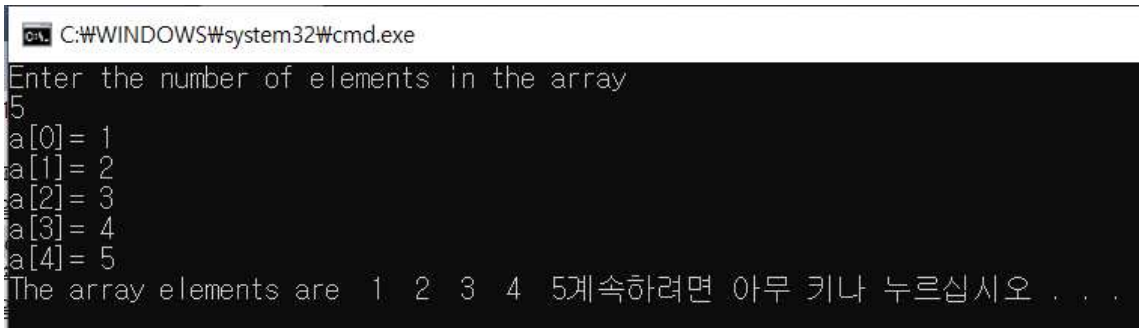
1.

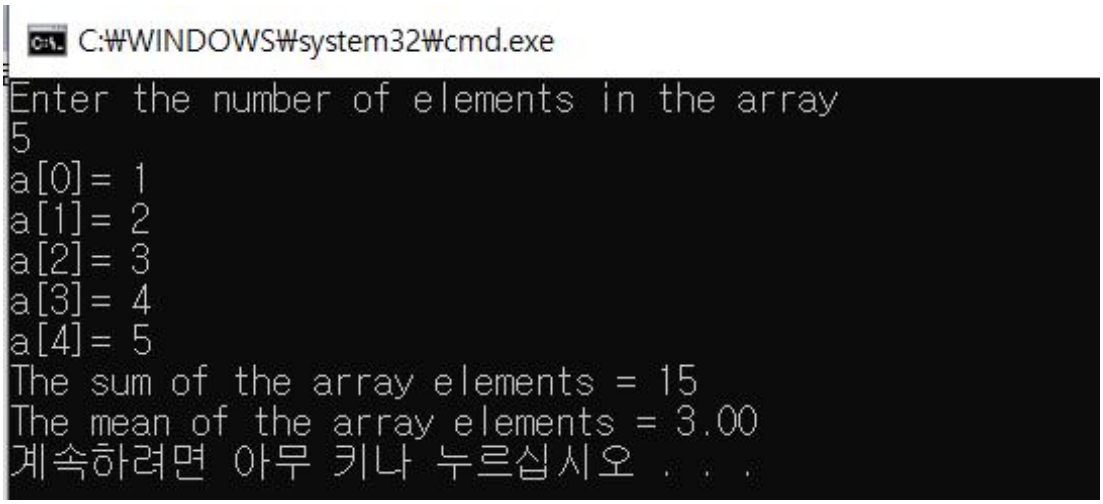
```
#include <stdio.h>

int main()
{
	int a[20];
	int x,i;
	printf("Enter the number of elements in the array\n");
	scanf("%d",&x);
	for(i=0;i<x;i++)
		{
			printf("a[%d]= ",i);
			scanf("%d",&a[i]);
		}

	printf("The array elements are");
	for(i=0;i<x;i++)
	 printf("   %d",a[i]);

	return 0;


}
```



2.

```
#include <stdio.h>

int main()
{
	int a[20];
	int x,i;
	int sum=0;
	printf("Enter the number of elements in the array\n");
	scanf("%d",&x);
	for(i=0;i<x;i++)
		{
```

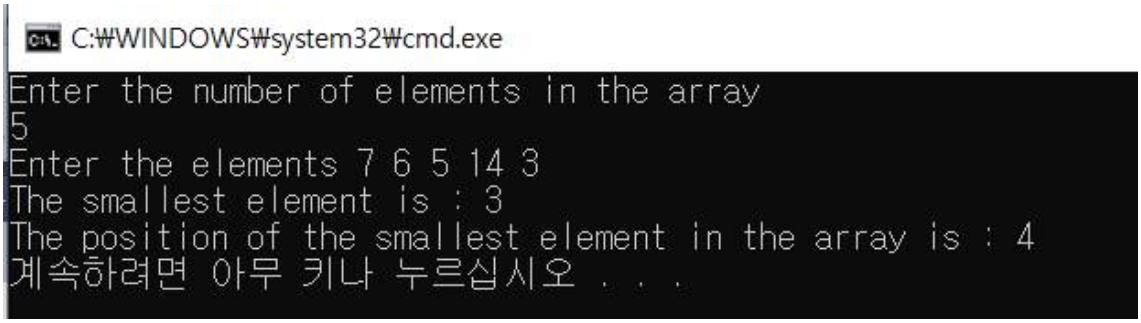
```
                printf("a[%d]= ",i);
                scanf("%d",&a[i]);
                sum=sum+a[i];
        }

    printf("The sum of the array elements = %d\n",sum);
    printf("The mean of the array elements = %.2lf\n", sum/(double)x);

    return 0;


}
```



3.

```
#include <stdio.h>

int main()
{
    int a[20];
    int x,i;
    int small;
    int count=1;
    printf("Enter the number of elements in the array\n");
    scanf("%d",&x);
    printf("Enter the elements");
    for(i=0;i<x;i++)
        {
            scanf("%d",&a[i]);
        }
    small=a[0];
    for(i=1;i<x;i++)
        if(small>a[i])
```

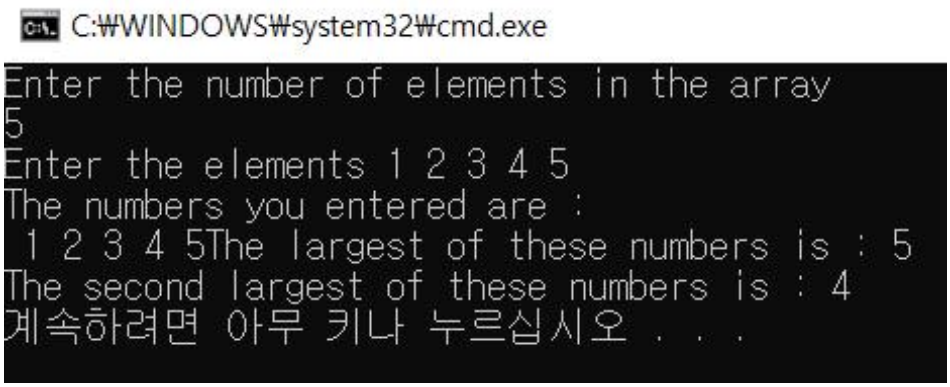
```
                        {small=a[i];
                                count++;}
        printf("The smallest element is : %d\n",small);
        printf("The position of the smallest element in the array is : %d\n", count);

        return 0;

}
```



