The University of Azad Jammu and Kashmir, Muzaffarabad

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Course Name	Data Structure & Algorithm
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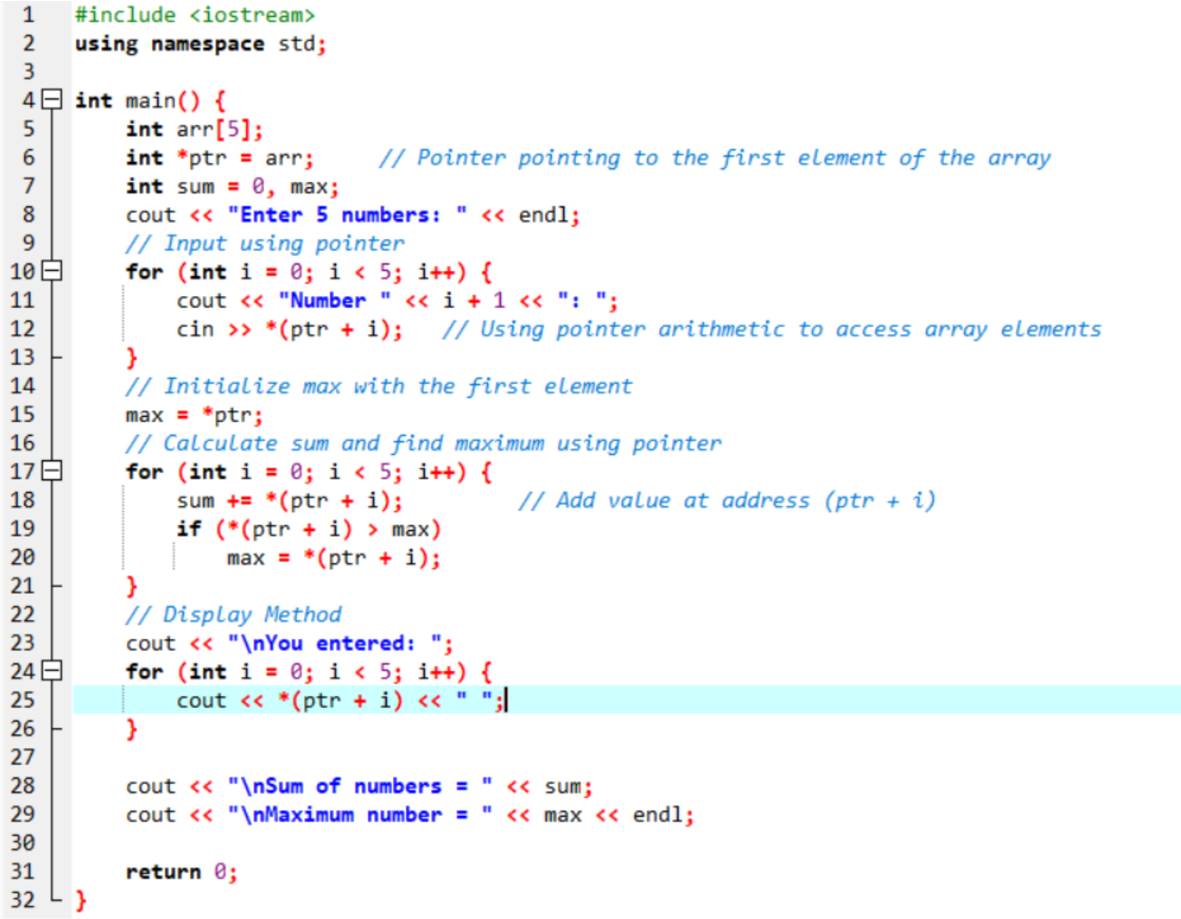
Question:

Write a program that reads 5 numbers using array pointers, finds sum and maximum as well.

