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Assignment – 5

1) Rata-Rata Nilai

```
#include <iostream>

using namespace std;

int main() {
    // deklarasi variabel
    int n;
    double sum, avg;
    sum = 0;

    cout << "Menghitung Rata-Rata Nilai" << endl;

    // input n bilangan
    cout << "Ada berapa angka? "; cin >> n;

    // deklarasi array
    int array[n];
    cout << "Angka = ";
    for(int i = 0; i < n; i++) {
        // input nilai tiap n
        cin >> array[i];
        // jumlah akhir bilangan dari tiap input
        sum += array[i];
    }

    // hitung rata-rata
    avg = sum / n;

    // print rata-rata
    cout << "Rata-rata = " << avg;

    return 0;
}
```

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2) Konversi Biner

```
#include <iostream>

using namespace std;

int main() {
    // deklarasi variabel
    int num, x;
    int array[8];

    cout << "Konversi Bilangan Cacah Ke Bilangan Biner" << endl;

    // input bilangan
    cout << "Masukkan angka : ";
    cin >> num;

    // jika input bilangan negatif
    if(num > 255 || num < 0) {
        cout << "Invalid number" << endl;
    }
    else {
        // loop biner
        for(int i = 0; num > 0; i++) {
            if(num % 2 == 1) {
                array[i] = 1;
            }
            else if(num % 2 == 0) {
                array[i] = 0;
            }
            num /= 2;
            // panjang array
            x = i;
        }

        // print biner
        cout << "Biner : ";
        // loop print biner dari bilangan terakhir
        for(int i = x; i >= 0; i--) {
            cout << array[i] << " ";
        }
    }
    return 0;
}
```

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3) Interseksi Dua Array

```
#include <iostream>

using namespace std;

int main() {
    // deklarasi variabel
    int n;

    cout << "Mencari Bilangan yang Sama Dari Dua Himpunan" << endl;

    // input n bilangan
    cout << "Ada berapa angka? "; cin >> n;

    // deklarasi array
    int A[n];
    int B[n];

    // input bilangan anggota himpunan A dan B
    cout << "Himpunan A = ";
    for(int i = 0; i < n; i++) {
        cin >> A[i];
    }
    cout << "Himpunan B = ";
    for(int i = 0; i < n; i++) {
        cin >> B[i];
    }

    // print anggota himpunan A
    cout << "A = [ ";
    for(int i = 0; i < n; i++) {
        cout << A[i] << " ";
    }
    cout << "]" << endl;

    // print anggota himpunan B
    cout << "B = [ ";
    for(int i = 0; i < n; i++) {
        cout << B[i] << " ";
    }
    cout << "]" << endl;

    // cari interseksi
```

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```
cout << "Interseksi: ";
for(int x = 0; x <= n; x++) {
    for(int y = 0; y < n; y++) {
        if (A[x] == B[y]){
            // print interseksi
            cout << A[x] << " ";
            // hapus duplikat
            if (A[x] == B[y]) {
                break;
            }
        }
    }
}

return 0;
}
```

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4) Perkalian Dua Matriks

```
#include <iostream>

using namespace std;

int main() {
    // deklarasi array matriks
    int array1[2][2];
    int array2[2][2];
    int arrayX[2][2];

    // input anggota matriks 1
    cout << "Masukkan elemen matriks 1: " << endl;
    for(int i = 0; i <= 1; i++){
        for(int j = 0; j <= 1; j++){
            cout << "Masukkan elemen a" << i + 1 << j + 1 << ": ";
            cin >> array1[i][j];
        }
    }

    cout << endl;

    // input anggota matriks 2
    cout << "Masukkan elemen matriks 2: " << endl;
    for(int k = 0; k <= 1; k++){
        for(int l = 0; l <= 1; l++){
            cout << "Masukkan elemen b" << k + 1 << l + 1 << ": ";
            cin >> array2[k][l];
        }
    }

    cout << endl;

