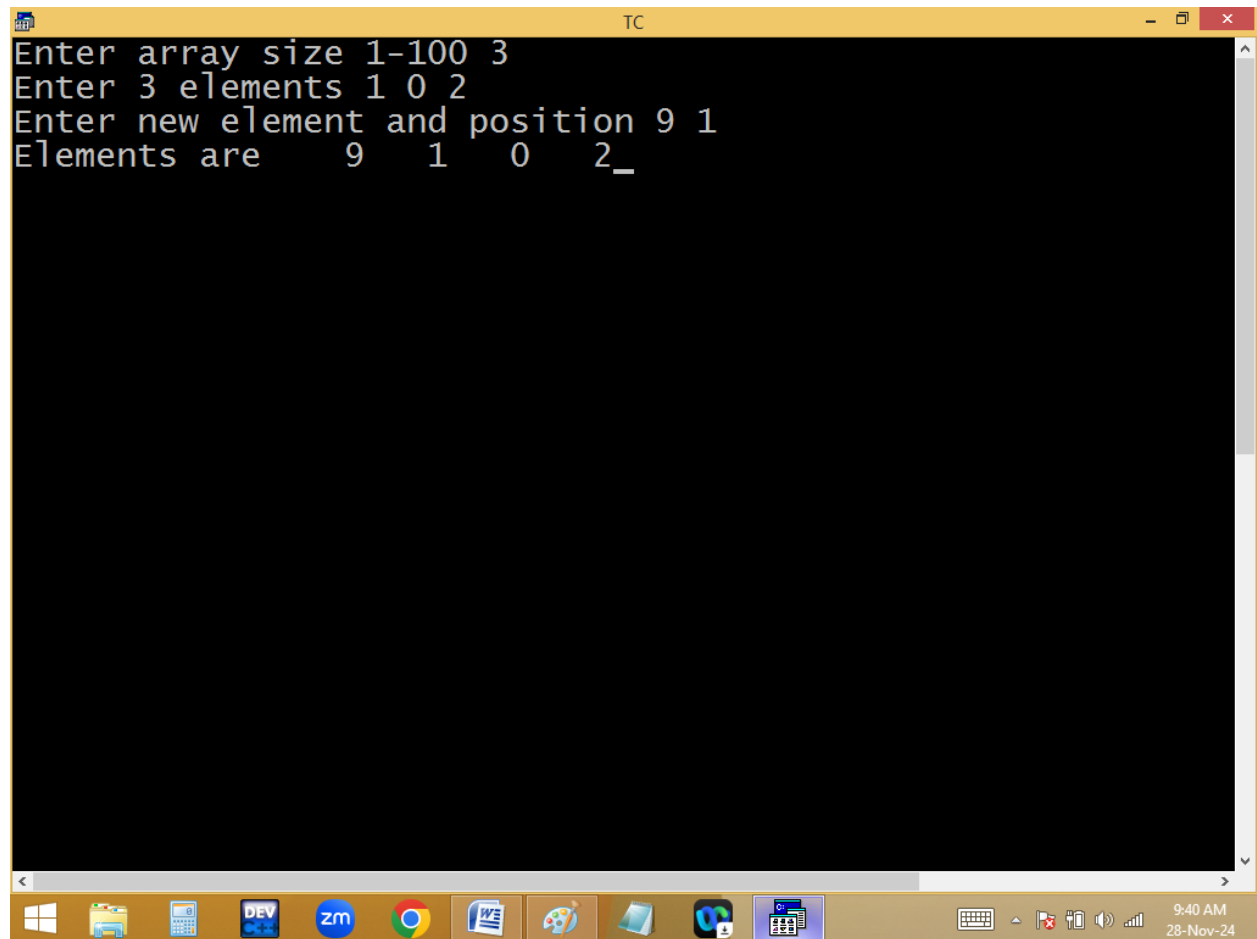


```
TC
Enter array size 1-100 3
Enter 3 elements 1 2 3
Enter new element and position 4 4
Elements are 1 2 3 4_
```



The image shows a Windows 10 desktop environment. A Turbo C++ (TC) window is open, displaying a program that interacts with the user to create and modify an array. The program prompts for an array size (1-100), then for three elements (1, 2, 3), and finally for a new element and its position (4, 4). The output shows the array elements as 1, 2, 3, and 4, with a trailing underscore. The Windows taskbar at the bottom contains icons for the Start menu, File Explorer, Calculator, DEV C++, Zoom, Google Chrome, Word, Paint, OneDrive, and a calendar. The system tray on the right shows the time as 9:39 AM on 28-Nov-24, along with icons for keyboard, network, and volume.

```
TC
Enter array size 1-100 3
Enter 3 elements 1 0 2
Enter new element and position 9 1
Elements are 9 1 0 2_
```



The image shows a Windows 10 desktop environment. A Turbo C++ (TC) window is open, displaying a program that interacts with an array. The program prompts the user to enter an array size (1-100), three elements (1, 0, 2), and a new element and position (9, 1). The output shows the array elements as 9, 1, 0, 2, with a trailing underscore. The taskbar at the bottom contains icons for Windows, File Explorer, Calculator, DEV C++, Zoom, Google Chrome, Word, Paint, OneDrive, and a calendar. The system tray on the right shows the time as 9:40 AM on 28-Nov-24.

