

**BÁO CÁO THỰC HÀNH TUẦN 43**  
**HỌC PHẦN: IT3040 - KỸ THUẬT LẬP TRÌNH - 20221**

**Mục Lục**

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## Bài tập 1: Tìm và sửa các lỗi cú pháp

The screenshot shows the Dev-C++ IDE with a C++ program in `Bai1.c`. The program has a syntax error on line 6: `for ( i = 1; i <= n; ++i) printf("%d ", x[i]);`. The error message is "Process exited after 0.07053 seconds with return value 0". The output window shows the program's execution, displaying the numbers 1 through 5.

```
1 #include <stdio.h>
2
3 int x[100], mark[100], n,i,j;
4
5 void print(){
6     for ( i = 1; i <= n; ++i) printf("%d ", x[i]);
7     printf("\n");
8 }
9
10 void process(int i) {
11     if (i > n){
12         print();
13         return;
14     }
15     for ( j = 1; j <= n; ++j)
16         if (!mark[j]){
17             mark[j] = 1;
18             x[i] = j;
19             process(i+1);
20             mark[j] = 0;
21         }
22 }
23
24 int main() {
```

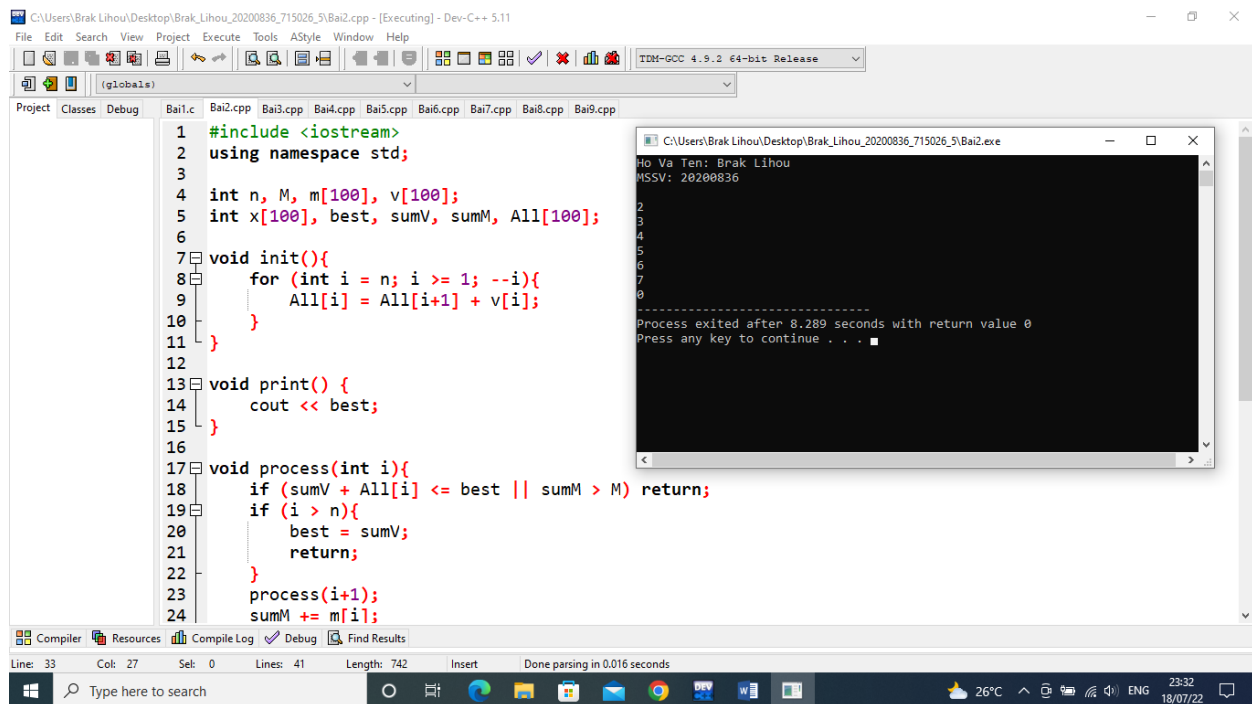
Compiler (1) Resources Compile Log Debug Find Results  
Line: 26 Col: 27 Sel: 0 Lines: 30 Length: 536 Insert Done parsing in 0.016 seconds  
Type here to search

The screenshot shows the Dev-C++ IDE with the corrected C++ program in `Bai1.c`. The program is now syntactically correct and includes a `printf` statement in the `main` function to display the program name and ID.

```
8 }
9
10 void process(int i) {
11     if (i > n){
12         print();
13         return;
14     }
15     for ( j = 1; j <= n; ++j)
16         if (!mark[j]){
17             mark[j] = 1;
18             x[i] = j;
19             process(i+1);
20             mark[j] = 0;
21         }
22 }
23
24 int main() {
25     printf("Ho Va Ten:Brak Lihou\n");
26     printf("MSSV: 20200836\n");
27     public int __cdecl printf(const char * __restrict __format, ...)
28     process(1);
29     return 0;
30 }
```