    // print matriks 1
    cout << "Matriks 1: " << endl;
    for(int i = 0; i <= 1; i++){
        for(int j = 0; j <= 1; j++){
            cout << array1[i][j] << " ";
        }
        cout << endl;
    }

    cout << endl;
```

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```
// print matriks 2
cout << "Matriks 2: " << endl;
for(int k = 0; k <= 1; k++){
    for(int l = 0; l <= 1; l++){
        cout << array2[k][l] << " ";
    }
    cout << endl;
}

// rumus perkalian dua matriks
for(int m = 0; m <= 1; m++){
    for(int n = 0; n <= 1; n++){
        arrayX[m][n] = array1[m][0] * array2[0][n] + array1[m][1]
* array2[1][n];
    }
}

cout << endl;

// print hasil perkalian dua matriks
cout << "Output Matriks: " << endl;
for(int m = 0; m <= 1; m++){
    for(int n = 0; n <= 1; n++){
        cout << arrayX[m][n] << " ";
    }
    cout << endl;
}

return 0;
}
```

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5) Bilangan Bulat Positif Terkecil

```
#include <iostream>

using namespace std;

int main() {
    // deklarasi variabel
    int n;
    int x = 1;
    int m = 0;

    // input jumlah anggota himpunan
    cout << "Ada berapa angka? "; cin >> n;

    // deklarasi array himpunan
    int array[n];

    // input anggota himpunan
    cout << "Masukkan angka: ";
    for(int i = 0; i < n; i++){
        cin >> array[i];
    }

    // mencari bilangan positif terkecil yang tidak ada di himpunan
    for(int i = 0; i < n; i++){
        for(int j = n; j > 0; j--){
            while(x == array[i] || x == array[j]) {
                x++;
            }
        }
    }

    // jika semua input bilangan negatif
    for(int i = 0; i < n; i++){
        if(array[i] < 0) {
            m++;
            if(m == n) {
                x = 1;
            }
        }
    }

    // print bilangan positif terkecil
```

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```
cout << x;  
  
return 0;  
}
```

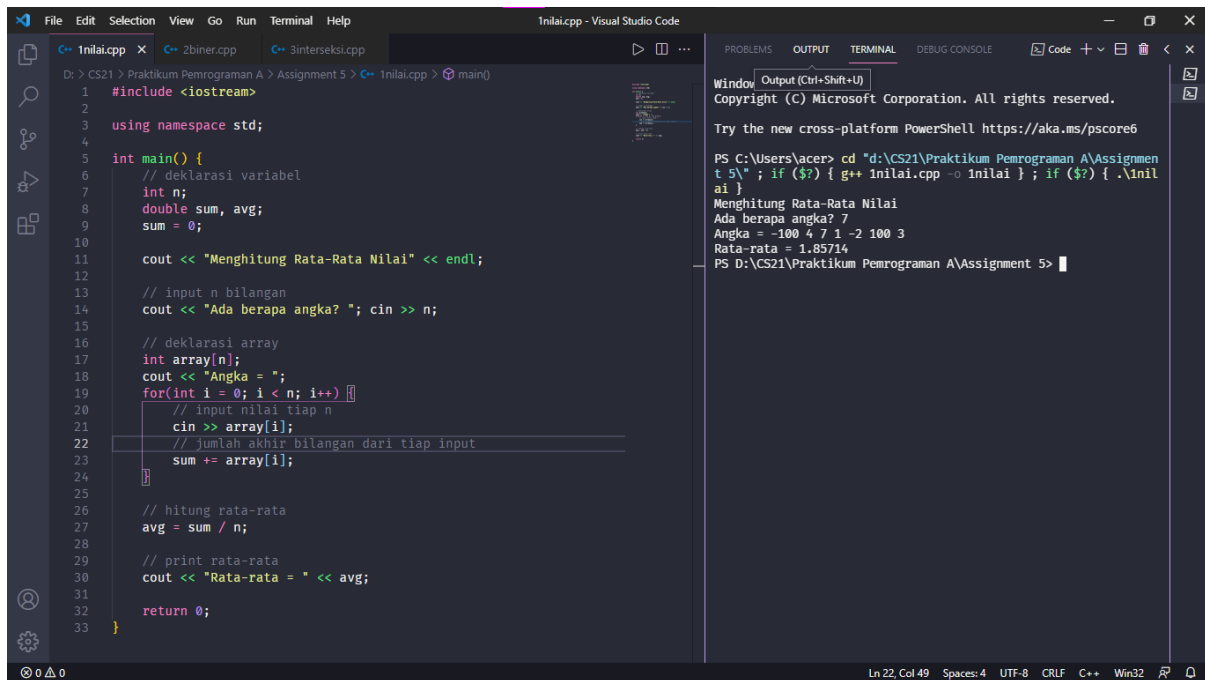

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Screenshot

1) Rata-Rata Nilai



