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WEEK 5 ASSIGNMENT

1. Source code:

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

int main() {
    int n;
    float total;

    cout << "How many integers?";
    cin >> n;
    int nums[n];

    cout << "Input integers separated by a space!";
    for (int i=0; i<n; i++) {
        cin >> nums[i];
        total += nums[i];
    }

    cout << "The average value = " << total/n;

    return 0;
}
```

Screenshot:

```
How many integers?5
Input integers separated by a space!10 20 30 40 50
The average value = 30
Process finished with exit code 0
```

2. Source code:

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

int main() {
    int n, x, i;
    int nums[24];

    cout << "Input an integer!";
    cin >> n;
    x = n;

    for (i=0; n>0; i++) {
```

```
        nums[i] = n%2;
        n /= 2;
    }

    cout << "The binary value of " << x << " = " ;

    for (int j=i-1; j>=0; j--) {
        cout << nums[j] << " ";
    }

    return 0;
}
```

Screenshot:

```
Input an integer!13
The binary value of 13 = 1 1 0 1
Process finished with exit code 0

Input an integer!4
The binary value of 4 = 1 0 0
Process finished with exit code 0
```

3. Source code:

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

int main() {
    int n;

    cout << "Input the length of arrays!";
    cin >> n;

    int first[n];
    int second[n];

    cout << endl;

    cout << "Input elements of the first array!" << endl;
    for (int i=0; i<n; i++) {
        cout << "Input element a" << i+1 << "!";
        cin >> first[i];
    }

    cout << endl;

    cout << "Input elements of the second array!" << endl;
    for (int j=0; j<n; j++) {
        cout << "Input element a" << j+1 << "!";
        cin >> second[j];
    }

    cout << endl;
```

```cpp
    for (int x=0; x<n; x++){
        for (int y=0; y<n; y++){
            if (first[x] == second[y]){
                cout << first[x] << " ";
            }
        }
    }


    return 0;
}
```

Screenshot:

```
Input the length of arrays!2

Input elements of the first array!
Input element a1!1
Input element a2!2

Input elements of the second array!
Input element a1!2
Input element a2!3


2
Process finished with exit code 0
```

```
Input the length of arrays!5

Input elements of the first array!
Input element a1!1
Input element a2!3
Input element a3!4
Input element a4!6
Input element a5!7

Input elements of the second array!
Input element a1!1
Input element a2!2
Input element a3!3
Input element a4!4
Input element a5!5


1 3 4
Process finished with exit code 0
```

4. Source code:

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

int main() {
    int first[2][2];
    int second[2][2];
    int product[2][2];

    cout << "Input elements of the first matrix!" << endl;
    for (int i=0; i<2; i++) {
        for (int j=0; j<2; j++) {
            cout << "Input element a" << i+1 << j+1 << "!";
            cin >> first[i][j];
        }
    }

    cout << endl;

    cout << "Input elements of the second matrix!" << endl;
    for (int i=0; i<2; i++) {
        for (int j=0; j<2; j++) {
            cout << "Input element a" << i+1 << j+1 << "!";
            cin >> second[i][j];
        }
    }

    cout << endl;
```

```cpp
        cout << "The First Matrix" << endl;
        for (int i=0; i<2; i++) {
            for (int j=0; j<2; j++) {
                cout << first[i][j]  << " ";
            }
            cout << endl;
        }

        cout << endl;

        cout << "The Second Matrix" << endl;
        for (int i=0; i<2; i++) {
            for (int j=0; j<2; j++) {
                cout << second[i][j] << " ";
            }
            cout << endl;
        }

        cout << endl;


        product[0][0] = (first[0][0] * second[0][0])
                      + (first[0][1] * second[1][0]);

        product[0][1] = (first[0][0] * second[0][1])
                      + (first[0][1] * second[1][1]);

        product[1][0] = (first[1][0] * second[0][0])
                      + (first[1][1] * second[1][0]);

        product[1][1] = (first[1][0] * second[0][1])
                      + (first[1][1] * second[1][1]);


        cout << "The Product Matrix" << endl;
        for (int i=0; i<2; i++) {
            for (int j=0; j<2; j++) {
                cout << product[i][j]  << " ";
            }
            cout << endl;
        }


}
```

Screenshot:

```
Input elements of the first matrix!
Input element a11!1
Input element a12!2
Input element a21!3
Input element a22!4

Input elements of the second matrix!
Input element a11!5
Input element a12!6
Input element a21!7
Input element a22!8

The First Matrix
1 2
3 4

The Second Matrix
5 6
7 8

The Product Matrix
19 22
43 50

Process finished with exit code 0
```

5. Source code:

```cpp
#include <iostream>
using namespace std;
int main()
{
    int n;
    int smpi = 0;

    cout << "How many integers?";
    cin >> n;

    int nums[n];

    cout << "Input integers separated by a space!";
    for (int i=0; i<n; i++) {
        cin >> nums[i];
```

```
    }

    for (int i=0; i<n; i++) {
        cout << nums[i] << " ";
    }

    cout << endl;

    for (int i=1; i<=n; i++){
        bool x = true;

        for (int j=0; j<n; j++){
            if (nums[j] == i){
                x = false;
            }
        }

        if (x){
            smpi = i;
            break;
        }
    }

    cout << "The smallest positive integer = " << smpi;


    return 0;
}
```

Screenshot:

```
How many integers?5
Input integers separated by a space!2 1 3 6 9
2 1 3 6 9
The smallest positive integer = 4
Process finished with exit code 0
```

```
How many integers?10
Input integers separated by a space!1 2 3 4 6 7 8 9 10 11
1 2 3 4 6 7 8 9 10 11
The smallest positive integer = 5
Process finished with exit code 0
```