```cpp
//QUESTION-1:

#include<iostream>
#include<stdlib.h>
using namespace std;

int a[20],b[20],c[40];
int m,n,p,val,i,key,pos,temp;

void create();
void display();
void insert();
void del();

int main()
{
    int choice;
    do{
        cout<<"1.CREATE\n";
        cout<<"2.DISPLAY\n";
        cout<<"3.INSERT\n";
        cout<<"4.DELETE\n";
        cout<<"5.EXIT\n";

        cout<<"Enter your choice: ";
        cin>>choice;
        switch(choice)
        {
            case 1: create();
```

```
        case 1: create();
                break;
        case 2:display();
                break;
        case 3: insert();
                break;
        case 4: del();
                break;
        case 5: exit(0);
                break;
        default :
            cout<<"\n INVAILD CHOICE:";
            break;
        }
}
    while(choice!=5);
    {
    return 0;
    }
}

void create()
{
        cout<<"Enter the size of element in an array";
        cin>>n;
        cout<<"enter the elements for the array";

        for(int i=0;i<n;i++)
        {
            cin>>a[i];
```

```
            cin>>a[i];
        }
}
void display()
{
    int i;
    cout<<"The Array of Elements"<<endl;
    for(i=0;i<n;i++)
    {
        cout<<a[i];
    }
}
void insert()
{
    cout<<"Enter The position of new element"<<endl;
    cin>>pos;
    cout<<"Enter the element to be inserted"<<endl;
    cin>>val;
    for(i=n-1;i>=pos;i--)
    {
        a[i+1]=a[i];
    }
    a[pos]=val;
    n=n+1;
}

void del()
{
    cout<<"Enter the elemeent to be deleted"<<endl;
```

```
    cin>>pos;
    cout<<"Enter the element to be inserted"<<endl;
    cin>>val;
    for(i=n-1;i>=pos;i--)
    {
        a[i+1]=a[i];
    }
    a[pos]=val;
    n=n+1;
}

void del()
{
    cout<<"Enter the elemeent to be deleted"<<endl;
    cin>>pos;
    val=a[pos];
    for(i=pos;i<n-1;i++)
    {
        a[i]=a[i+1];
    }
    n=n-1;
    cout<<"The deleted element is "<<val<<endl;

}
```

```
1.CREATE
2.DISPLAY
3.INSERT
4.DELETE
5.EXIT
Enter your choice: 1
Enter the size of element in an array4
enter the elements for the array1 2 3 4
1.CREATE
2.DISPLAY
3.INSERT
4.DELETE
5.EXIT
Enter your choice: 2
The Array of Elements
12341.CREATE
2.DISPLAY
3.INSERT
4.DELETE
5.EXIT
Enter your choice: 4
Enter the elemeent to be deleted
1
The deleted element is 2
1.CREATE
2.DISPLAY
3.INSERT
4.DELETE
5.EXIT
Enter your choice: 2
```

```
Enter your choice: 2
The Array of Elements
1341.CREATE
2.DISPLAY
3.INSERT
4.DELETE
5.EXIT
Enter your choice: 3
Enter The position of new element
0
Enter the element to be inserted
0
1.CREATE
2.DISPLAY
3.INSERT
4.DELETE
5.EXIT
Enter your choice: 2
The Array of Elements
01341.CREATE
2.DISPLAY
3.INSERT
4.DELETE
5.EXIT
Enter your choice: 5

--------------------------------
Process exited after 98.47 seconds with return value 0
Press any key to continue . . .
```

```cpp
//QUESTION-2:
#include<iostream>
using namespace std;

int remDup(int arr[], int n)
{
    if (n==0 || n==1)
        return n;

    int j = 0;
    for (int i=0; i < n-1; i++)
        if (arr[i] != arr[i+1])
            arr[j++] = arr[i];

    arr[j++] = arr[n-1];
    return j;
}
int main()
{
    int arr[] = {20, 20, 30, 60, 40, 40, 40, 80, 80};
    int n = sizeof(arr) / sizeof(arr[0]);
    n = remDup(arr, n);
    for (int i=0; i<n; i++)
        cout << arr[i] << " ";
    return 0;
}
```

```
20 30 60 40 80
--------------------------------
Process exited after 0.05697 seconds with return value 0
Press any key to continue . . .