```
File Edit Selection View Go Run Terminal Help
1nilai.cpp - Visual Studio Code

D:\> CS21 > Praktikum Pemrograman A > Assignment 5 > 1nilai.cpp > main()
1 #include <iostream>
2
3 using namespace std;
4
5 int main() {
6     // deklarasi variabel
7     int n;
8     double sum, avg;
9     sum = 0;
10
11     cout << "Menghitung Rata-Rata Nilai" << endl;
12
13     // input n bilangan
14     cout << "Ada berapa angka? "; cin >> n;
15
16     // deklarasi array
17     int array[n];
18     cout << "Angka = ";
19     for(int i = 0; i < n; i++) {
20         // input nilai tiap n
21         cin >> array[i];
22         // jumlah akhir bilangan dari tiap input
23         sum += array[i];
24     }
25
26     // hitung rata-rata
27     avg = sum / n;
28
29     // print rata-rata
30     cout << "Rata-rata = " << avg;
31
32     return 0;
33 }
```

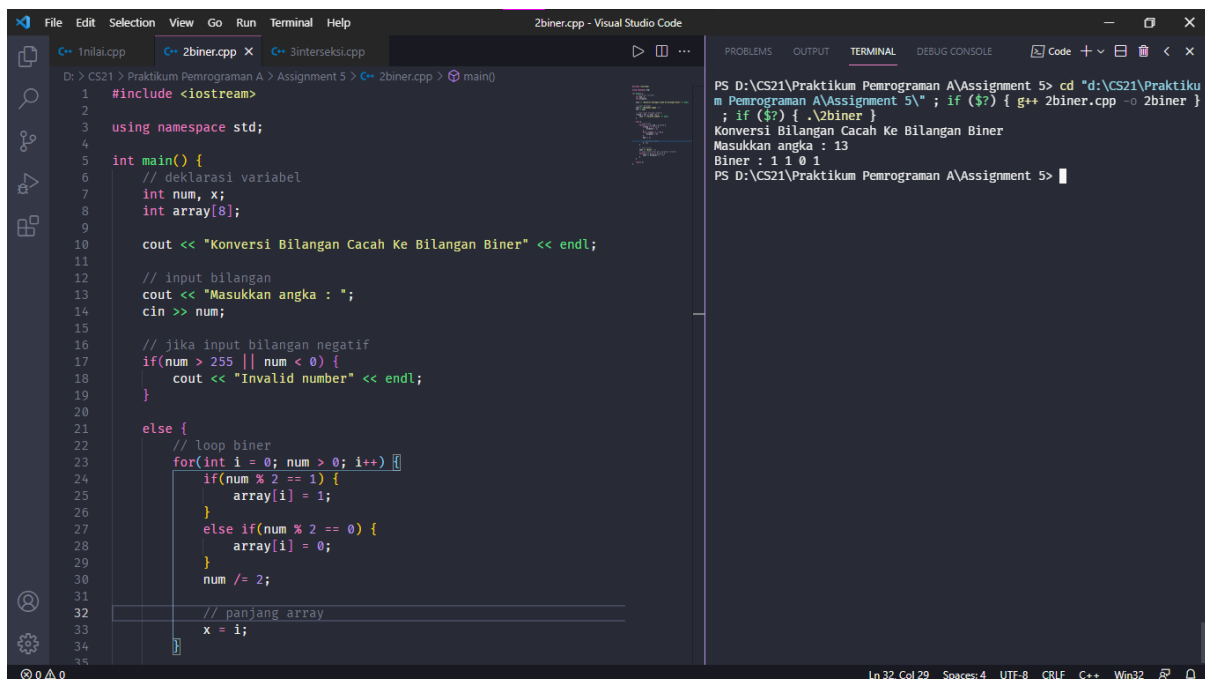
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

Window Output (Ctrl+Shift+U)
Copyright (C) Microsoft Corporation. All rights reserved.
Try the new cross-platform PowerShell <https://aka.ms/pscore6>