Compiler (1) Resources Compile Log Debug Find Results  
Line: 26 Col: 27 Sel: 0 Lines: 30 Length: 536 Insert Done parsing in 0.016 seconds  
Type here to search

## Bài tập 2: Tìm và sửa các lỗi cú pháp

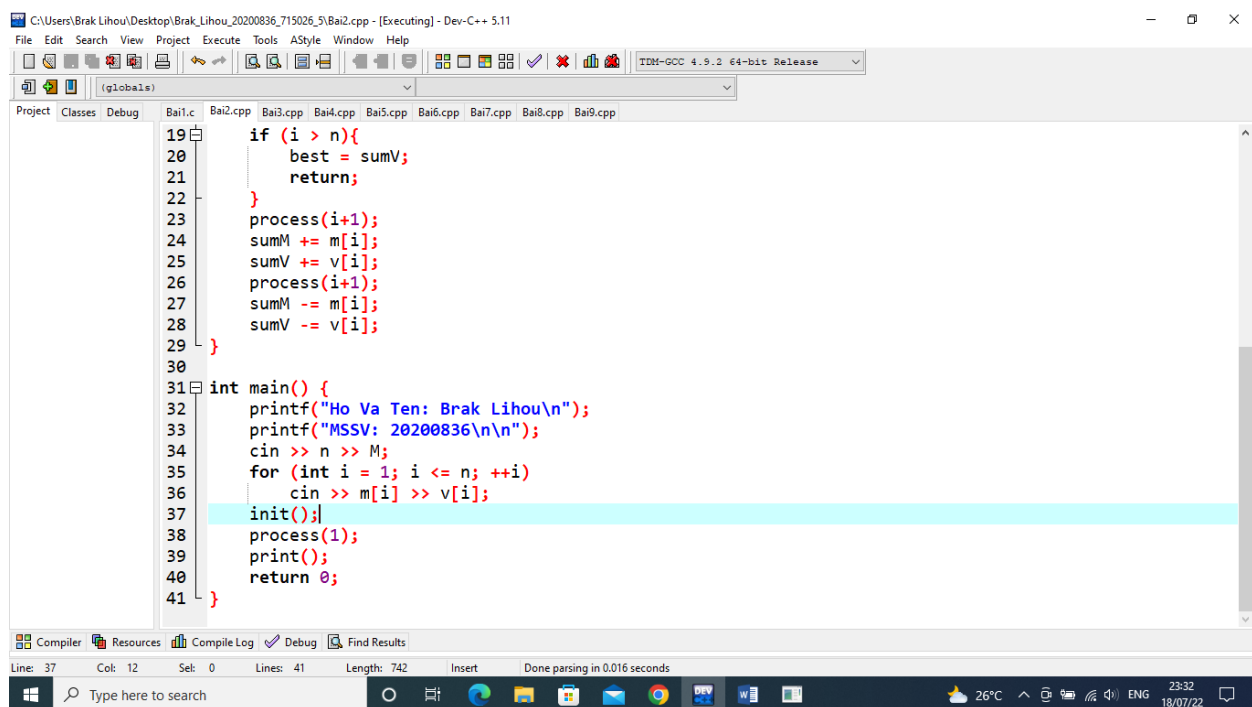


The screenshot shows the Dev-C++ IDE with the file `Bai2.cpp` open. The code defines a recursive function `process` to find the maximum sum of a subsequence. The `main` function calls `init`, `process`, and `print`. The execution window shows the output: "Ho Va Ten: Brak Lihou", "MSSV: 20200836", and a message indicating the process exited after 8.289 seconds.

```
1 #include <iostream>
2 using namespace std;
3
4 int n, M, m[100], v[100];
5 int x[100], best, sumV, sumM, All[100];
6
7 void init(){
8     for (int i = n; i >= 1; --i){
9         All[i] = All[i+1] + v[i];
10    }
11 }
12
13 void print() {
14     cout << best;
15 }
16
17 void process(int i){
18     if (sumV + All[i] <= best || sumM > M) return;
19     if (i > n){
20         best = sumV;
21         return;
22     }
23     process(i+1);
24     sumM += m[i];
```

Execution Output:

```
Ho Va Ten: Brak Lihou
MSSV: 20200836
-----
Process exited after 8.289 seconds with return value 0
Press any key to continue . . .
```



The screenshot shows the continuation of the `Bai2.cpp` code in the Dev-C++ IDE. The `process` function continues with its recursive logic, and the `main` function handles input and output.

```
19     if (i > n){
20         best = sumV;
21         return;
22     }
23     process(i+1);
24     sumM += m[i];
25     sumV += v[i];
26     process(i+1);
27     sumM -= m[i];
28     sumV -= v[i];
29 }
30
31 int main() {
32     printf("Ho Va Ten: Brak Lihou\n");
33     printf("MSSV: 20200836\n\n");
34     cin >> n >> M;
35     for (int i = 1; i <= n; ++i)
36         cin >> m[i] >> v[i];
37     init();
38     process(1);
39     print();
40     return 0;
41 }
```