4.

```
#include <stdio.h>

int main()
{
        int a[20];
        int x,i;
        int large,second_large;

        printf("Enter the number of elements in the array\n");
        scanf("%d",&x);
        printf("Enter the elements");
        for(i=0;i<x;i++)
                {
                        scanf("%d",&a[i]);

                }

        large=a[0];
        for(i=1;i<x;i++)
                if(large<a[i])
                        {
                                large=a[i];

                        }
        second_large=a[0];
        for(i=1;i<x;i++)
```

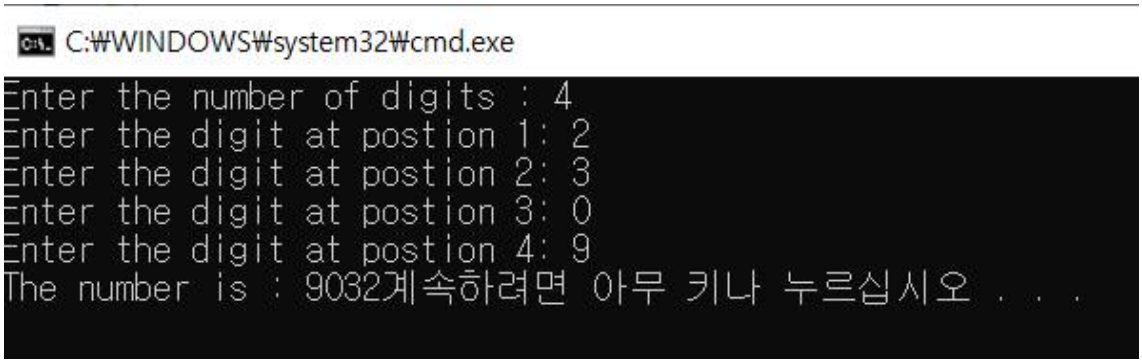
```
		{
			if(large!=a[i])
				if(a[i]>second_large)
					second_large=a[i];
		}
	printf("The numbers you entered are : \n");
	for(i=0;i<x;i++)
		printf(" %d",a[i]);
	printf("The largest of these numbers is : %d\n",large);
	printf("The second largest of these numbers is : %d\n", second_large);

	return 0;

}
```



5.

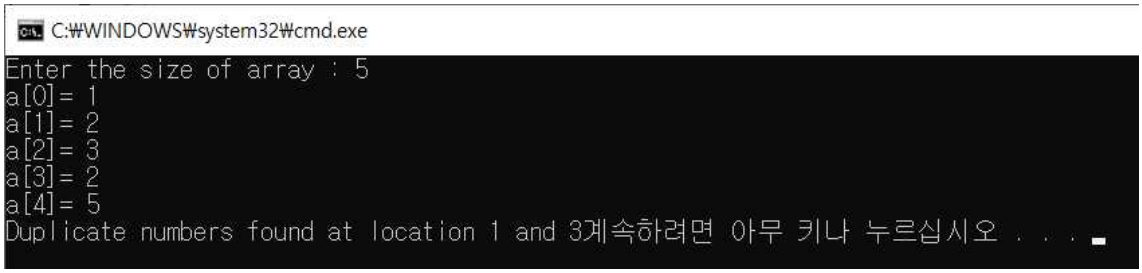
```
#include <stdio.h>

int main()
{
	int i,x;
	int a[10];
	printf("Enter the number of digits : ");
	scanf("%d",&x);

	for(i=0;i<x;i++)
	{
		printf("Enter the digit at postion %d: ",i+1);
		scanf("%d",&a[i]);
	}

	printf("The number is : ");
	for(i=x-1;i>=0;i--)
		printf("%d",a[i]);
```

```
        return 0;

}
```



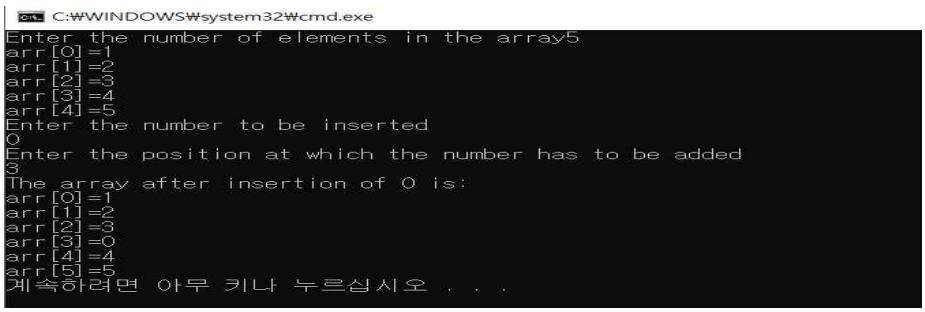
6.

```
#include <stdio.h>

int main()
{
        int i,x,j;
        int a[10];
        printf("Enter the size of array : ");
        scanf("%d",&x);

        for(i=0;i<x;i++)
        {
                printf("a[%d]= ", i);
                scanf("%d",&a[i]);
        }



        for(i=0;i<x;i++)
                for(j=i+1;j<x;j++)
                        if(a[i]==a[j])
                                printf("Duplicate numbers found at location %d and
%d",i,j);

        return 0;
}
```