```
PS C:\Users\acer> cd "d:\CS21\Praktikum Pemrograman A\Assignment 5"
PS C:\Users\acer> cd "d:\CS21\Praktikum Pemrograman A\Assignment 5" & if ($?) { g++ 1nilai.cpp -o 1nilai }; if ($?) { .\1nilai }
Menghitung Rata-Rata Nilai
Ada berapa angka? 7
Angka = -100 4 7 1 -2 100 3
Rata-rata = 1.85714
PS D:\CS21\Praktikum Pemrograman A\Assignment 5>
```

Ln 22, Col 49 Spaces: 4 UTF-8 CRLF C++ Win32

2) Konversi Biner



```
File Edit Selection View Go Run Terminal Help
2biner.cpp - Visual Studio Code

D:\> CS21 > Praktikum Pemrograman A > Assignment 5 > 2biner.cpp > main()
1 #include <iostream>
2
3 using namespace std;
4
5 int main() {
6     // deklarasi variabel
7     int num, x;
8     int array[8];
9
10     cout << "Konversi Bilangan Cacah Ke Bilangan Biner" << endl;
11
12     // input bilangan
13     cout << "Masukkan angka : ";
14     cin >> num;
15
16     // jika input bilangan negatif
17     if(num > 255 || num < 0) {
18         cout << "Invalid number" << endl;
19     }
20
21     else {
22         // loop biner
23         for(int i = 0; num > 0; i++) {
24             if(num % 2 == 1) {
25                 array[i] = 1;
26             }
27             else if(num % 2 == 0) {
28                 array[i] = 0;
29             }
30             num /= 2;
31
32             // panjang array
33             x = i;
34         }
35     }
36 }
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
PS D:\CS21\Praktikum Pemrograman A\Assignment 5> cd "d:\CS21\Praktikum Pemrograman A\Assignment 5" & if ($?) { g++ 2biner.cpp -o 2biner }; if ($?) { .\2biner }
Konversi Bilangan Cacah Ke Bilangan Biner
Masukkan angka : 13
Biner : 1 1 0 1
PS D:\CS21\Praktikum Pemrograman A\Assignment 5>
```

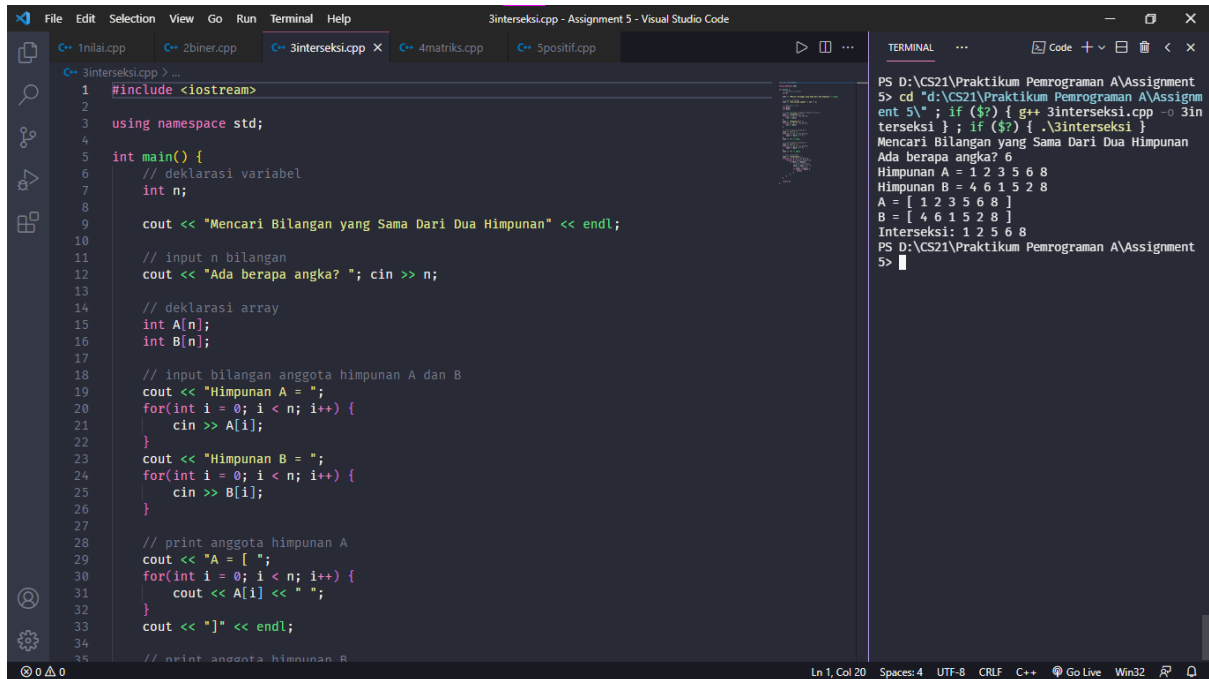
Ln 32, Col 29 Spaces: 4 UTF-8 CRLF C++ Win32

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3) Interseksi Dua Array