## Bài tập 3: Dây ngoặc đúng

## Báo Cao Thực hành buổi 5-Brak Lihou (20200836)

```
#include <iostream>
using namespace std;
#include <string.h>
#include <stack>

int par(string str){
    int a = str.length();
    stack<char> S;
    char x, y;
    for (int i=0; i<a; i++){
        x = str[i];
        if (x == '(' || x == '[' || x == '{'){
            S.push(x);
        }
        else {
            if(S.size() == 0) return 0;
            if (x == ')') {
                if (S.top() == '('){
                    S.pop();
                }
                else return 0;
            }
            else if (x == ']') {
                if (S.top() == '['){
                    S.pop();
                }
                else return 0;
            }
            else if (x == '}') {
                if (S.top() == '{'){
                    S.pop();
                }
                else return 0;
            }
        }
    }
    if (S.size() != 0){
        return 0;
    }
    else return 1;
}

int main(){
    printf("Ho Va Ten: Brak Lihou\n");
    printf("MSSV: 20200836\n");
}
```

Ho Va Ten: Brak Lihou  
MSSV: 20200836

```
1
2
0
.....
Process exited after 2.386 seconds with return value 0
Press any key to continue . . .
```

Báo Cao Thực hành buổi 5-Brak Lihou (20200836)

The screenshot shows a C++ development environment with the following details:

- Title Bar:** C:\Users\Brak Lihou\Desktop\Brak\_Lihou\_20200836\_715026\_\Bai3.cpp - Dev-C++ 5.11
- Menu Bar:** File Edit Search View Project Execute Tools AStyle Window Help
- Toolbar:** Includes icons for file operations, compilation, and execution.
- Project Explorer:** Shows a project named "(globals)" with source files Bai1.c through Bai9.cpp.
- Code Editor:** Displays the code for Bai3.cpp:

```
34     }  
35     }  
36 }  
37 if (S.size() != 0){  
38     return 0;  
39 }  
40 else return 1;  
41 }  
42  
43 int main(){  
44     printf("Ho Va Ten: Brak Lihou\n");  
45     printf("MSSV: 20200836\n\n");  
46     public int __cdecl printf(const char * __restrict__ Format, ...)  
47     string str;  
48  
49     cin >> n;  
50     for(int i=0; i<n; i++){  
51         cin >> str;  
52         cout << par(str) << endl;  
53     }  
54  
55     return 0;  
56 }
```
- Status Bar:** Line: 45, Col: 27, Sel: 0, Lines: 56, Length: 1199, Insert mode, Done parsing in 0.016 seconds.
- Taskbar:** Windows taskbar at the bottom with search bar and system tray showing date/time as 23:35 18/07/22.

## Bài tập 4: Bài toán người du lịch

## Báo Cao Thực hành buổi 5-Brak Lihou (20200836)

The image shows a C++ IDE with two windows. The main window displays the source code for a game, and a smaller window shows the execution output.

