

Program Using an Array

```
//Reads in 5 scores and shows how much each
//score differs from the highest score.
#include <iostream>

int main()
{
    using namespace std;
    int i, score[5], max;

    cout << "Enter 5 scores:\n";
    cin >> score[0];
    max = score[0];
    for (i = 1; i < 5; i++)
    {
        cin >> score[i];
        if (score[i] > max)
            max = score[i];
        //max is the largest of the values score[0],..., score[i].
    }

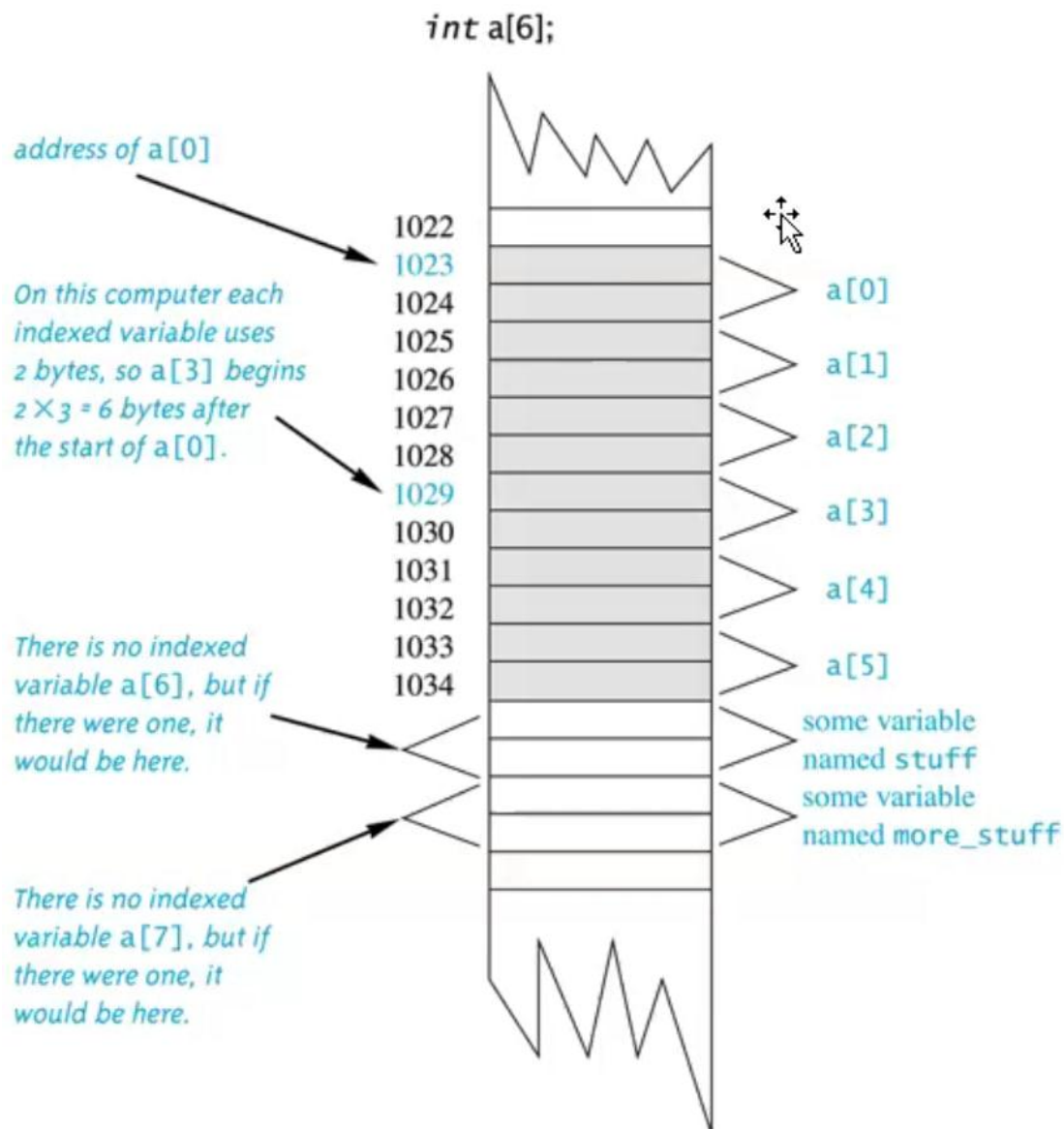
    cout << "The highest score is " << max << endl
         << "The scores and their\n"
         << "differences from the highest are:\n";
    for (i = 0; i < 5; i++)
        cout << score[i] << " off by "
             << (max - score[i]) << endl;

    return 0;
}
```