```
#include <iostream>

using namespace std;

int main() {
    // deklarasi variabel
    int n;

    cout << "Mencari Bilangan yang Sama Dari Dua Himpunan" << endl;

    // input n bilangan
    cout << "Ada berapa angka? "; cin >> n;

    // deklarasi array
    int A[n];
    int B[n];

    // input bilangan anggota himpunan A dan B
    cout << "Himpunan A = ";
    for(int i = 0; i < n; i++) {
        cin >> A[i];
    }
    cout << "Himpunan B = ";
    for(int i = 0; i < n; i++) {
        cin >> B[i];
    }

    // print anggota himpunan A
    cout << "A = [ ";
    for(int i = 0; i < n; i++) {
        cout << A[i] << " ";
    }
    cout << "]" << endl;

    // print anggota himpunan B
    cout << "B = [ ";
    for(int i = 0; i < n; i++) {
        cout << B[i] << " ";
    }
    cout << "]" << endl;

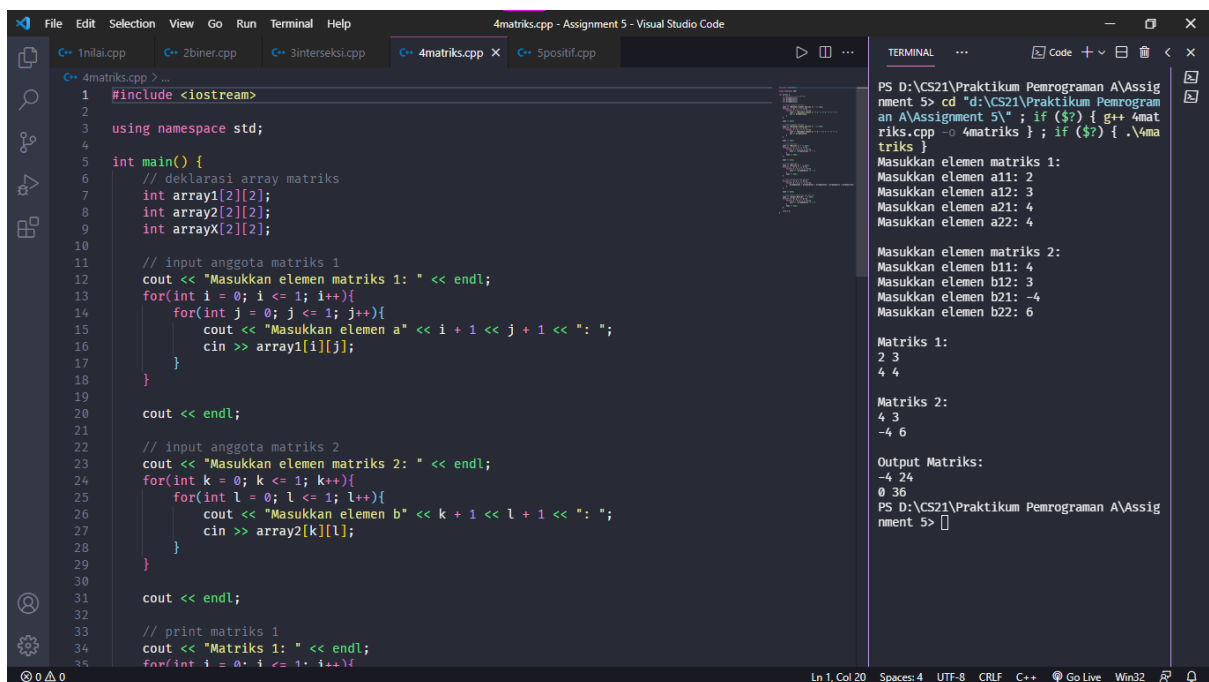
    // mencari interseksi
    int intersection[n];
    int count = 0;
    for(int i = 0; i < n; i++) {
        for(int j = 0; j < n; j++) {
            if(A[i] == B[j]) {
                intersection[count] = A[i];
                count++;
            }
        }
    }