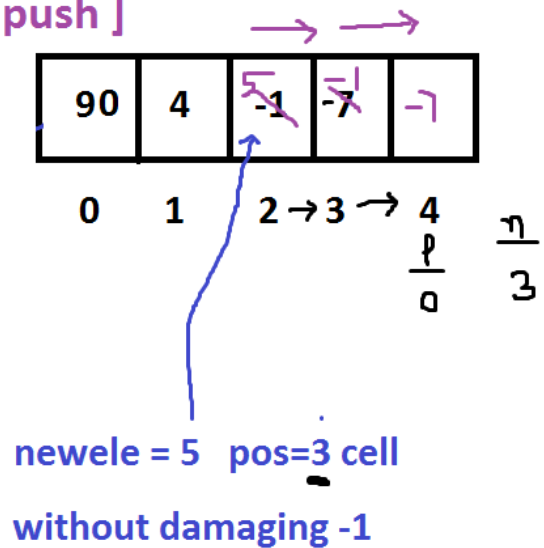
```

Enter array size 1-100 4
Enter 4 elements 1 2 4 5
Enter new element and position 3 3
Elements are 1 2 3 4 5_

```

Right shifting of array elements [push]

$2 \geq 3$
 $3 \geq 3$
 $i = 4 \geq 3$
 $3 \geq 3$
 $4 = 3$
 $for(i=n; i \geq pos; i--) a[i] = a[i-1];$
 $a[i] = newele;$
 $a = 5$
 $3 = 9$
 $\frac{9}{3} \quad \frac{p}{9}$
 $2 \rightarrow 3 \geq 0$
 $1 \rightarrow 2 \geq 0$
 $0 \rightarrow 1 \geq 0$
 $-1 \quad 0 = 0$

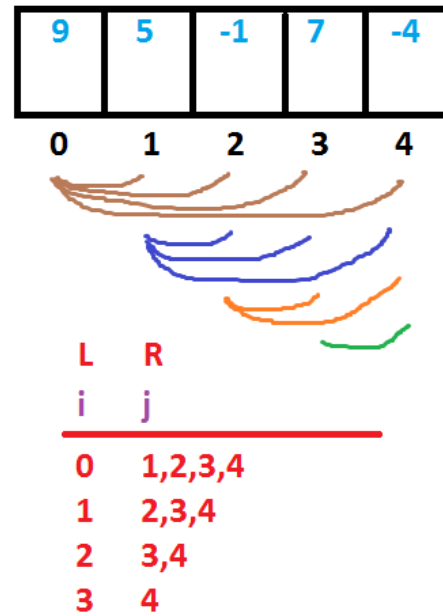


Sorting: Arranging data in a order

Selection sort:

Selection sort in ascending order:

9	5	-1	7	-4
5	9	-1	7	-4
-1	9	5	7	-4
-4	9	5	7	-1
-4	5	9	7	-1
-4	-1	9	7	5
-4	-1	7	9	5
-4	-1	5	9	7
-4	-1	5	7	9




```
TC
File Edit Run Compile Project Options Debug
Line 19 Col 1 Insert Indent Tab Fill Unindent * E
#include<stdio.h>
#include<conio.h>
void main()
{
int a[100],i,n,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("Elements are ");
for(i=0;i<n;i++)printf("%4d",a[i]);
getch();
}
```

F1 Help F5 Zoom F6 Switch F7 Trace F8 Stop F9 Make F10

10:02 AM 28-Nov-24

```

Enter array size 1-100 9
Enter 9 elements 3 0 8 -2 7 3 -5 9 4
Elements are -5 -2 0 3 3 4 7 8 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;
}
}
}

