WEEK 7

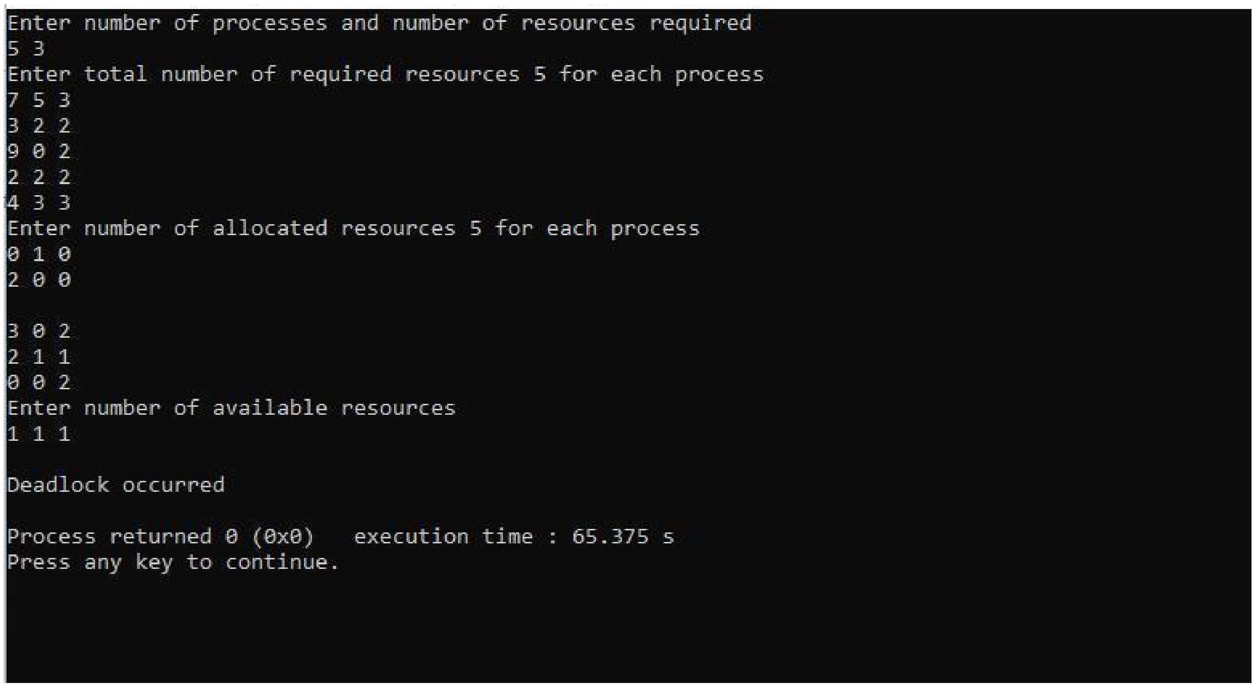
Write a C program to simulate deadlock detection.

CODE:

```
#include <stdio.h>

int main() {
    int n, m, all[10][10], req[10][10], ava[10], need[10][10];
    int i, j, k, flag[10], prev[10], c, count = 0;

    printf("Enter number of processes and number of resources
required \n");

    scanf("%d %d", &n, &m);

    printf("Enter total number of required resources %d for each
process\n", n);

    for (i = 0; i < n; i++)

        for (j = 0; j < m; j++)

            scanf("%d", &req[i][j]);

    printf("Enter number of allocated resources %d for each process\n",
    n); for (i = 0; i < n; i++)

        for (j = 0; j < m; j++)

            scanf("%d", &all[i][j]);
```

```
printf("Enter number of available resources
\n"); for (i = 0; i < m; i++)
    scanf("%d", &ava[i]);

for (i = 0; i < n; i++)
    for (j = 0; j < m; j++)
        need[i][j] = req[i][j] - all[i][j];
for (i = 0; i < n; i++)
    flag[i] = 1;

k = 1;

while (k) {
    k = 0;

    for (i = 0; i < n; i++) {
        if (flag[i]) {
            c = 0;
            for (j = 0; j < m; j++) {
                if (need[i][j] <= ava[j]) {
                    c++;
                }
            }
            if (c == m) {
                for (j = 0; j < m; j++) {
                }
                for (j = 0; j < m; j++) {
                    ava[j] += all[i][j];
                    all[i][j] = 0;
                }

                flag[i] = 0;
                count++;
            }
        }
    }

    for (i = 0; i < n; i++) {
        if (flag[i] != prev[i]) {
            k = 1;
            break;
        }
    }

    for (i = 0; i < n; i++) {
        prev[i] = flag[i];
    }
}

if (count == n) {
    printf("\nNo deadlock");
} else {
    printf("\nDeadlock occurred \n");
    }
    return 0;
}
```

OUTPUT:



```
Enter number of processes and number of resources required
5 3
Enter total number of required resources 5 for each process
7 5 3
3 2 2
9 0 2
2 2 2
4 3 3
Enter number of allocated resources 5 for each process
0 1 0
2 0 0

3 0 2
2 1 1
0 0 2
Enter number of available resources
1 1 1

Deadlock occurred

Process returned 0 (0x0)   execution time : 65.375 s
Press any key to continue.
```