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.
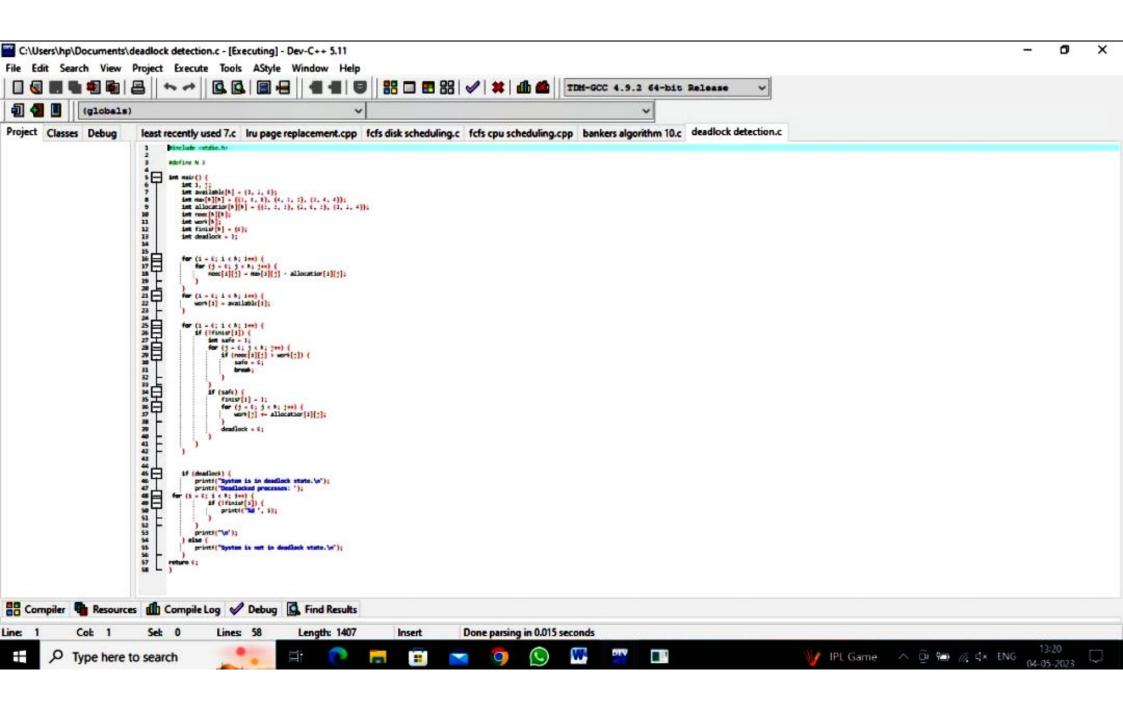
Max Matrix   Allocation Matrix

3 6 83 3 3

4 3 32 0 3

3 4 41 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.

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TDM-GCC 4.9.2 64-bit Release

(globals)

Project   Classes   Debug | least recently used 7.c   lru page replacement.cpp   fcfs disk scheduling.c   fcfs cpu scheduling.cpp   bankers algorithm 10.c   deadlock detection.c

```c
#include <stdio.h>

#define N 3

int main() {
    int i, j;
    int available[N] = {3, 3, 2};
    int max[N][N] = {{7, 5, 3}, {4, 7, 2}, {2, 4, 4}};
    int allocation[N][N] = {{2, 3, 1}, {2, 4, 2}, {3, 2, 4}};
    int need[N][N];
    int work[N];
    int finish[N] = {0};
    int deadlock = 1;

    for (i = 0; i < N; i++) {
        for (j = 0; j < N; j++) {
            need[i][j] = max[i][j] - allocation[i][j];
        }
    }
    for (i = 0; i < N; i++) {
        work[i] = available[i];
    }

    for (i = 0; i < N; i++) {
        if (!finish[i]) {
            int safe = 1;
            for (j = 0; j < N; j++) {
                if (need[i][j] > work[j]) {
                    safe = 0;
                    break;
                }
            }
            if (safe) {
                finish[i] = 1;
                for (j = 0; j < N; j++) {
                    work[j] += allocation[i][j];
                }
                deadlock = 0;
            }
        }
    }

    if (deadlock) {
        printf("System is in deadlock state.\n");
        printf("Deadlocked processes: ");
        for (i = 0; i < N; i++) {
            if (!finish[i]) {
                printf("%d ", i);
            }
        }
        printf("\n");
    } else {
        printf("System is not in deadlock state.\n");
    }
    return 0;
}
```

Compiler   Resources   Compile Log   Debug   Find Results

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

ystem is in deadlock state.
eadlocked processes: 0 1 2

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ress any key to continue . . . _