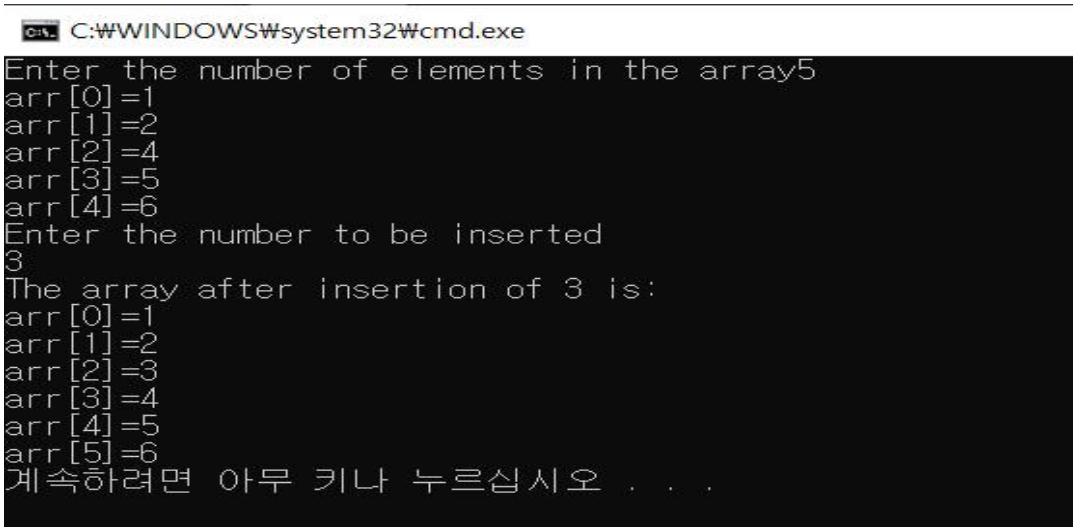
7.

```
#include <stdio.h>

int main()
{
	int n,i;
	int a[10];
	int num,location;
	printf("Enter the number of elements in the array");
	scanf("%d",&n);
	for(i=0;i<n;i++)
	{
		printf("arr[%d]=",i);
		scanf("%d",&a[i]);
	}
	printf("Enter the number to be inserted\n");
	scanf("%d",&num);
	printf("Enter the position at which the number has to be added\n");
	scanf("%d",&location);
	for(i=n;i>=location;i--)
		a[i+1]=a[i];
	a[location]=num;
	n=n+1;
	printf("The array after insertion of 0 is: \n");
	for(i=0;i<n;i++)
	{
		printf("arr[%d]=%d\n",i,a[i]);
	}
}
```



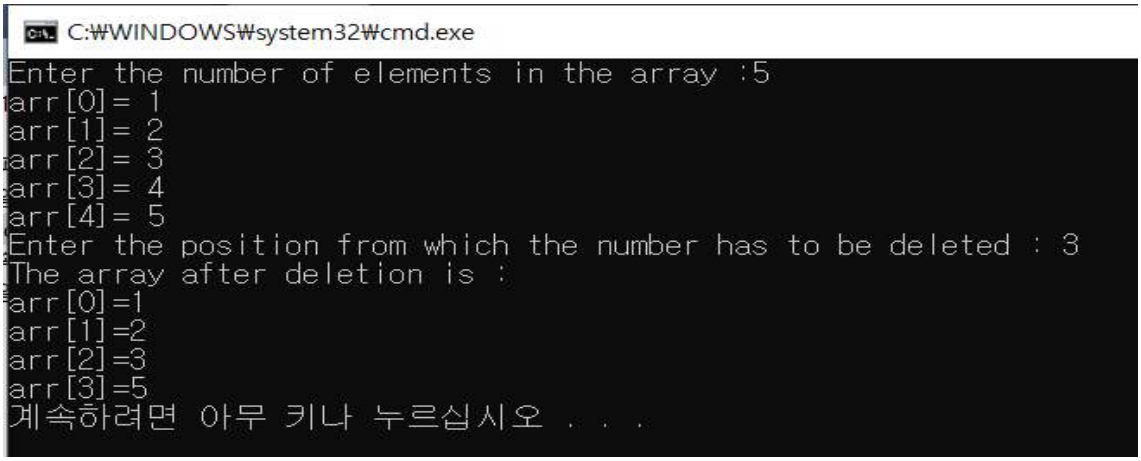
8.

```
#include <stdio.h>

int main()
{
        int n,i,j;
        int a[10];
        int num,location;
        printf("Enter the number of elements in the array");
        scanf("%d",&n);
        for(i=0;i<n;i++)
        {
                printf("arr[%d]=",i);
                scanf("%d",&a[i]);
        }
        printf("Enter the number to be inserted\n");
        scanf("%d",&num);

        for(i=0;i<n;i++)
        {
                if(a[i]>num)
                        {
                                for(j=n-1;j>=i;j--)
                                        {
                                                a[j+1]=a[j];
                                        }
                                a[i]=num;
                                        break;
                        }
        }
        n=n+1;
        printf("The array after insertion of 3 is:\n");
        for(i=0;i<n;i++)
        {
                printf("arr[%d]=%d\n",i,a[i]);

        }
}
```



9.

```
#include <stdio.h>

int main()
{
        int a[10];
        int i,n,position,j;
        printf("Enter the number of elements in the array :");
        scanf("%d",&n);

        for(i=0;i<n;i++)
        {       printf("arr[%d]= ",i);
                scanf("%d",&a[i]);
        }
        printf("Enter the position from which the number has to be deleted : ");
        scanf("%d",&position);

        for(i=0;i<n;i++)
                {
                        for(j=position;j<n-1;j++)
                        {
                                a[j]=a[j+1];
                        }
                }
        n=n-1;

        printf("The array after deletion is : \n");
        for(i=0;i<n;i++)
                printf("arr[%d]=%d\n",i,a[i]);
}
```



10.

```
#include <stdio.h>

int main()
{
	int a[10];
	int i,n,num,j;
	int position;
	printf("Enter the number of elements in the array :");
	scanf("%d",&n);

	for(i=0;i<n;i++)
	{	printf("arr[%d]= ",i);
		scanf("%d",&a[i]);
	}
	printf("Enter the number to be deleted : ");
	scanf("%d",&num);

	for(i=0;i<n;i++)
		{
			if(a[i]==num)
			{
				position=i;
				for(j=position;j<n-1;j++)
				{
					a[j]=a[j+1];
				}
			}
		}
	n=n-1;

	printf("The array after deletion is : \n");
```