    cout << "Interseksi: ";
    for(int i = 0; i < count; i++) {
        cout << intersection[i] << " ";
    }
    cout << endl;

    return 0;
}
```

PS D:\CS21\Praktikum Pemrograman A\Assignment 5> cd "d:\CS21\Praktikum Pemrograman A\Assignment 5" & if (\$?) { g++ 3interseksi.cpp -o 3interseksi }; if (\$?) { .\3interseksi }
Mencari Bilangan yang Sama Dari Dua Himpunan
Ada berapa angka? 6
Himpunan A = 1 2 3 5 6 8
Himpunan B = 4 6 1 5 2 8
A = [1 2 3 5 6 8]
B = [4 6 1 5 2 8]
Interseksi: 1 2 5 6 8
PS D:\CS21\Praktikum Pemrograman A\Assignment 5>

4) Perkalian Dua Matriks



```
#include <iostream>

using namespace std;

int main() {
    // deklarasi array matriks
    int array1[2][2];
    int array2[2][2];
    int arrayX[2][2];

    // input anggota matriks 1
    cout << "Masukkan elemen matriks 1: " << endl;
    for(int i = 0; i <= 1; i++){
        for(int j = 0; j <= 1; j++){
            cout << "Masukkan elemen a" << i + 1 << j + 1 << ": ";
            cin >> array1[i][j];
        }
    }

    cout << endl;

    // input anggota matriks 2
    cout << "Masukkan elemen matriks 2: " << endl;
    for(int k = 0; k <= 1; k++){
        for(int l = 0; l <= 1; l++){
            cout << "Masukkan elemen b" << k + 1 << l + 1 << ": ";
            cin >> array2[k][l];
        }
    }

    cout << endl;

    // print matriks 1
    cout << "Matriks 1: " << endl;
    for(int i = 0; i <= 1; i++){
        for(int j = 0; j <= 1; j++){
            cout << array1[i][j] << " ";
        }
        cout << endl;
    }

    // print matriks 2
    cout << "Matriks 2: " << endl;
    for(int i = 0; i <= 1; i++){
        for(int j = 0; j <= 1; j++){
            cout << array2[i][j] << " ";
        }
        cout << endl;
    }

    // print hasil perkalian
    cout << "Output Matriks: " << endl;
    for(int i = 0; i <= 1; i++){
        for(int j = 0; j <= 1; j++){
            int sum = 0;
            for(int k = 0; k <= 1; k++){
                sum += array1[i][k] * array2[k][j];
            }
            cout << sum << " ";
        }
        cout << endl;
    }