**Source Code (Bai4.cpp):**

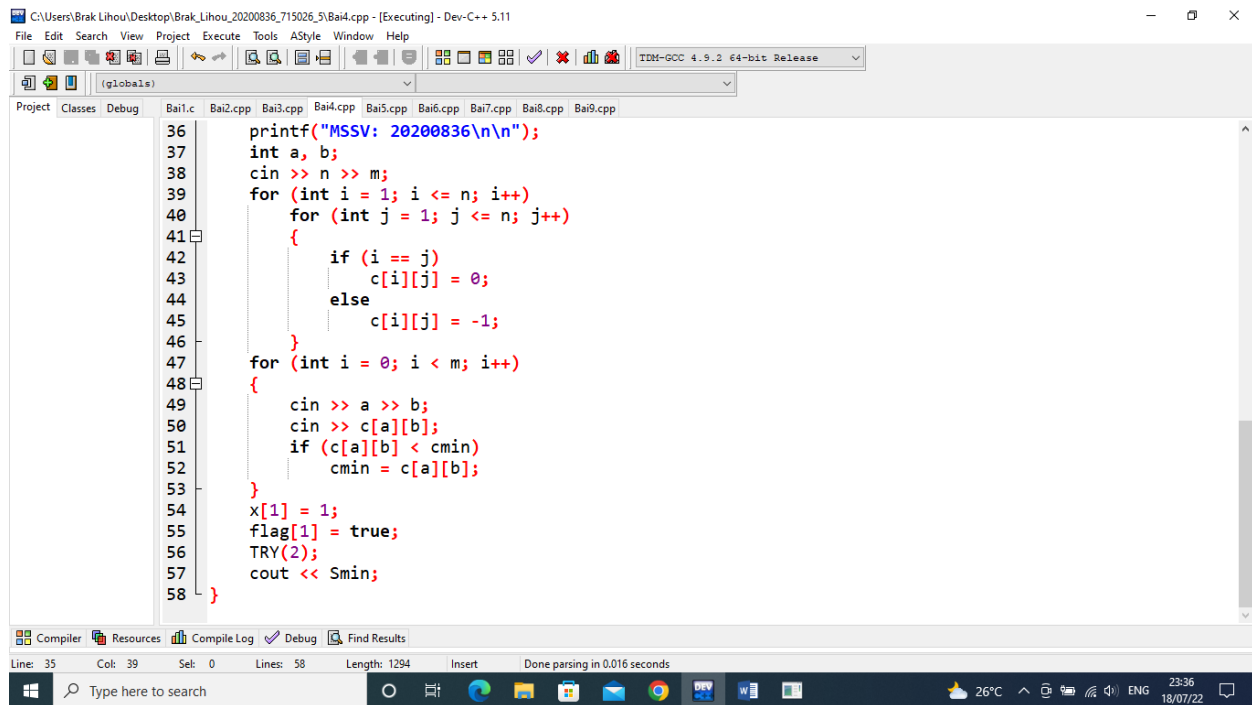
```
1 #include <bits/stdc++.h>
2 using namespace std;
3 int m, n, Smin = 1000000;
4 long long S = 0;
5 int cmin = 100000000;
6 int x[100];
7 int c[100][100];
8 vector<int> flag(100, false);
9 void TRY(int k)
10 {
11     for (int i = 2; i <= n; i++)
12     {
13         if (flag[i] == false && c[x[k - 1]][i] != -1)
14         {
15             flag[i] = true;
16             x[k] = i;
17             S = S + c[x[k - 1]][i];
18             if (k == n)
19             {
20                 if (S + c[i][1] < Smin && c[i][1] != -1)
21                     Smin = S + c[i][1];
22             }
23             else if (S + cmin * (n - k + 1) < Smin)
24             {
25                 TRY(k + 1);
26             }
27             flag[i] = false;
28             S = S - c[x[k - 1]][i];
29         }
30     }
31 }
32
33 main()
34 {
35     printf("Ho Va Ten: Brak Lihou\n");
36     printf("MSSV: 20200836\n");
37     int a, b;
38     cin >> n >> m;
39     for (int i = 1; i <= n; i++)
40         for (int j = 1; j <= n; j++)
41         {
42             if (i == j)
```

**Execution Output:**

```
Ho Va Ten: Brak Lihou
MSSV: 20200836
1
2
3
4
5
6
7
8
1000000
-----
Process exited after 5.976 seconds with return value 0
Press any key to continue . . .
```