Answer:

Code



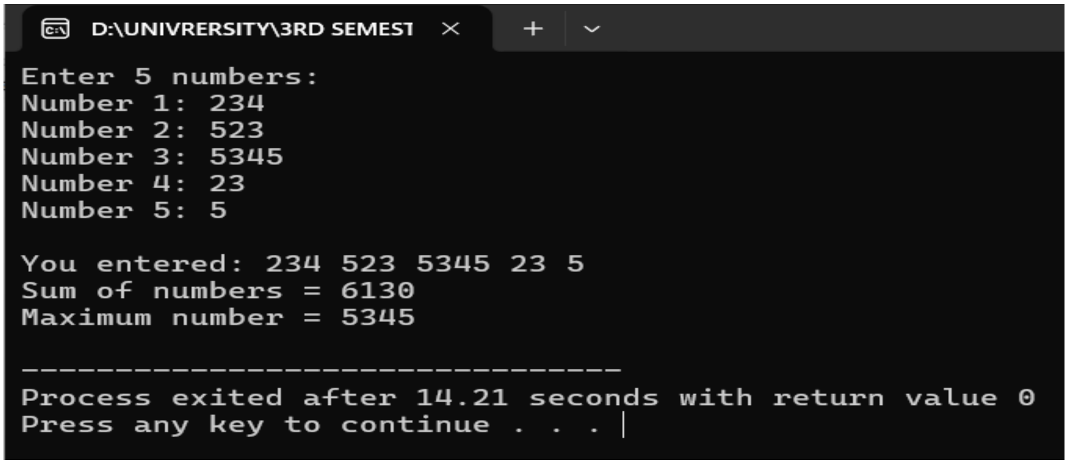
```cpp
#include <iostream>
using namespace std;

int main() {
    int arr[5];
    int *ptr = arr;      // Pointer pointing to the first element of the array
    int sum = 0, max;
    cout << "Enter 5 numbers: " << endl;
    // Input using pointer
    for (int i = 0; i < 5; i++) {
        cout << "Number " << i + 1 << ": ";
        cin >> *(ptr + i);   // Using pointer arithmetic to access array elements
    }
    // Initialize max with the first element
    max = *ptr;
    // Calculate sum and find maximum using pointer
    for (int i = 0; i < 5; i++) {
        sum += *(ptr + i);          // Add value at address (ptr + i)
        if (*(ptr + i) > max)
            max = *(ptr + i);
    }
    // Display Method
    cout << "\nYou entered: ";
    for (int i = 0; i < 5; i++) {
        cout << *(ptr + i) << " ";
    }

    cout << "\nSum of numbers = " << sum;
    cout << "\nMaximum number = " << max << endl;

    return 0;
}
```

Output



```
Enter 5 numbers:
Number 1: 234
Number 2: 523
Number 3: 5345
Number 4: 23
Number 5: 5

You entered: 234 523 5345 23 5
Sum of numbers = 6130
Maximum number = 5345

--------------------------------
Process exited after 14.21 seconds with return value 0
Press any key to continue . . .
```

Explanation

1️⃣ int arr[5];

Creates an integer array that holds 5 elements in continuous memory.

2️⃣ int *ptr = arr;

The variable ptr is a pointer to an integer.

The name of the array numbers represents the address of its first element, so this line makes ptr point to the first element.

3️⃣ Input loop

```
cin >> *(ptr + i);
```

(ptr + i) moves the pointer to the i-th element of the array.

*(ptr + i) accesses the value stored at that position.

So, we’re filling the array using pointer arithmetic.

4️⃣ Initialize max

```
max = *ptr;
```

Dereferences ptr (the first element’s value) and stores it as the initial maximum.

5️⃣ Sum and maximum loop

```
sum += *(ptr + i);
if (*(ptr + i) > max)
   max = *(ptr + i);
```

Adds each value to sum.

Compares and updates max if a larger number is found.

6️⃣ Display loop

```
cout << *(ptr + i) << " ";
```

Uses the pointer again to print each element from memory.