    return 0;
}
```

PS D:\CS21\Praktikum Pemrograman A\Assignment 5> cd "d:\CS21\Praktikum Pemrograman A\Assignment 5" & if (\$?) { g++ 4matriks.cpp -o 4matriks }; if (\$?) { .\4matriks }
Masukkan elemen matriks 1:
Masukkan elemen a11: 2
Masukkan elemen a12: 3
Masukkan elemen a21: 4
Masukkan elemen a22: 4

Masukkan elemen matriks 2:
Masukkan elemen b11: 4
Masukkan elemen b12: 3
Masukkan elemen b21: -4
Masukkan elemen b22: 6

Matriks 1:
2 3
4 4

Matriks 2:
4 3
-4 6

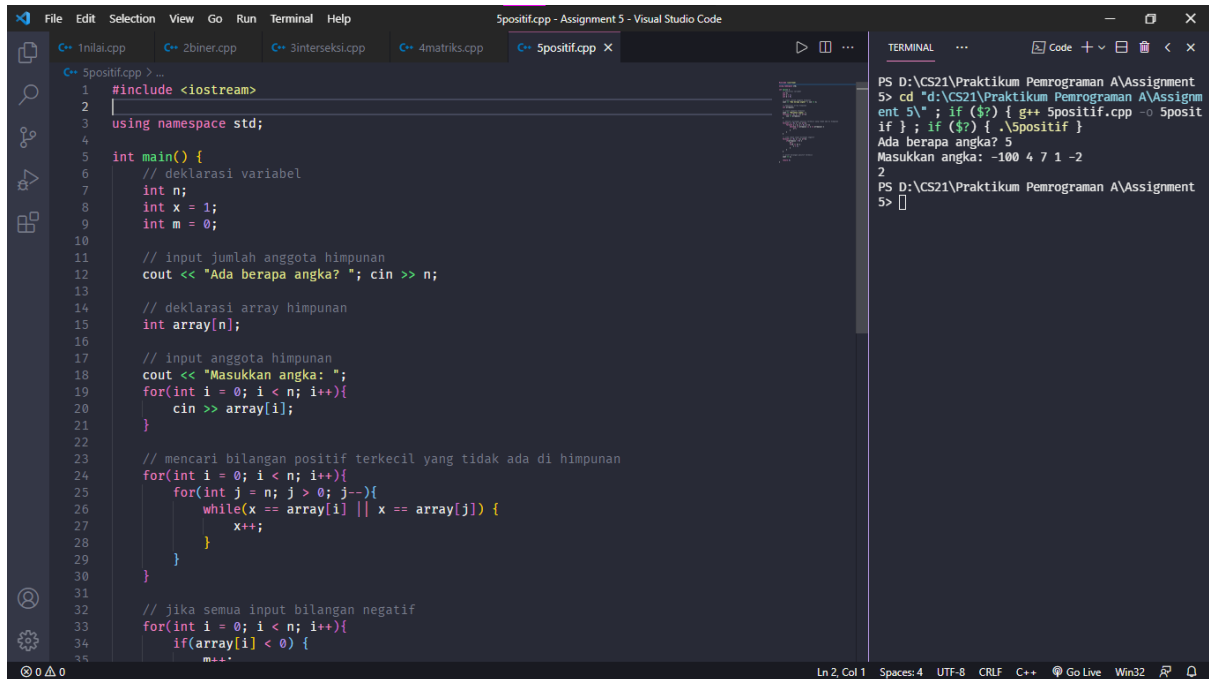
Output Matriks:
-4 24
0 36
PS D:\CS21\Praktikum Pemrograman A\Assignment 5>

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5) Bilangan Bulat Positif Terkecil



The image shows a Visual Studio Code editor with a C++ file named `Spositif.cpp` open. The code is as follows:

```
1 #include <iostream>
2
3 using namespace std;
4
5 int main() {
6     // deklarasi variabel
7     int n;
8     int x = 1;
9     int m = 0;
10
11     // input jumlah anggota himpunan
12     cout << "Ada berapa angka? "; cin >> n;
13
14     // deklarasi array himpunan
15     int array[n];
16
17     // input anggota himpunan
18     cout << "Masukkan angka: ";
19     for(int i = 0; i < n; i++){
20         cin >> array[i];
21     }
22
23     // mencari bilangan positif terkecil yang tidak ada di himpunan
24     for(int i = 0; i < n; i++){
25         for(int j = n; j > 0; j--){
26             while(x == array[i] || x == array[j]) {
27                 x++;
28             }
29         }
30     }
31
32     // jika semua input bilangan negatif
33     for(int i = 0; i < n; i++){
34         if(array[i] < 0) {
35             m++;
36         }
37     }
38 }
```

The terminal window on the right shows the command prompt output:

```
PS D:\CS21\Praktikum Pemrograman A\Assignment
S> cd "d:\CS21\Praktikum Pemrograman A\Assignm
ent 5\" ; if ($?) { g++ Spositif.cpp -o Sposit
if } ; if ($?) { .\Spositif }
Ada berapa angka? 5
Masukkan angka: -100 4 7 1 -2
2
PS D:\CS21\Praktikum Pemrograman A\Assignment
S>
```