```

$$\frac{n}{5}$$



L	R
i	j
0	1,2,3,4
1	2,3,4
2	3,4
3	4
4	

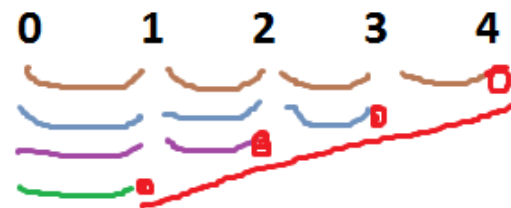
Descending order:

```
TC
File Edit Run Compile Project Options Debug
Line 14 Col 9 Insert Indent Tab Fill Unindent * E
#include<stdio.h>
#include<conio.h>
void main()
{
int a[100],i,n,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("Elements are ");
for(i=0;i<n;i++)printf("%4d",a[i]);
getch();
}
F1 Help F5 Zoom F6 Switch F7 Trace F8 Stop F9 Make F10
```

```
TC
Enter array size 1-100 7
Enter 7 elements 3 9 0 3 -5 1 -7 4
Elements are 9 3 3 1 0 -5 -7
```

Bubble sort in ascending order:

9	5	-1	7	-4
5	9	-1	7	-4
5	-1	9	7	-4
5	-1	7	9	-4
5	-1	7	-4	9
-1	5	7	-4	9
-1	5	-4	7	9
-1	-4	5	7	9
-4	-1	5	7	9



L R

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

```
TC
File Edit Run Compile Project Options Debug
Line 14 Col 41 Insert Indent Tab Fill Unindent * E
#include<stdio.h>
#include<conio.h>
void main()
{
int a[100],i,n,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("Elements are ");
for(i=0;i<n;i++)printf("%4d",a[i]);
getch();
}
```

F1 Help F5 Zoom F6 Switch F7 Trace F8 Stop F9 Make F10

10:24 AM
28-Nov-24

```
TC
Enter array size 1-100 9
Enter 9 elements 1 9 0 3 9 -3 7 -1 4
Elements are -3 -1 0 1 3 4 7 9 9_
```

Descending order:

```
TC
File Edit Run Compile Project Options Debug
Line 14 Col 9 Insert Indent Tab Fill Unindent * E
#include<stdio.h>
#include<conio.h>
void main()
{
int a[100],i,n,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("Elements are ");
for(i=0;i<n;i++)printf("%4d",a[i]);
getch();
}
```

F1 Help F5 Zoom F6 Switch F7 Trace F8 Stop F9 Make F10

10:25 AM
28-Nov-24


```

Enter array size 1-100 8
Enter 8 elements 3 0 1 9 -3 7 -4 3
Elements are      9      7      3      3      1      0      -3      -4

```

```

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;
        }
    }
}

```



n-i-2

- 5-0-2=3 ✓
- 5-1-2=2 ✓
- 5-2-2=1 ✓
- 5-3-2=0 ✓

L	R
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

Sort even elements in ascending and odd elements in descending order:

```
TC
File Edit Run Compile Project Options Debug
Line 1 Col 49 Insert Indent Tab Fill Unindent * E
#include<stdio.h>
#include<conio.h>
void main()
{
int a[100],i,n,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("Even Elements are ");
for(i=0;i<n;i++)if(a[i]%2==0)printf("%4d",a[i]);
printf("\nOdd Elements are ");
for(i=n-1;i>=0;i--)if(a[i]%2!=0)printf("%4d",a[i]);
getch();
}
F1 Help F5 Zoom F6 Switch F7 Trace F8 Stop F9 Make F10
```

```
TC
Enter array size 1-100 9
Enter 9 elements 1 2 3 4 5 6 7 8 9
Even Elements are      2      4      6      8
Odd Elements are      9      7      5      3      1_
```

```
TC
Enter array size 1-100 9
Enter 9 elements 3 0 9 -2 7 4 8 -5 1
Even Elements are -2 0 4 8
Odd Elements are 9 7 3 1 -5
```

