Task 1
Copy the program given below. Save (as maxArray.cpp), compile and run it.

```cpp
// Determine the maximum value in an array
#include <iostream>
using namespace std;

int main ()
{
    const int n = 5; // number of elements in the array
double x[n], max;

    // get the elements of the array
    cout << "input " << n << " numbers" << endl;
    for(int i=0; i<n; ++i)
        cin >> x[i];

    // first element is assumed to be maximum
    max = x[0];
    for (int i=1; i<n; i++)
    {
        if ( x[i] > max ) max = x[i];
    }
    cout << "maximum is " << max << endl;
    return 0;
}
```

Task 2
Modify the program given in Task 2 in order to find also the minimum element of the array.

Task 3
Write a C++ function named `double maxPos(double x[], int size);` that returns the position of the maximum element of an array `x` of given size. Use this function in a main program.

Task 4
Write a C++ program that reads components of two vectors `A = (a_1, a_2, a_3)` and `B = (b_1, b_2, b_3)` and outputs the dot (scalar) product and the angle in degrees between the vectors.

Task 5
Write a program that reads the elements of two square matrix of size `nxn`, (say `A` and `B`) and calculates the matrix multiplication of them, and then assigns the result to the matrix `C = A x B`.

Hint: If the matrices are given by `A = [a_{ij}]_{nxn}` and `B = [b_{ij}]_{nxn}` then their multiplication matrix `C = [c_{ij}]_{nxn}` is defined as:

```
c_{ij} = \sum_{k=1}^{n} a_{ik} b_{kj}
```

Test your program with the following examples:

```
\begin{pmatrix} 1 & 0 \\ -1 & 3 \end{pmatrix} \times \begin{pmatrix} 3 & 1 \\ 2 & 1 \end{pmatrix} = \begin{pmatrix} 3 & 1 \\ 1 & 3 \end{pmatrix}
```

```
\begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix} \cdot \begin{pmatrix} 0 & 2 & 4 \\ 1 & 3 & 5 \\ 1 & 0 & 2 \end{pmatrix} = \begin{pmatrix} 5 & 8 & 20 \\ 11 & 23 & 53 \\ 17 & 38 & 86 \end{pmatrix}
```