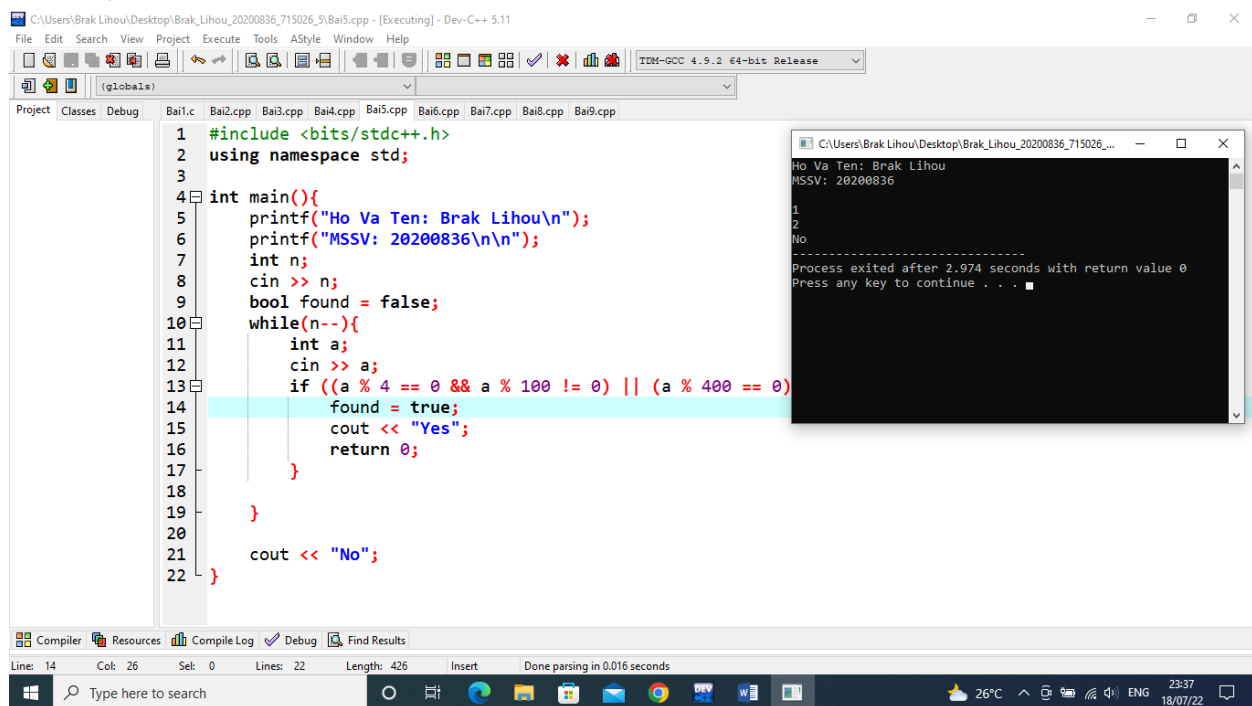


## Báo Cao Thực hành buổi 5-Brak Lihou (20200836)



```
36 printf("MSSV: 20200836\n\n");
37 int a, b;
38 cin >> n >> m;
39 for (int i = 1; i <= n; i++)
40     for (int j = 1; j <= m; j++)
41     {
42         if (i == j)
43             c[i][j] = 0;
44         else
45             c[i][j] = -1;
46     }
47 for (int i = 0; i < m; i++)
48 {
49     cin >> a >> b;
50     cin >> c[a][b];
51     if (c[a][b] < cmin)
52         cmin = c[a][b];
53 }
54 x[1] = 1;
55 flag[1] = true;
56 TRY(2);
57 cout << Smin;
58 }
```

## Bài tập 5: Năm nhuận



```
1 #include <bits/stdc++.h>
2 using namespace std;
3
4 int main(){
5     printf("Ho Va Ten: Brak Lihou\n");
6     printf("MSSV: 20200836\n\n");
7     int n;
8     cin >> n;
9     bool found = false;
10    while(n--){
11        int a;
12        cin >> a;
13        if ((a % 4 == 0 && a % 100 != 0) || (a % 400 == 0))
14            found = true;
15        cout << "Yes";
16        return 0;
17    }
18
19 }
20
21 cout << "No";
22 }
```

```
Ho Va Ten: Brak Lihou
MSSV: 20200836

1
2
No

Process exited after 2.974 seconds with return value 0
Press any key to continue . . .
```

## Bài tập 6: Tổng kết

The image shows two screenshots of a C++ IDE (Dev-C++ 5.11) with the TDM-GCC 4.9.2 64-bit Release compiler. The top screenshot shows a program that uses `printf` and `while` loops to process input. The bottom screenshot shows a more complex version of the program using `cout` and `if` statements.

**Top Screenshot Code:**

```

1 #include <bits/stdc++.h>
2 using namespace std;
3
4 char cal(double a){
5     if (a < 4) return 'F';
6     if (4 <= a && a < 5.5) return 'D';
7     if (5.5 <= a && a < 7) return 'C';
8     if (7 <= a && a < 8.5) return 'B';
9     if (8.5 <= a) return 'A';
10 }
11
12 int main(){
13     printf("Ho Va Ten: Brak Lihou\n");
14     printf("MSSV: 20200836\n\n");
15     public int __cdecl printf(const char * __restrict__, ...)
16     cin >> n;
17     int A = 0, B = 0, C = 0, D = 0, F = 0;
18     while(n--){
19         int a;
20         cin >> a;
21         char calA = cal(a);
22
23         if (calA == 'A') ++A;
24         if (calA == 'B') ++B;

```

**Bottom Screenshot Code:**

```

8     if (7 <= a && a < 8.5) return 'B';
9     if (8.5 <= a) return 'A';
10 }
11
12 int main(){
13     printf("Ho Va Ten: Brak Lihou\n");
14     printf("MSSV: 20200836\n\n");
15     int n;
16     cin >> n;
17     int A = 0, B = 0, C = 0, D = 0, F = 0;
18     while(n--){
19         int a;
20         cin >> a;
21         char calA = cal(a);
22
23         if (calA == 'A') ++A;
24         if (calA == 'B') ++B;
25         if (calA == 'C') ++C;
26         if (calA == 'D') ++D;
27         if (calA == 'F') ++F;
28     }
29     cout << A << " " << B << " " << C << " " << D << " " << F;
30 }

```

## Bài tập 7: Chia tiền

```

1 #include <bits/stdc++.h>
2 using namespace std;
3 int main(){
4     printf("Ho Va Ten: Brak Lihou\n");
5     printf("MSSV: 20200836\n");
6     public int __cdecl printf(const char * __restrict __Format, ...)
7     cin >> n;
8     int ans = 0, sum = 0;
9     while(n--){
10         int k, t;
11         cin >> k >> t;
12
13         if(t == 1){
14             while(k--){
15                 int a;
16                 cin >> a;
17                 sum += a;
18                 ans = max(ans, -sum);
19             }
20         } else {
21             while(k--){
22                 int a;
23                 cin >> a;
24                 sum -= a;
25                 ans = max(ans, -sum);
26             }
27         }
28     }
29     cout << ans;
30 }

```

The screenshot shows the execution of the program. The output window displays the following text:

```

Ho Va Ten: Brak Lihou
MSSV: 20200836

```

The process exited after 4.431 seconds with return value 0. Press any key to continue . . .

