```cpp
#include<iostream>
using namespace std;
int main ()
{
    int i, num, div, sum=0;
    cout << "Enter the number to be checked : ";
    cin >> num;
    for (i=1; i < num; i++)
    {
            div = num % i;
            if (div == 0)
                    sum = sum + i;
    }
    if (sum == num)
            cout << "\n" << num <<" is a perfect number.";
    else
            cout << "\n" << num <<" is not a perfect number.";
    return 0;
}
```

5

Enter the number to be checked :
5 is not a perfect number.

```cpp
#include <iostream>
using namespace std;

int main() {
    int n;
    cout << "Enter the size of the square matrix: ";
    cin >> n;

    int matrix[n][n];
    cout << "Enter the elements of the matrix: " << endl;
    for (int i = 0; i < n; i++) {
        for (int j = 0; j < n; j++) {
            cin >> matrix[i][j];
        }
    }

    int sum1 = 0, sum2 = 0;
    for (int i = 0; i < n; i++) {
        sum1 += matrix[i][i];
        sum2 += matrix[i][n-i-1];
    }

    cout << "Sum of main diagonal: " << sum1 << endl;
    cout << "Sum of secondary diagonal: " << sum2 << endl;

    return 0;
}
```

```
2
2
3
4
5
```

```
Enter the size of the square matrix: Enter the elements of
the matrix:
Sum of main diagonal: 7
Sum of secondary diagonal: 7
```

```cpp
#include <iostream>
using namespace std;

int main() {
    int r, c;
    cout << "Enter the number of rows and columns of the matrices: ";
    cin >> r >> c;

    int mat1[r][c], mat2[r][c], sum[r][c];
    cout << "Enter the elements of the first matrix: " << endl;
    for (int i = 0; i < r; i++) {
        for (int j = 0; j < c; j++) {
            cin >> mat1[i][j];
        }
    }

    cout << "Enter the elements of the second matrix: " << endl;
    for (int i = 0; i < r; i++) {
        for (int j = 0; j < c; j++) {
            cin >> mat2[i][j];
        }
    }

    for (int i = 0; i < r; i++) {
        for (int j = 0; j < c; j++) {
            sum[i][j] = mat1[i][j] + mat2[i][j];
        }
    }

    cout << "Sum of the two matrices: " << endl;
```

```
2
2
2
3
4
5
3
7
9
8
```

```
Enter the number of rows and columns of the matrices: Enter
the elements of the first matrix:
Enter the elements of the second matrix:
Sum of the two matrices:
5 10
13 13
```

```cpp
    int mat1[r1][c1], mat2[r2][c2], prod[r1][c2];
    cout << "Enter the elements of the first matrix: " << endl;
    for (int i = 0; i < r1; i++) {
        for (int j = 0; j < c1; j++) {
            cin >> mat1[i][j];
        }
    }

    cout << "Enter the elements of the second matrix: " << endl;
    for (int i = 0; i < r2; i++) {
        for (int j = 0; j < c2; j++) {
            cin >> mat2[i][j];
        }
    }

    for (int i = 0; i < r1; i++) {
        for (int j = 0; j < c2; j++) {
            prod[i][j] = 0;
            for (int k = 0; k < c1; k++) {
                prod[i][j] += mat1[i][k] * mat2[k][j];
            }
        }
    }

    cout << "Product of the two matrices: " << endl;
    for (int i = 0; i < r1; i++) {
        for (int j = 0; j < c2; j++) {
            cout << prod[i][j] << " ";
        }
        cout << endl;
    }

    return 0;
}
```

```cpp
#include <iostream>
using namespace std;

int main() {
    int n, x;
    cout << "\n Enter the size of the array: ";
    cin >> n;

    int arr[n];
    cout << "\n Enter the elements of the array: " << endl;
    for (int i = 0; i < n; i++) {
        cin >> arr[i];
    }

    cout << "\n Enter the element to search: ";
    cin >> x;

    int count = 0;
    for (int i = 0; i < n; i++) {
        if (arr[i] == x) {
            count++;
        }
    }

    cout << "\n The number of occurrences of " << x << " in the array is: " << count << endl;

    return 0;
}
```

```cpp
    cin >> n1;
    cout << "\n Enter the size of the second array: ";
    cin >> n2;

    int arr1[n1], arr2[n2], arr3[n1+n2];

    cout << "\n Enter the elements of the first array: " << endl;
    for (int i = 0; i < n1; i++) {
            cin >> arr1[i];
    }

    cout << "\n Enter the elements of the second array: " << endl;
    for (int i = 0; i < n2; i++) {
            cin >> arr2[i];
    }

    int i = 0, j = 0, k = 0;
    while (i < n1 && j < n2) {
            if (arr1[i] < arr2[j]) {
```

```cpp
#include <iostream>
using namespace std;

int main() {
    int n;
    cout << "\n Enter the size of the array: ";
    cin >> n;

    int arr[n];
    cout << "\n Enter the elements of the array: " << endl;
    for (int i = 0; i < n; i++) {
        cin >> arr[i];
    }

    int largest = arr[0], second_largest = arr[0];