Sample Dialogue

```
Enter 5 scores:
5 9 2 10 6
The highest score is 10
The scores and their
differences from the highest are:
5 off by 5
9 off by 1
2 off by 8
10 off by 0
6 off by 4
```

An Array in Memory



DISPLAY 7.3 Indexed Variable as an Argument

```
1 //Illustrates the use of an indexed variable as an argument.
2 //Adds 5 to each employee's allowed number of vacation days.
3 #include <iostream>
4 const int NUMBER_OF_EMPLOYEES = 3;

5 int adjustDays(int oldDays);
6 //Returns oldDays plus 5.

7 int main( )
8 {
9     using namespace std;
10    int vacation[NUMBER_OF_EMPLOYEES], number;
11    cout << "Enter allowed vacation days for employees 1"
12         << " through " << NUMBER_OF_EMPLOYEES << ":\n";
13    for (number = 1; number <= NUMBER_OF_EMPLOYEES; number++)
14        cin >> vacation[number - 1];
15    for (number = 0; number < NUMBER_OF_EMPLOYEES; number++)
16        vacation[number] = adjustDays(vacation[number]);
17    cout << "The revised number of vacation days are:\n";
18    for (number = 1; number <= NUMBER_OF_EMPLOYEES; number++)
19        cout << "Employee number " << number
20             << " vacation days = " << vacation[number-1] << endl;
21    return 0;
22 }
23 int adjustDays(int oldDays)
24 {
25     return (oldDays + 5);
26 }
```

Sample Dialogue

```
Enter allowed vacation days for employees 1 through 3:
10 20 5
The revised number of vacation days are:
Employee number 1 vacation days = 15
Employee number 2 vacation days = 25
Employee number 3 vacation days = 10
```

```

1 //Tests the function inputData.
2 #include <iostream>
3 const int NUMBER_OF_PLANTS = 4;
4
5 void inputData(int a[], int lastPlantNumber);
6 //Precondition: lastPlantNumber is the declared size of the array a.
7 //Postcondition: For plantNumber = 1 through lastPlantNumber:
8 //a[plantNumber - 1] equals the total production for plant number plantNumber.
9
10 void getTotal(int& sum);
11 //Reads nonnegative integers from the keyboard and
12 //places their total in sum.
13
14 int main( )
15 {
16     using namespace std;
17     int production[NUMBER_OF_PLANTS];
18     char ans;
19
20     do
21     {
22         inputData(production, NUMBER_OF_PLANTS);
23         cout << endl
24             << "Total production for each"
25             << " of plants 1 through 4:\n";
26         for (int number = 1; number <= NUMBER_OF_PLANTS; number++)
27             cout << production[number - 1] << " ";
28
29         cout << endl
30             << "Test Again?(Type y or n and Return): ";
31         cin >> ans;
32     } while ( (ans != 'N') && (ans != 'n') );
33
34     cout << endl;
35
36     return 0;
37 }
38 //Uses iostream:
39 void inputData(int a[], int lastPlantNumber)
40 {
41     using namespace std;
42     for (int plantNumber = 1;
43         plantNumber <= lastPlantNumber; plantNumber++)
44     {
45         cout << endl
46             << "Enter production data for plant number "

```

```

47         << plantNumber << endl;
48         getTotal(a[plantNumber - 1]);
49     }
50 }
51
52
53 //Uses iostream:
54 void getTotal(int& sum)
55 {
56     using namespace std;
57     cout << "Enter number of units produced by each department.\n"
58          << "Append a negative number to the end of the list.\n";
59
60     sum = 0;
61     int next;
62     cin >> next;
63     while (next >= 0)
64     {
65         sum = sum + next;
66         cin >> next;
67     }
68
69     cout << "Total = " << sum << endl;
70 }

```

Sample Dialogue

Enter production data for plant number 1
Enter number of units produced by each department.
Append a negative number to the end of the list.

1 2 3 -1

Total = 6

Enter production data for plant number 2
Enter number of units produced by each department.
Append a negative number to the end of the list.

0 2 3 -1

Total = 5

Enter production data for plant number 3
Enter number of units produced by each department.
Append a negative number to the end of the list.

2 -1

Total = 2

Enter production data for plant number 4
Enter number of units produced by each department.
Append a negative number to the end of the list.

-1

Total = 0

Total production for each of plants 1 through 4:
6 5 2 0

Test Again?(Type y or n and Return): **n**