```

```cpp
//QUESTION -3


#include <iostream>
using namespace std;

int main()
{
    int i;
    int arr[5]={1};
    for(i =0;i<5;i++)
    {
        cout<<arr[i];
    }
    return 0;
}
```

```
10000
--------------------------------
Process exited after 0.05796 seconds with return value 0
Press any key to continue . . .
```

```cpp
//QUESTION -4 Part-1)


#include <iostream>
using namespace std;
void revarr(int arr[], int start, int end)
{
    while (start < end)
    {
        int temp = arr[start];
        arr[start] = arr[end];
        arr[end] = temp;
        start++;
        end--;
    }
}
void printArr(int arr[], int size)
{
   for (int i = 0; i < size; i++)
   cout << arr[i] << " ";
    cout << endl;
}
int main()
{
    int arr[] = {60,50,40,30,20,10};
    int n = sizeof(arr) / sizeof(arr[0]);
```

```
        arr[start] = arr[end];
        arr[end] = temp;
        start++;
        end--;
    }
}
void printArr(int arr[], int size)
{
   for (int i = 0; i < size; i++)
   cout << arr[i] << " ";
    cout << endl;
}
int main()
{
    int arr[] = {60,50,40,30,20,10};
    int n = sizeof(arr) / sizeof(arr[0]);

    printArr(arr, n);
    revarr(arr, 0, n-1);

    cout << "Reversed array is" << endl;
    printArr(arr, n);
    return 0;
}
```

```
60 50 40 30 20 10
Reversed array is
10 20 30 40 50 60

--------------------------------
Process exited after 0.06283 seconds with return value 0
Press any key to continue . . .
```

```cpp
// QUESTION-4 PART-2)

#include <iostream>
using namespace std;
int main()
{
    int a[10][10],b[10][10],mul[10][10],r,c,i,j,k;
    cout<<"enter the number of row=";
    cin>>r;
    cout<<"enter the number of column=";
    cin>>c;
    cout<<"enter the first matrix element=\n";
    for(i=0;i<r;i++)
    {
        for(j=0;j<c;j++)
            {
                cin>>a[i][j];
            }
        }
    cout<<"enter the second matrix element=\n";
    for(i=0;i<r;i++)
    {
        for(j=0;j<c;j++)
    {
            cin>>b[i][j];
    }
    }
```

```
    }
    cout<<"multiply of the matrix=\n";
    for(i=0;i<r;i++)
    {
        for(j=0;j<c;j++)
                {
                    mul[i][j]=0;
                    for(k=0;k<c;k++)
                    {
                        mul[i][j]+=a[i][k]*b[k][j];
                    }
                }
    }

    for(i=0;i<r;i++)
    {
        for(j=0;j<c;j++)
        {
            cout<<mul[i][j]<<" ";
        }
    cout<<"\n";
    }
    return 0;
}
```

```
enter the number of row=3
enter the number of column=3
enter the first matrix element=
1 2 3
4 5 6
7 8 9
enter the second matrix element=
3 4 5
6 7 8
9 0 1
multiply of the matrix=
42 18 24
96 51 66
150 84 108

--------------------------------
Process exited after 29.02 seconds with return value 0
Press any key to continue . . .