## Bài tập 8: Cắt hình chữ nhật

## Báo Cao Thực hành buổi 5-Brak Lihou (20200836)

```
#include <bits/stdc++.h>

using namespace std;

int w, h;
int table[601][601];

void init() {
    for (int i=1; i<=h; i++) {
        for (int j=1; j<=w; j++) {
            table[i][j] = i*j;
        }
    }
}

int main()
{
    ios::sync_with_stdio(false);
    cin.tie();

    //int w, h, m;
    int m;
    cin >> w >> h;
    cin >> m;

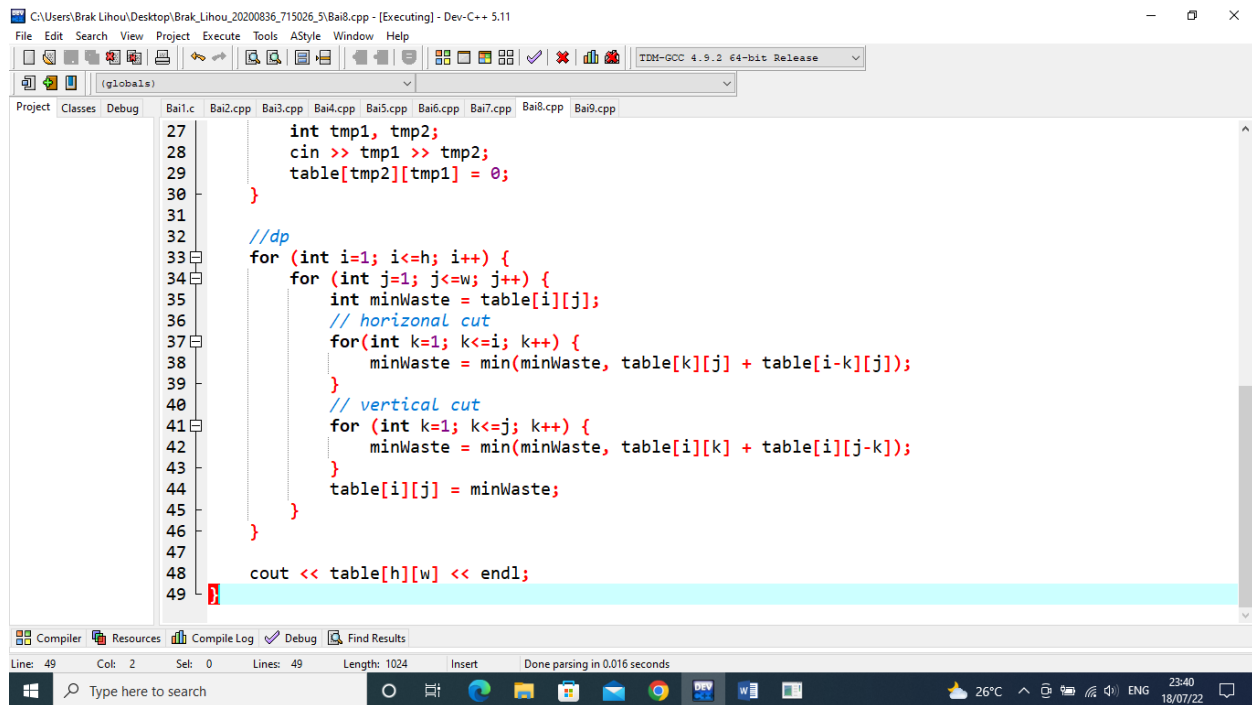
    int m;
    cin >> w >> h;
    cin >> m;

    init();
    for (int i=0; i<m; i++) {
        int tmp1, tmp2;
        cin >> tmp1 >> tmp2;
        table[tmp2][tmp1] = 0;
    }

    //dp
    for (int i=1; i<=h; i++) {
        for (int j=1; j<=w; j++) {
            int minWaste = table[i][j];
            // horizontal cut
            for(int k=1; k<=i; k++) {
                minWaste = min(minWaste, table[k][j] + table[i-k][j]);
            }
            // vertical cut
            for (int k=1; k<=j; k++) {
                minWaste = min(minWaste, table[i][k] + table[i][j-k]);
            }
            table[i][j] = minWaste;
        }
    }
}
```

Process exited after 7.153 seconds with return value 0  
Press any key to continue . . .

