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DAA Mini Project.cpp
  Open ~
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            +
                                                                1 // CPP Program to multiply two matrix using pthreads
 2 #include <bits/stdc++.h>
 3 using namespace std;
 5 // maximum size of matrix
 6 #define MAX 4
 8 // maximum number of threads
 9 #define MAX THREAD 4
10
11 int matA[MAX][MAX];
12 int matB[MAX][MAX];
13 int matC[MAX][MAX];
14 int step i = 0;
15
16 void* multi(void* arg)
17 {
       int i = step i++; //i denotes row number of resultant matC
18
19
      for (int j = 0; j < MAX; j++)</pre>
20
       for (int k = 0; k < MAX; k++)</pre>
21
22
           matC[i][j] += matA[i][k] * matB[k][j];
23 }
24
25 // Driver Code
26 int main()
27 {
28
       // Generating random values in matA and matB
29
       for (int i = 0; i < MAX; i++) {</pre>
           for (int j = 0; j < MAX; j++) {</pre>
30
               matA[i][j] = rand() % 10;
31
32
               matB[i][j] = rand() % 10;
33
           }
       }
34
35
36
       // Displaying matA
       cout << endl
37
           << "Matrix A" << endl;
38
39
       for (int i = 0; i < MAX; i++) {</pre>
           for (int j = 0; j < MAX; j++)</pre>
40
                cout << matA[i][j] << " ";
41
42
           cout << endl;
43
       }
44
45
       // Displaying matB
       cout << endl
46
           << "Matrix B" << endl;
47
48
       for (int i = 0; i < MAX; i++) {</pre>
49
           for (int j = 0; j < MAX; j++)</pre>
50
                cout << matB[i][j] << " ";
51
           cout << endl;
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                                                           \equiv
                                                                    26 int main()
27 {
28
       // Generating random values in matA and matB
29
       for (int i = 0; i < MAX; i++) {</pre>
           for (int j = 0; j < MAX; j++) {</pre>
30
31
                matA[i][j] = rand() % 10;
                matB[i][j] = rand() % 10;
32
33
           }
34
       }
35
36
       // Displaying matA
37
       cout << endl
           << "Matrix A" << endl;
38
39
       for (int i = 0; i < MAX; i++) {</pre>
           for (int j = 0; j < MAX; j++)</pre>
40
41
                cout << matA[i][j] << " ";
42
           cout << endl;
43
       }
44
45
       // Displaying matB
       cout << endl
46
           << "Matrix B" << endl;
47
       for (int i = 0; i < MAX; i++) {</pre>
48
49
           for (int j = 0; j < MAX; j++)</pre>
50
                cout << matB[i][j] << " ";
51
           cout << endl;
52
       }
53
54
       // declaring four threads
55
       pthread t threads[MAX THREAD];
56
57
       // Creating four threads, each evaluating its own part
       for (int i = 0; i < MAX_THREAD; i++) {</pre>
58
59
           int* p;
60
           pthread create(&threads[i], NULL, multi, (void*)(p));
61
       }
62
63
       // joining and waiting for all threads to complete
       for (int i = 0; i < MAX THREAD; i++)</pre>
64
65
           pthread join(threads[i], NULL);
66
67
       // Displaying the result matrix
68
       cout << endl
           << "Multiplication of A and B" << endl;
69
70
       for (int i = 0; i < MAX; i++) {</pre>
           for (int j = 0; j < MAX; j++)</pre>
71
                cout << matC[i][j] << " ";
72
73
           cout << endl;
74
75
       return 0;
76 }
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ubuntu@linux:~$ g++ -pthread DAA_Mini_Project.cpp
DAA_Mini_Project.cpp: In function 'void* multi(void*)':
DAA_Mini_Project.cpp:23:1: warning: no return statement in function r
eturning non-void [-Wreturn-type]
  23 | }
ubuntu@linux:~$ ./a.out
Matrix A
3 7 3 6
9 2 0 3
0 2 1 7
2 2 7 9
Matrix B
6 5 5 2
1 7 9 6
6 6 8 9
0 3 5 2
Multiplication of A and B
43 100 132 87
56 68 78 36
8 41 61 35
56 93 129 97
ubuntu@linux:~$
```