```

```cpp
// QUESTION-4 PART -3

#include<iostream>
using namespace std;
int main ()
{
    int A[10][10], m, n, i, j;
    cout << "Enter rows and columns of matrix : ";
    cin >> m >> n;
    cout << "Enter elements of matrix : ";
    for (i = 0; i < m; i++)
    {
        for (j = 0; j < n; j++)
        {
            cin >> A[i][j];
        }
    }
    cout << "Entered Matrix : \n ";
    for (i = 0; i < m; i++)
    {
        for (j = 0; j < n; j++)
        {
            cout << A[i][j] << " ";
        }
        cout << "\n ";
    }
```

```
    }
    cout << "Entered Matrix : \n ";
    for (i = 0; i < m; i++)
    {
        for (j = 0; j < n; j++)
        {
            cout << A[i][j] << " ";
        }
        cout << "\n ";
    }
    cout << "Transpose of Matrix : \n ";
    for (i = 0; i < n; i++)
    {
        for (j = 0; j < m; j++)
        {
            cout << A[j][i] << " ";
        }
        cout << "\n ";
    }
    return 0;
}
```

```
Enter rows and columns of matrix : 3 3
Enter elements of matrix : 1 2 3
4 5 6
 7 8 9
Entered Matrix :
 1 2 3
 4 5 6
 7 8 9
 Transpose of Matrix :
 1 4 7
 2 5 8
 3 6 9

--------------------------------
Process exited after 18.75 seconds with return value 0
Press any key to continue . . .
```

```cpp
//Question-5:

#include <iostream>
#include <conio.h>
using namespace std;
int main ()
{

    int arr[100], start, mid, end, i, num, element;
    cout << " Enter size of the array: " << endl;
    cin >> num;
    cout << " Enter the values in sorted array : " << endl;
    for (i = 0; i < num; i++)
    {
        cout << " arr [" << i << "] = ";
        cin >> arr[i];
    }
    start = 0;
    end = num - 1;

    cout << " Define a value to be searched from sorted array: " << endl;
    cin >> element;

    while ( start <= end)
    {
        mid = ( start + end ) / 2;
        if (arr[mid] == element)
        {
            cout << " Element is found at index " << (mid + 1);
```

```
    while ( start <= end)
    {
        mid = ( start + end ) / 2;
        if (arr[mid] == element)
        {
            cout << " Element is found at index " << (mid + 1);
            exit (0);
        }
        else if ( element > arr[mid])
        {
            start = mid + 1;
        }
        else if ( element < arr[mid])
        {
            end = mid - 1;
        }
    }
    cout << " Number is not found. " << endl;
    return 0;
}
```

```
 Enter size of the array:
4
 Enter the values in sorted array :
 arr [0] = 1
 arr [1] = 2
 arr [2] = 3
 arr [3] = 4
 Define a value to be searched from sorted array:
4
 Element is found at index 3
--------------------------------
Process exited after 6.596 seconds with return value 0
Press any key to continue . . .
```

```cpp
//QUESTION -6

#include<iostream>
using namespace std;
int main()
{
    int arr[7]={64,34,25,12,22,11,90};
    int counter=1;
    while(counter<7)
    {
        for(int i=0; i< 7-counter; i++)
        {
            if(arr[i]>arr[i+1])
            {
                int temp=arr[i];
                arr[i]=arr[i+1];
                arr[i+1]=temp;
            }
        }
    counter++;
    }
    cout<<"Sorted Array is :"<<endl;
    for(int i=0; i<7; i++)
    {
        cout<<arr[i];
    }
    return 0;
}
```

```
Sorted Array is :
11 12 22 25 34 64 90
--------------------------------
Process exited after 0.05698 seconds with return value 0
Press any key to continue . . .
```

```cpp
//Question -7
#include <iostream>
using namespace std;

int findmis(int ar[], int N)
{
    int l = 0, r = N - 1;
    while (l <= r)
    {

        int mid = (l + r) / 2;
        if (ar[mid] != mid + 1 &&
                            ar[mid - 1] == mid)
            return mid + 1;

        if (ar[mid] != mid + 1)
            r = mid - 1;
        else
            l = mid + 1;
    }
    return -1;
}
int main()
{
    int arr[] = {1, 2, 3, 4, 5, 7, 8};
    int N = sizeof(arr)/sizeof(arr[0]);
    cout << findmis(arr, N);
    return 0;
}
```

```
6
--------------------------------
Process exited after 0.05175 seconds with return value 0
Press any key to continue . . .
```