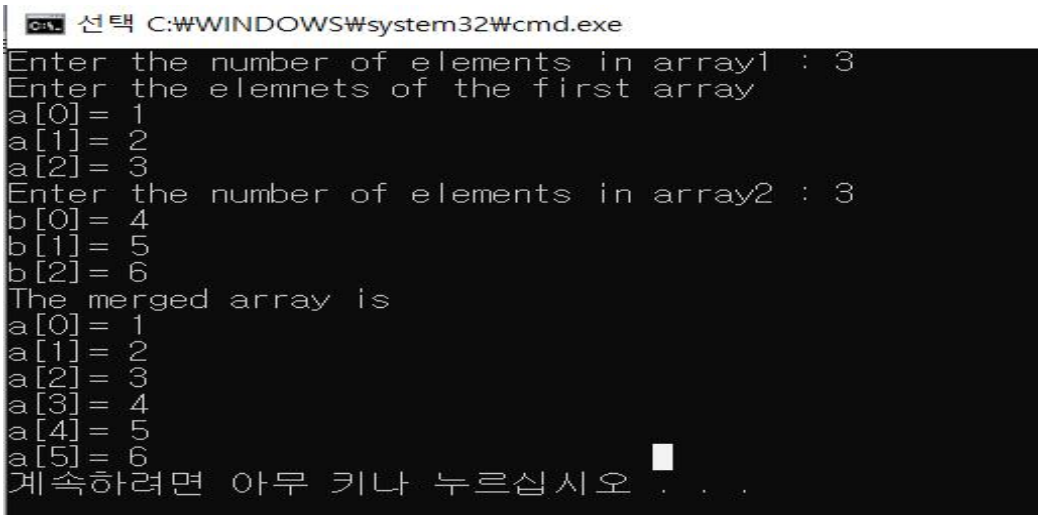
```
        for(i=0;i<n;i++)
                printf("arr[%d]=%d\n",i,a[i]);
}
```

```
선택 C:₩WINDOWS₩system32₩cmd.exe
Enter the number of elements in the array :5
arr[0]= 1
arr[1]= 2
arr[2]= 3
arr[3]= 4
arr[4]= 5
Enter the number to be deleted : 3
The array after deletion is :
arr[0]=1
arr[1]=2
arr[2]=4
arr[3]=5
계속하려면 아무 키나 누르십시오 . . .
```

11.

```
#include <stdio.h>

int main()
{
        int n1,n2,i;
        int a[10],b[10],c[20];
        int index=0;
        printf("Enter the number of elements in array1 : ");
        scanf("%d",&n1);
        printf("Enter the elemnets of the first array\n");
        for(i=0;i<n1;i++)
        {
                        printf("a[%d]= ",i);
                        scanf("%d",&a[i]);
        }
        printf("Enter the number of elements in array2 : ");
        scanf("%d",&n2);
        for(i=0;i<n2;i++)
        {
                        printf("b[%d]= ",i);
                        scanf("%d",&b[i]);
        }

        for(i=0;i<n1;i++)
        {
                c[index]=a[i];
                index++;
        }
```

```
	for(i=0;i<n2;i++)
	{
		c[index]=b[i];
		index++;
	}

	printf("The merged array is\n");
	for(i=0;i<index;i++)
		printf("a[%d]= %d\n",i,c[i]);

}
```



12.

```
#include <stdio.h>

int main()
{
	int n1,n2,n3,i;
	int a[10],b[10],c[20];
	int index=0;
	int f_index=0;
	int s_index=0;
	printf("Enter the number of elements in array1 : ");
	scanf("%d",&n1);
	printf("Enter the elemnets of the first array\n");
	for(i=0;i<n1;i++)
	{
			printf("a[%d]= ",i);
			scanf("%d",&a[i]);
	}
	printf("Enter the number of elements in array2 : ");
```

```
scanf("%d",&n2);
for(i=0;i<n2;i++)
{
                printf("b[%d]=  ",i);
                scanf("%d",&b[i]);
}
n3=n1+n2;
while((f_index<n1)&&(s_index<n2))
        {
                if(a[f_index]<b[s_index])
                        {
                                c[index]=a[f_index];
                                f_index++;
                                index++;
                        }
                else
                        {
                                c[index]=b[s_index];
                                s_index++;
                                index++;
                        }


        }

if(f_index==n1)
{
        for(i=s_index;i<n2;i++)
                {
                        c[index]=b[s_index];
                        index++;
                }
}
else  if(s_index==n1)
{
        for(i=f_index;i<n1;i++)
                {
                        c[index]=a[f_index];
                        index++;
                }
}
```

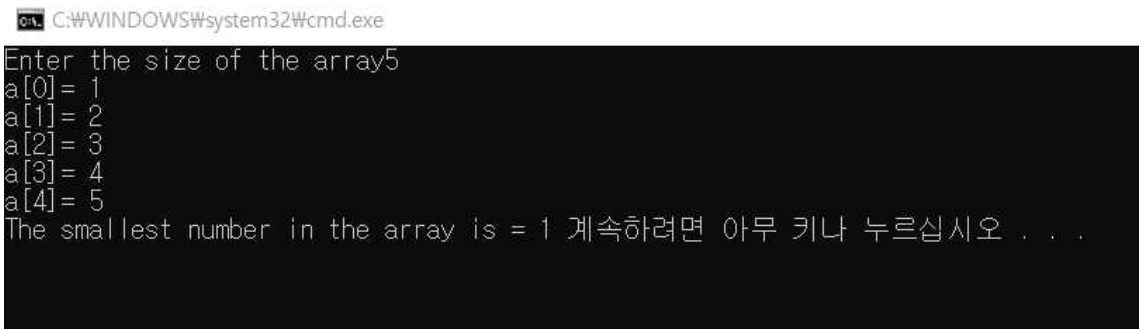
```
        printf("The merged array is\n");
        for(i=0;i<n3;i++)
                printf("a[%d]= %d\n",i,c[i]);

}
```

```
Enter the number of elements in array1 : 3
Enter the elemnets of the first array
a[0] = 1
a[1] = 3
a[2] = 5
Enter the number of elements in array2 : 3
b[0] = 2
b[1] = 4
b[2] = 6
The merged array is
a[0] = 1
a[1] = 2
a[2] = 3
a[3] = 4
a[4] = 5
a[5] = 6
계속하려면 아무 키나 누르십시오 . . .
```

13.

```
#include <stdio.h>
int find_smallest(int a[],int n);
int main()
{
        int n,i;
        int a[10];
        printf("Enter the size of the array");
        scanf("%d",&n);
        for(i=0;i<n;i++)
        {
                printf("a[%d]= ",i);
                scanf("%d",&a[i]);
        }
        printf("The smallest number in the array is = %d ",find_smallest(a,n));

}

int find_smallest(int a[],int n)
{
        int smallest,i;
        smallest=a[0];
        for(i=1;i<n;i++)
                {
                        if(a[i]<smallest)
                                smallest=a[i];
                }
```