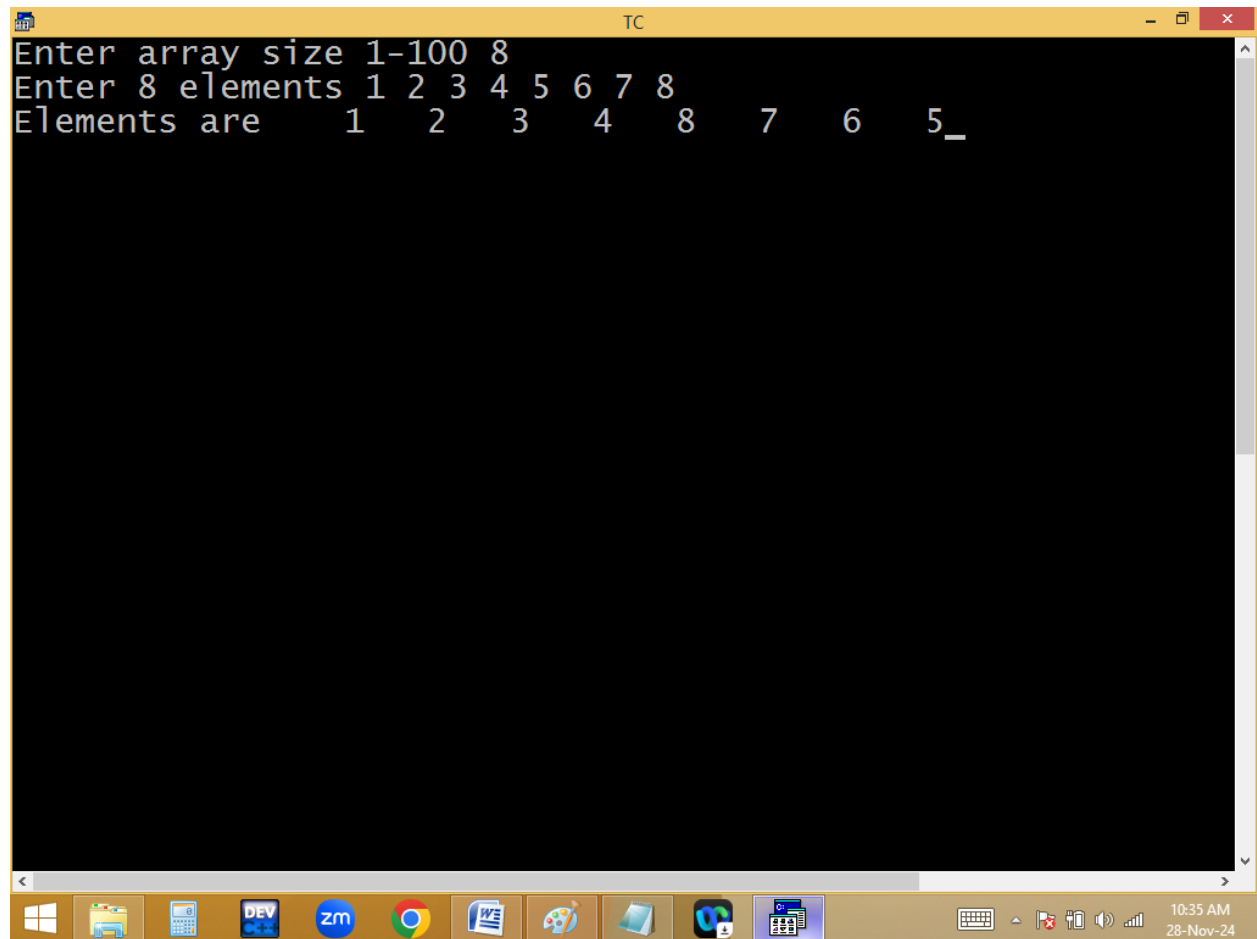
Arrange half array elements in ascending and remaining descending:

```
TC
File Edit Run Compile Project Options Debug
Line 19 Col 14 Insert Indent Tab Fill Unindent * E
void main()
{
int a[100],i,n,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("Elements are ");
for(i=0;i<n/2;i++)printf("%4d",a[i]);
for(i=n-1;i>=n/2;i--)printf("%4d",a[i]);
getch();
}
```

F1 Help F5 Zoom F6 Switch F7 Trace F8 Stop F9 Make F10

10:35 AM
28-Nov-24

```
TC
Enter array size 1-100 8
Enter 8 elements 1 2 3 4 5 6 7 8
Elements are 1 2 3 4 8 7 6 5_
```



The screenshot shows a Windows 10 desktop environment. A Turbo C++ (TC) window is open, displaying a program that prompts for an array size (1-100) and 8 elements. The user has entered '8' for the size and '1 2 3 4 5 6 7 8' for the elements. The output shows the elements as '1 2 3 4 8 7 6 5_'. The taskbar at the bottom contains icons for Windows, File Explorer, Calculator, DEV C++, Zoom, Google Chrome, Word, Paint, OneDrive, and a calendar. The system tray on the right shows the time as 10:35 AM on 28-Nov-24.

```
TC
Enter array size 1-100 9
Enter 9 elements 2 0 7 5 -2 6 4 1 7
Elements are -2 0 1 2 7 7 6 5 4
```

Find the 2nd max and 2nd min array elements:


```
TC
File Edit Run Compile Project Options Debug
Line 1 Col 1 Insert Indent Tab Fill Unindent * E
#include<stdio.h>
#include<conio.h>
void main()
{
int a[100],i,n,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("Elements are ");
for(i=0;i<n;i++)printf("%4d",a[i]);
printf("\n2nd min=%d, 2nd max=%d",a[1],a[n-2]);
getch();
}
```

F1 Help F5 Zoom F6 Switch F7 Trace F8 Stop F9 Make F10

10:40 AM 28-Nov-24

```
TC
Enter array size 1-100 7
Enter 7 elements 6 0 2 0 7 5 7
Elements are    0    0    2    5    6    7    7
2nd min=0, 2nd max=7_
```