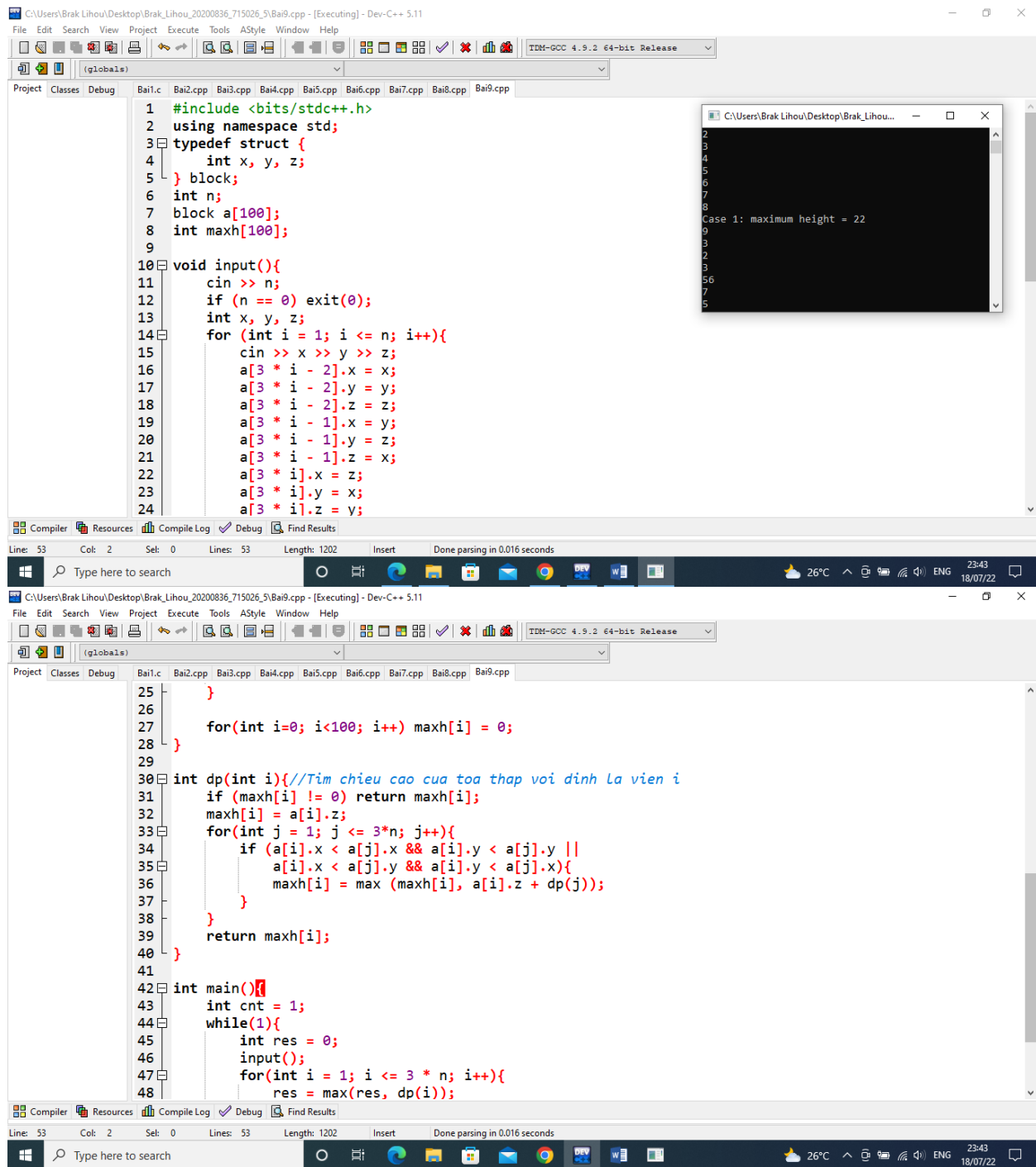
## Báo Cao Thực hành buổi 5-Brak Lihou (20200836)



```
27     int tmp1, tmp2;
28     cin >> tmp1 >> tmp2;
29     table[tmp2][tmp1] = 0;
30 }
31
32 //dp
33 for (int i=1; i<=h; i++) {
34     for (int j=1; j<=w; j++) {
35         int minWaste = table[i][j];
36         // horizontal cut
37         for(int k=1; k<=i; k++) {
38             minWaste = min(minWaste, table[k][j] + table[i-k][j]);
39         }
40         // vertical cut
41         for (int k=1; k<=j; k++) {
42             minWaste = min(minWaste, table[i][k] + table[i][j-k]);
43         }
44         table[i][j] = minWaste;
45     }
46 }
47
48 cout << table[h][w] << endl;
49 }
```