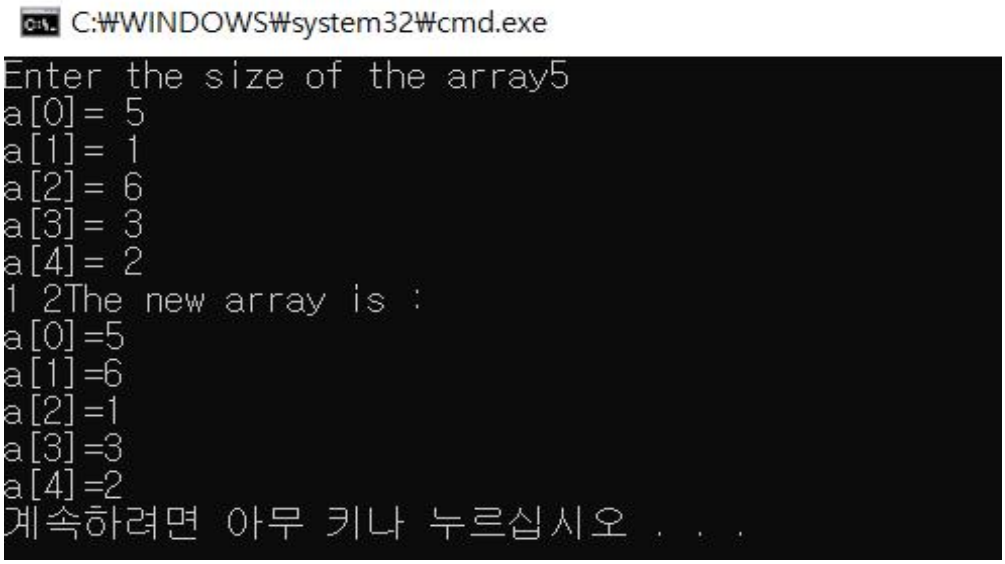
```
        return smallest;
}
```



14.

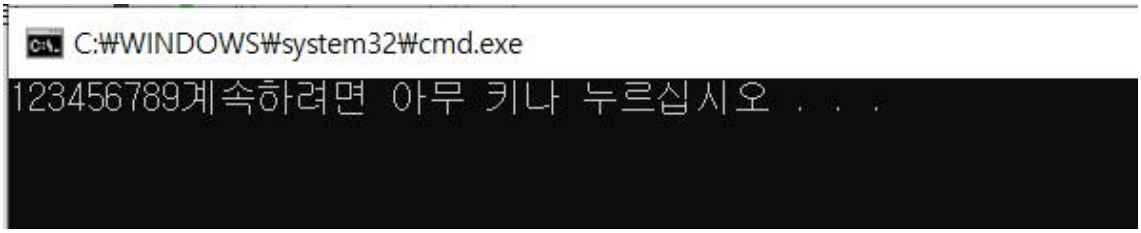
```
#include <stdio.h>
int find_smallest(int a[],int n);
int find_largest(int a[],int n);
int main()
{
        int n,i,j,temp;
        int a[10];
        int small,large;
        printf("Enter the size of the array");
        scanf("%d",&n);
        for(i=0;i<n;i++)
        {
                printf("a[%d]= ",i);
                scanf("%d",&a[i]);
        }
        small=find_smallest(a,n);
        large=find_largest(a,n);
        printf("%d %d",small,large);
        temp=a[small];
        a[small]=a[large];
        a[large]=temp;

        printf("The new array is : \n" );
        for(i=0;i<n;i++)
        {
                printf("a[%d]=%d\n",i,a[i]);
        }

}

int find_smallest(int a[],int n)
```

```
{
        int smallest,i,pos;
        smallest=a[0];
        for(i=1;i<n;i++)
                {
                        if(a[i]<smallest)
                                {
                                        smallest=a[i];
                                        pos=i;
                                }
                }

        return pos;
}
int find_largest(int a[],int n)
{
        int largest,i,pos;
        largest=a[0];
        for(i=1;i<n;i++)
                {
                        if(a[i]>largest)
                                {
                                        largest=a[i];
                                        pos=i;
                                }
                }

        return pos;
}
```



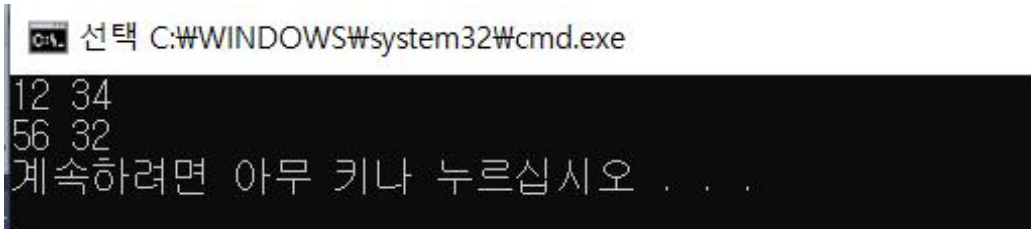
15.

```
#include <stdio.h>

int main()
{
	int a[]={1,2,3,4,5,6,7,8,9};
	int *p1; int *p2;
	p1=a;
	p2=&a[8];
	while(p1<=p2)
	{
		printf("%d",*p1);
		p1++;
				}
	return 0;

}
```



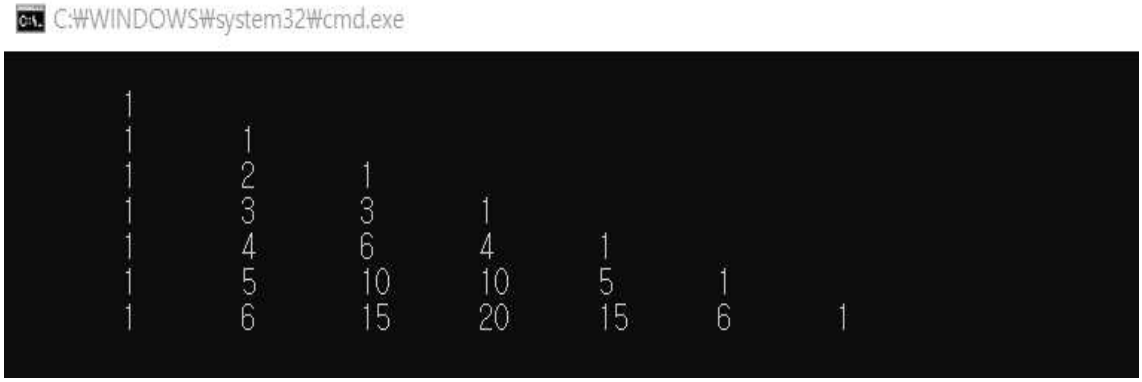
16.

```
#include <stdio.h>


int main()
{

	int a[2][2]={{12,34},{56,32}};
	int i,j;
	for(i=0;i<2;i++)

	{
		for(j=0;j<2;j++)
			{
				printf("%d ",a[i][j]);
			}
				printf("\n");
	}
}
```