    for (int i = 1; i < n; i++) {
        if (arr[i] > largest) {
            second_largest = largest;
            largest = arr[i];
        } else if (arr[i] > second_largest && arr[i] != largest) {
            second_largest = arr[i];
        }
    }

    if (second_largest == arr[0]) {
        cout << "\n The second largest number does not exist." << endl;
    } else {
        cout << "\n The second largest number in the array is: " << second_largest << endl;
    }

    return 0;
}
```

```cpp
#include <iostream>
using namespace std;

int main() {
    int n;
    cout << "\n Enter the size of the array: ";
    cin >> n;

    int arr[n];
    cout << "\n Enter the elements of the array: " << endl;
    for (int i = 0; i < n; i++) {
        cin >> arr[i];
    }

    int sum = 0;
    for (int i = 0; i < n; i++) {
        sum += arr[i];
    }

    float average = (float) sum / n;
    cout << "\n The average of the elements in the array is: " << average << endl;

    return 0;
}
```

```
4
1
2
3
4
```

```
Enter the size of the array:
Enter the elements of the array:

The average of the elements in the array is: 2.5
```

```cpp
#include<iostream>
using namespace std;
int main()
{
    int arr[10], tot=10, i, elem, j, found=0;
    cout<<"Enter 10 Array Elements: ";
    for(i=0; i<tot; i++)
            cin>>arr[i];
    cout<<"\nEnter Element to Delete: ";
    cin>>elem;
    for(i=0; i<tot; i++)
    {
            if(arr[i]==elem)
            {
                    for(j=i; j<(tot-1); j++)
                            arr[j] = arr[j+1];
                    found++;
                    i--;
                    tot--;
            }
    }
    if(found==0)
            cout<<"\nElement doesn't found in the Array!";
    else
            cout<<"\nElement Deleted Successfully!";
    cout<<endl;
    return 0;
}
```

```
1
2
3
4
5
6
7
8
9
0
5
```

```
Enter 10 Array Elements:
Enter Element to Delete:
Element Deleted Successfully!
```

```cpp
#include <iostream>
using namespace std;

int main() {
    int n;
    cout << "Enter the size of the array: ";
    cin >> n;

    int arr[n];
    cout << "\nEnter the elements of the array: " << endl;
    for (int i = 0; i < n; i++) {
        cin >> arr[i];
    }

    int start = 0, end = n-1;
    while (start < end) {
        int temp = arr[start];
        arr[start] = arr[end];
        arr[end] = temp;
        start++;
        end--;
    }

    cout << "\nThe array after reversing the elements is: ";
    for (int i = 0; i < n; i++) {
        cout << arr[i] << " ";
    }
    cout << endl;

    return 0;
```

```cpp
#include <iostream>
using namespace std;

int main() {
    int n, pos, x;
    cout << "Enter the size of the array: ";
    cin >> n;

    int arr[n+1];
    cout << "\nEnter the elements of the array: " << endl;
    for (int i = 0; i < n; i++) {
        cin >> arr[i];
    }

    cout << "\nEnter the position to insert the element: ";
    cin >> pos;

    if (pos < 1 || pos > n+1) {
        cout << "\nInvalid position!" << endl;
        return 0;
    }

    cout << "\nEnter the element to insert: ";
    cin >> x;

    for (int i = n; i >= pos; i--) {
        arr[i] = arr[i-1];
    }

    arr[pos-1] = x;
    n++;

    cout << "\nThe array after inserting the element is: ";
    for (int i = 0; i < n; i++) {
        cout << arr[i] << " ";
```

```
4
1
2
3
4
3
6
```

```
Enter the size of the array:
Enter the elements of the array:

Enter the position to insert the element:
Enter the element to insert:
The array after inserting the element is: 1 2 6 3 4
```

```cpp
#include <iostream>
using namespace std;

int main() {
    int n, pos, x;
    cout << "Enter the size of the array: ";
    cin >> n;

    int arr[n+1];
    cout << "\nEnter the elements of the array: " << endl;
    for (int i = 0; i < n; i++) {
        cin >> arr[i];
    }

    cout << "\nEnter the position to insert the element: ";
    cin >> pos;

    if (pos < 1 || pos > n+1) {
        cout << "\nInvalid position!" << endl;
        return 0;
    }

    cout << "\nEnter the element to insert: ";
    cin >> x;

    for (int i = n; i >= pos; i--) {
        arr[i] = arr[i-1];
    }

    arr[pos-1] = x;
    n++;

    cout << "\nThe array after inserting the element is: ";
    for (int i = 0; i < n; i++) {
        cout << arr[i] << " ";
```

```
4
1
2
3
4
3
6
```

```
Enter the size of the array:
Enter the elements of the array:

Enter the position to insert the element:
Enter the element to insert:
The array after inserting the element is: 1 2 6 3 4
```