## Bài tập 9: Xây tháp

## Báo Cao Thực hành buổi 5-Brak Lihou (20200836)

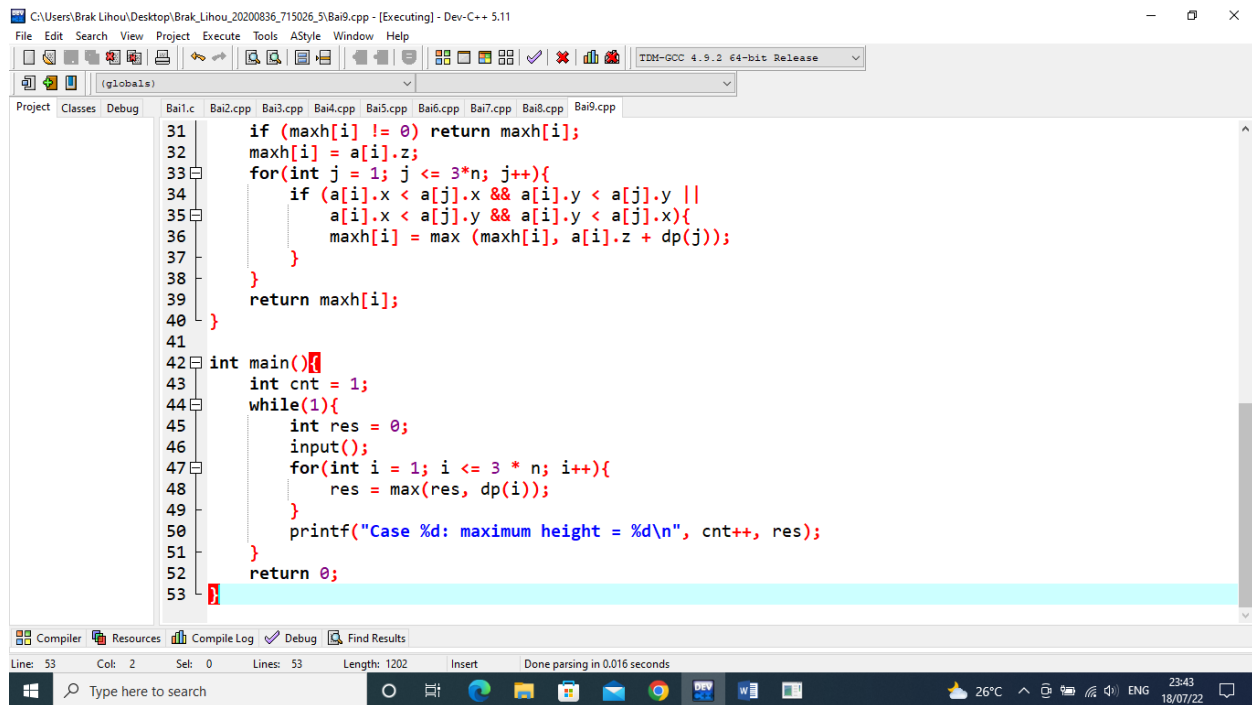


```
1 #include <bits/stdc++.h>
2 using namespace std;
3 typedef struct {
4     int x, y, z;
5 } block;
6 int n;
7 block a[100];
8 int maxh[100];
9
10 void input(){
11     cin >> n;
12     if (n == 0) exit(0);
13     int x, y, z;
14     for (int i = 1; i <= n; i++){
15         cin >> x >> y >> z;
16         a[3 * i - 2].x = x;
17         a[3 * i - 2].y = y;
18         a[3 * i - 2].z = z;
19         a[3 * i - 1].x = y;
20         a[3 * i - 1].y = z;
21         a[3 * i - 1].z = x;
22         a[3 * i].x = z;
23         a[3 * i].y = x;
24         a[3 * i].z = y;
25     }
26
27     for(int i=0; i<100; i++) maxh[i] = 0;
28 }
29
30 int dp(int i){//Tim chieu cao cua toa thap voi dinh la vien i
31     if (maxh[i] != 0) return maxh[i];
32     maxh[i] = a[i].z;
33     for(int j = 1; j <= 3*n; j++){
34         if (a[i].x < a[j].x && a[i].y < a[j].y ||
35             a[i].x < a[j].y && a[i].y < a[j].x){
36             maxh[i] = max (maxh[i], a[i].z + dp(j));
37         }
38     }
39     return maxh[i];
40 }
41
42 int main(){
43     int cnt = 1;
44     while(1){
45         int res = 0;
46         input();
47         for(int i = 1; i <= 3 * n; i++){
48             res = max(res, dp(i));
49         }
50     }
51 }
```

```
case 1: maximum height = 22
```



## Báo Cao Thực hành buổi 5-Brak Lihou (20200836)



```
C:\Users\Brak Lihou\Desktop\Brak_Lihou_20200836_715026_5\Bai9.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(global)
Project Classes Debug Bai1.c Bai2.cpp Bai3.cpp Bai4.cpp Bai5.cpp Bai6.cpp Bai7.cpp Bai8.cpp Bai9.cpp
31 | if (maxh[i] != 0) return maxh[i];
32 | maxh[i] = a[i].z;
33 | for(int j = 1; j <= 3*n; j++){
34 |     if (a[i].x < a[j].x && a[i].y < a[j].y ||
35 |         a[i].x < a[j].y && a[i].y < a[j].x){
36 |         maxh[i] = max (maxh[i], a[i].z + dp(j));
37 |     }
38 | }
39 | return maxh[i];
40 | }
41 |
42 | int main()
43 | {
44 |     int cnt = 1;
45 |     while(1){
46 |         int res = 0;
47 |         input();
48 |         for(int i = 1; i <= 3 * n; i++){
49 |             res = max(res, dp(i));
50 |         }
51 |         printf("Case %d: maximum height = %d\n", cnt++, res);
52 |     }
53 |     return 0;
54 | }
```

Compiler Resources Compile Log Debug Find Results

Line: 53 Col: 2 Sel: 0 Lines: 53 Length: 1202 Insert Done parsing in 0.016 seconds

Type here to search

26°C 23:43 18/07/22