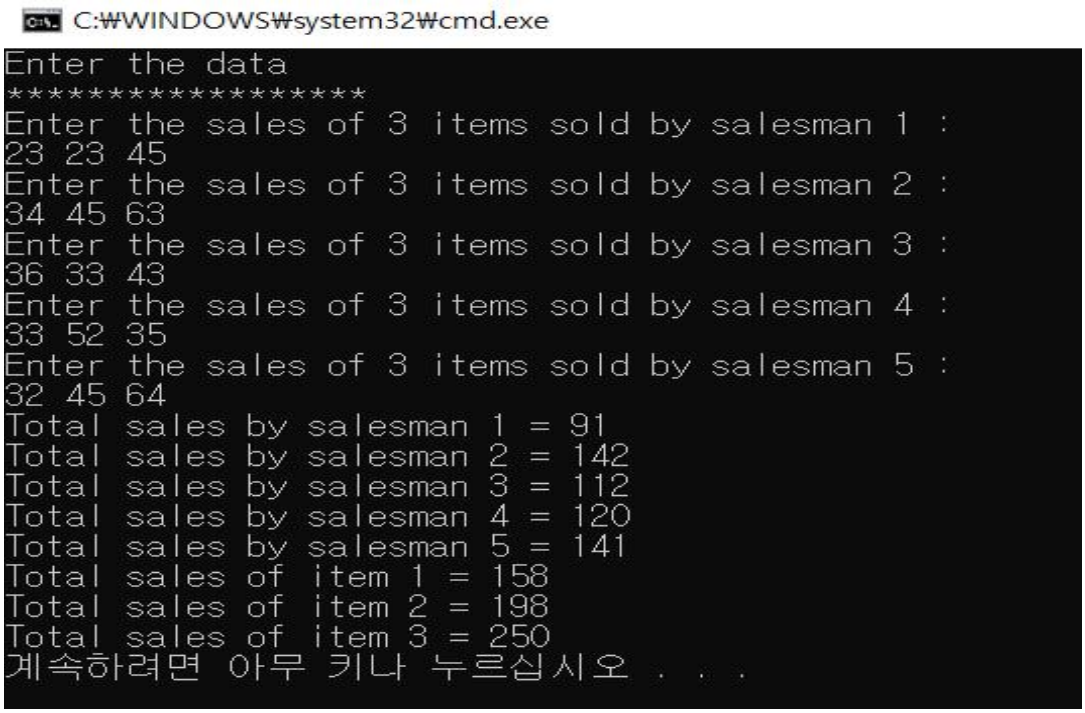
17.

```
#include <stdio.h>
#include <conio.h>
int main()
{

	int a[7][7]={0};
	int row=2;
	int i,j,col;
	a[0][0]=a[1][0]=a[1][1]=1;
	while(row<=7)
	{
			a[row][0]=1;
			for(col=1;col<=row;col++)
			a[row][col]=a[row-1][col-1]+a[row-1][col];
			row++;
	}
	for(i=0;i<7;i++)
	{
		printf("\n");
		for(j=0;j<=i;j++)
			printf("\t%d",a[i][j]);

	}
	getch();
}
```



18.

```
#include <stdio.h>
#include <conio.h>
int main()
{

        int a[5][3];
        int i,j;
        int total;
        printf("Enter the data\n");
        printf("******************\n");
        for(i=0;i<5;i++)
                {
                        printf("Enter the sales of 3 items sold by salesman %d :
\n",i+1);
                        for(j=0;j<3;j++)
                        {

                                scanf("%d",&a[i][j]);
                        }
                }
        for(i=0;i<5;i++)
                {       total=0;
                        for(j=0;j<3;j++)
                        {
                                total=total+a[i][j];
                        }
                        printf("Total sales by salesman %d = %d\n",i+1,total);
                }
        for(i=0;i<3;i++)
                {       total=0;
                        for(j=0;j<5;j++)
                        {
                                total=total+a[j][i];
                        }
                        printf("Total sales of item %d = %d\n",i+1,total);
                }
}
```



19.

```
#include <stdio.h>
#include <conio.h>
int main()
{

        int a[5][3];
        int i,j;
        int total;
        int h_mark;
        for(i=0;i<5;i++)
                {
                        printf("Enter the marks obtained by student %d : \n",i+1);
                        for(j=0;j<3;j++)
                        {
                                printf("marks[%d][%d]= ",i,j);
                                scanf("%d",&a[i][j]);
                        }
                }

        for(i=0;i<3;i++)
                {       h_mark=a[0][i];
                        for(j=0;j<5;j++)
                        {
                                if(h_mark<a[j][i])
```

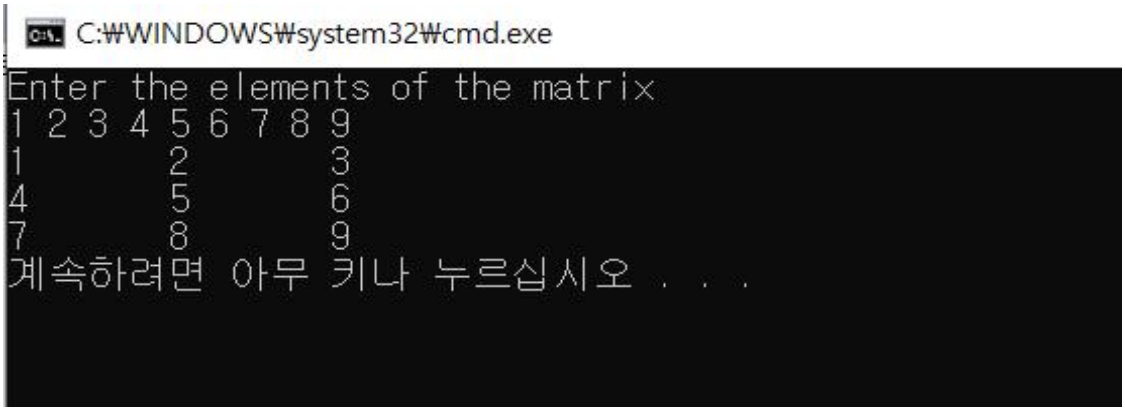
```
                                        h_mark=a[j][i];
                        }
        printf("The highest marks obtained in the subject %d =%d\n", i+1, h_mark);
                }

}
```

```
Enter the marks obtained by student 1 :
marks[0][0]= 89
marks[0][1]= 76
marks[0][2]= 100
Enter the marks obtained by student 2 :
marks[1][0]= 99
marks[1][1]= 90
marks[1][2]= 89
Enter the marks obtained by student 3 :
marks[2][0]= 67
marks[2][1]= 76
marks[2][2]= 56
Enter the marks obtained by student 4 :
marks[3][0]= 88
marks[3][1]= 77
marks[3][2]= 66
Enter the marks obtained by student 5 :
marks[4][0]= 67
marks[4][1]= 78
marks[4][2]= 89
The highest marks obtained in the subject 1 =99
The highest marks obtained in the subject 2 =90
The highest marks obtained in the subject 3 =100
계속하려면 아무 키나 누르십시오 . . .
```

