

6. Write a C program to implement the deadlock detection algorithm for a system with 3 processes and 3 resource instances and the resource matrices are given below.

Max Matrix

Allocation Matrix

3 6 8 3 3 3

4 3 3 2 0 3

3 4 4 1 2 4

The number of available resources is [1,2,0]. Determine if the system is in a deadlock state and identify the deadlocked processes.

C:\Users\hp\Documents\deadlock detection.c - [Executing] - Dev-C++ 5.11

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TDM-GCC 4.9.2 64-bit Release

(globals)

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```
1 #include <stdio.h>
2
3 #define N 3
4
5 int main() {
6     int i, j;
7     int available[N] = {3, 2, 4};
8     int max[N][3] = {{1, 1, 1}, {4, 1, 1}, {1, 4, 4}};
9     int allocation[N][3] = {{1, 1, 1}, {1, 1, 1}, {1, 1, 1}};
10    int need[N][3];
11    int work[N];
12    int finish[N] = {0};
13    int deadlock = 0;
14
15    for (i = 0; i < N; i++) {
16        for (j = 0; j < 3; j++) {
17            need[i][j] = max[i][j] - allocation[i][j];
18        }
19    }
20
21    for (i = 0; i < N; i++) {
22        work[i] = available[i];
23    }
24
25    for (i = 0; i < N; i++) {
26        if (!finish[i]) {
27            int safe = 1;
28            for (j = 0; j < 3; j++) {
29                if (need[i][j] > work[j]) {
30                    safe = 0;
31                    break;
32                }
33            }
34            if (safe) {
35                finish[i] = 1;
36                for (j = 0; j < 3; j++) {
37                    work[j] += allocation[i][j];
38                }
39                deadlock = 0;
40            }
41        }
42    }
43
44    if (deadlock) {
45        printf("System is in deadlock state.\n");
46        printf("Deadlocked processes: ");
47        for (i = 0; i < N; i++) {
48            if (!finish[i]) {
49                printf("%d ", i);
50            }
51        }
52        printf("\n");
53    } else {
54        printf("System is not in deadlock state.\n");
55    }
56    return 0;
57 }
```

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Line: 1 Col: 1 Sel: 0 Lines: 58 Length: 1407 Insert Done parsing in 0.015 seconds

C:\Users\hpl\Documents\deadlock-detection.exe

System is in deadlock state.
Deadlocked processes: 0 1 2

Process exited after 0.04982 seconds with return value 0
Press any key to continue . . .

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IPL Game



ENG

13:20

04-05-2023