20.

```
#include <stdio.h>

int main()
{
        int i,j;
        int a[3][3];
        printf("Enter the elements of the matrix\n");
        for(i=0;i<3;i++)
        {
                for(j=0;j<3;j++)
                {
                        scanf("%d",&a[i][j]);
                }
        }

        for(i=0;i<3;i++)
```

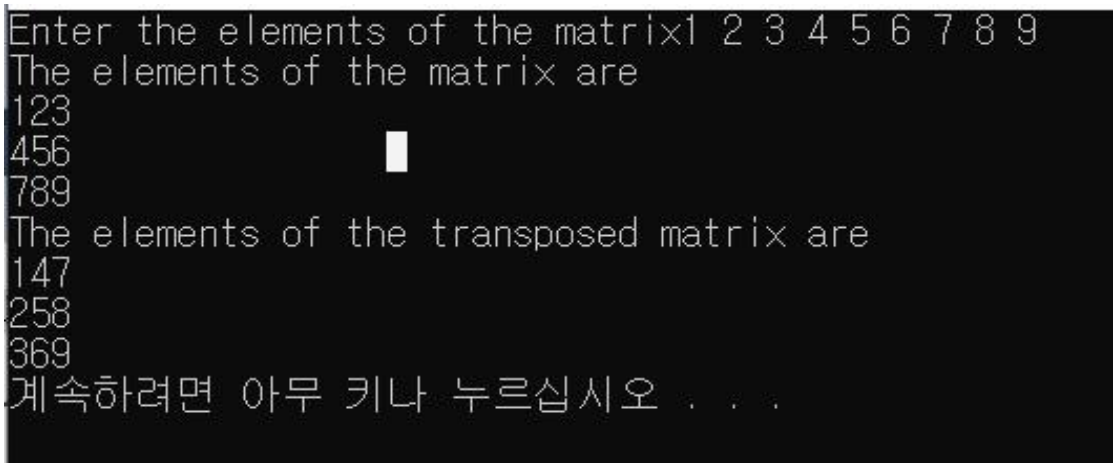
```
        {
                for(j=0;j<3;j++)
                        {
                                printf("%d\t",a[i][j]);
                        }
                                printf("\n");
        }
}
```



21.

```
#include <stdio.h>

int main()
{
        int a[3][3],b[3][3];
        int i,j;
        printf("Enter the elements of the matrix");
        for(i=0;i<3;i++)
        {
                for(j=0;j<3;j++)
                {
                        scanf("%d",&a[i][j]);
                }
        }
        printf("The elements of the matrix are\n");
        for(i=0;i<3;i++)
        {
                for(j=0;j<3;j++)
                {
                        printf("%d",a[i][j]);
                }
                printf("\n");
        }
        for(i=0;i<3;i++)
```

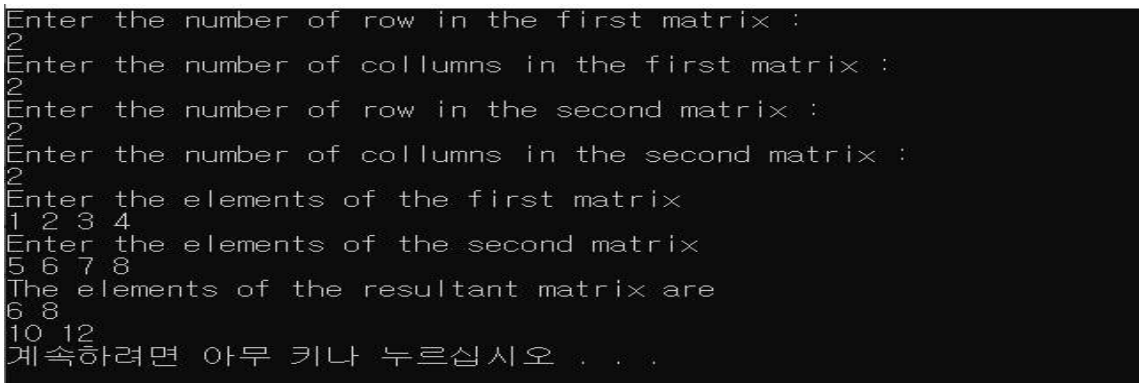
```
        {
                for(j=0;j<3;j++)
                {
                        b[i][j]=a[j][i];
                }

        }
        printf("The elements of the transposed matrix are\n");
        for(i=0;i<3;i++)
        {
                for(j=0;j<3;j++)
                {
                        printf("%d",b[i][j]);
                }
                printf("\n");
        }


}
```



22.

```
#include <stdio.h>

int main()
{
        int a[3][3],b[3][3],c[3][3];
        int i,j;
        int row1,row2,col1,col2;
        printf("Enter the number of row in the first matrix : \n");
        scanf("%d",&row1);
        printf("Enter the number of collumns in the first matrix : \n");
        scanf("%d",&col1);
        printf("Enter the number of row in the second matrix : \n");
```

```
        scanf("%d",&row2);
        printf("Enter the number of collumns in the second matrix : \n");
        scanf("%d",&col2);

        if(row1!=row2 || col1!=col2)
        {
                printf("it cannot be calculated");
                return 0;
        }
        printf("Enter the elements of the first matrix\n");
        for(i=0;i<row1;i++)
        {
                for(j=0;j<col1;j++)
                {
                        scanf("%d",&a[i][j]);
                }
        }
        printf("Enter the elements of the second matrix\n");
        for(i=0;i<row2;i++)
        {
                for(j=0;j<col2;j++)
                {
                        scanf("%d",&b[i][j]);
                }
        }
        for(i=0;i<row1;i++)
        {
                for(j=0;j<col1;j++)
                {
                        c[i][j]=a[i][j]+b[i][j];
                }
        }
        printf("The elements of the resultant matrix are\n");
        for(i=0;i<row1;i++)
        {
                for(j=0;j<col1;j++)
                {
                        printf("%d ",c[i][j]);
                }
                printf("\n");
        }

}
```



23.

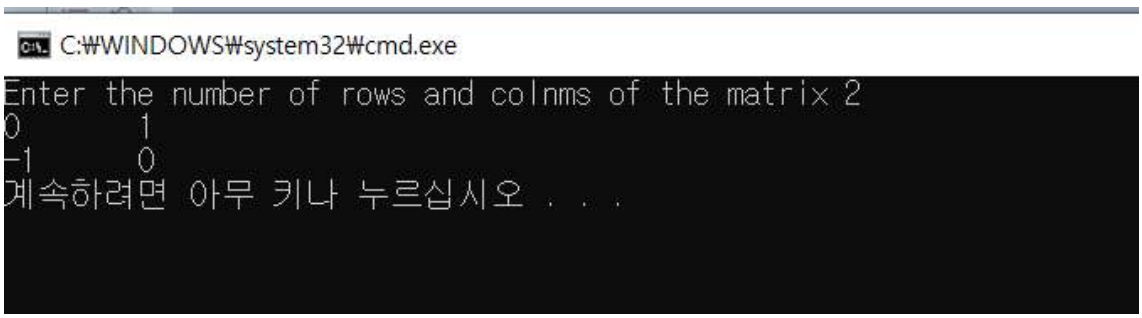
```
#include <stdio.h>

int main()
{
	int a[3][3],b[3][3],c[3][3];
	int i,j,k;
	int row1,row2,col1,col2;
	printf("Enter the number of row in the first matrix : \n");
	scanf("%d",&row1);
	printf("Enter the number of collumns in the first matrix : \n");
	scanf("%d",&col1);
	printf("Enter the number of row in the second matrix : \n");
	scanf("%d",&row2);
	printf("Enter the number of collumns in the second matrix : \n");
	scanf("%d",&col2);

	if(row1!=col2)
	{
		printf("it cannot be calculated");
		return 0;
	}
	printf("Enter the elements of the first matrix\n");
	for(i=0;i<row1;i++)
	{
		for(j=0;j<col1;j++)
		{
			scanf("%d",&a[i][j]);
		}
	}

	printf("Enter the elements of the second matrix\n");
	for(i=0;i<row2;i++)
```

```
{
        for(j=0;j<col2;j++)
        {
                scanf("%d",&b[i][j]);
        }
}


        for(i=0;i<row1;i++)
        {
                for(j=0;j<col2;j++)
                {                       c[i][j]=0;
                        for(k=0;k<col2;k++)
                                {

                                        c[i][j]+=a[i][k]*b[k][j];
                                }
                }
        }


        printf("The elements of the procut matrix are \n");
        for(i=0;i<row1;i++)
                {
                        for(j=0;j<col2;j++)
                                {
                                        printf("%d ",c[i][j]);
                                }
                        printf("\n");
                }

                }
```

```
Enter the number of row in the first matrix :
2
Enter the number of collumns in the first matrix :
2
Enter the number of row in the second matrix :
2
Enter the number of collumns in the second matrix :
2
Enter the elements of the first matrix
1 2 3 4
Enter the elements of the second matrix
5 6 7 8
The elements of the procut matrix are
19 22
43 50
계속하려면 아무 키나 누르십시오 . . .
```

24.

```
#include <stdio.h>

int main()
{
	int num;
	int i,j;
	int a[5][5];
	printf("Enter the number of rows and colnms of the matrix ");
	scanf("%d",&num);
	for(i=0;i<num;i++)
	{
		for(j=0;j<num;j++)
		{
			if(i>j)
				a[i][j]=-1;
			else if(i<j)
				a[i][j]=1;
			else
				a[i][j]=0;
		}
	}
	for(i=0;i<num;i++)
	{
		for(j=0;j<num;j++)
		{
			printf("%d		",a[i][j]);
		}
		printf("\n");
	}


}
```



25.

```
#include <stdio.h>
void display(int (*mat)[3]);
int main()
{
	int i,j;
	int a[3][3];

	printf("Enter the elements of the matrix\n");

	for(i=0;i<3;i++)
	{
		for(j=0;j<3;j++)
		{
			scanf("%d",&a[i][j]);
		}

	}

	display(a);


}
void display(int (*mat)[3])
	{
		int i,j;
		printf("The elements of the matrix are\n");
		for(i=0;i<3;i++)
		{
			for(j=0;j<3;j++)
			{
				printf("%d",*(*(mat+i)+j));
			}
			printf("\n");
		}
	}
```

```
C:₩WINDOWS₩system32₩cmd.exe
Enter the elements of the matrix
1 2 3 4 5 6 7 8 9
The elements of the matrix are
123
456
789
계속하려면 아무 키나 누르십시오 . . .
```

26.

```
#include <stdio.h>
void display(int (*a)[2][2]);
int main()
{
	int i,j,r;
	int a[2][2][2];

	printf("Enter the elements of the matrix\n");

	for(i=0;i<2;i++)
	{
		for(j=0;j<2;j++)
		{
			for(r=0;r<2;r++)
			{
				scanf("%d",&a[i][j][r]);
			}
		}

	}

	display(a);


}
void display(int (*a)[2][2])
{
		int i,j,r;
		printf("The matrix is \n");
		for(i=0;i<2;i++)
		{
			for(j=0;j<2;j++)
				{
					for(r=0;r<2;r++)
						{
							printf("arr[%d][%d][%d]=%d
",i,j,r,a[i][j][r]);
						}
					printf("\n");
				}

		}
```

}

```
Enter the elements of the matrix
1 2 3 4 5 6 7 8
The matrix is
arr[0][0][0]=1  arr[0][0][1]=2
arr[0][1][0]=3  arr[0][1][1]=4
arr[1][0][0]=5  arr[1][0][1]=6
arr[1][1][0]=7  arr[1][1][1]=8
계속하려면 아무 키나 누르십시오 . . .
```

27.

```
#include <stdio.h>
void display(int (*a)[2][2]);
int main()
{
	int i,j,r;
	int a[2][2][2];

	printf("Enter the elements of the matrix\n");

	for(i=0;i<2;i++)
	{
		for(j=0;j<2;j++)
		{
			for(r=0;r<2;r++)
			{
				scanf("%d",&a[i][j][r]);
			}
		}

	}

	display(a);


}
void display(int (*a)[2][2])
{
		int i,j,r;
		printf("The matrix is ");
		for(i=0;i<2;i++)
		{
			for(j=0;j<2;j++)
				{
```

```
                                        for(r=0;r<2;r++)
                                                {
                                                        printf("%d   ",*(*(*(a+i)+j)+r));
                                                }

                                }

                }
}
```