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# PROGRAM TO IMPLEMENT DEADLOCK DETECTION ALGORITHM

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**CODE:**

#include<stdio.h>

#include<stdlib.h>

#include<curses.h>

int max[100][100];

int alloc[100][100];

int need[100][100];

int avail[100];

int n, r;

void input();

void show();

void cal();

int main() {

int i, j;

printf("\*\*\*\*\*\*\*\*\*\* Deadlock Detection Algo \*\*\*\*\*\*\*\*\*\*\*\*\n");

input();

show();

cal();

getch();

return 0;

}

void input() {

int i, j;

printf("Enter the no of Processes\t");

scanf("%d", & n);

printf("Enter the no of resource instances\t");

scanf("%d", & r);

printf("Enter the Max Matrix\n");

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

for (j = 0; j < r; j++) {

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

}

}

printf("Enter the Allocation Matrix\n");

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

for (j = 0; j < r; j++) {

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

}

}

printf("Enter the available Resources\n");

for (j = 0; j < r; j++) {

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

}

}

void show() {

int i, j;

printf("Process\t Allocation\t Max\t Available\t");

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

printf("\nP%d\t\t ", i + 1);

for (j = 0; j < r; j++) {

printf("%d ", alloc[i][j]);

}

printf("\t\t");

for (j = 0; j < r; j++) {

printf("%d ", max[i][j]);

}

printf("\t\t");

if (i == 0) {

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

printf("%d ", avail[j]);

}

}

}

void cal() {

int finish[100], temp, need[100][100], flag = 1, k, c1 = 0;

int dead[100];

int safe[100];

int i, j;

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

finish[i] = 0;

}

//find need matrix

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

for (j = 0; j < r; j++) {

need[i][j] = max[i][j] - alloc[i][j];

}

}

while (flag) {

flag = 0;

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

int c = 0;

for (j = 0; j < r; j++) {

if ((finish[i] == 0) && (need[i][j] <= avail[j])) {

c++;

if (c == r) {

for (k = 0; k < r; k++) {

avail[k] += alloc[i][j];

finish[i] = 1;

flag = 1;

} //printf("\nP%d",i);

if (finish[i] == 1) {

i = n;

}}}}}}

j = 0;

flag = 0;

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

if (finish[i] == 0) {

dead[j] = i;

j++;

flag = 1;

}

}

if (flag == 1) {

printf("\n\nSystem is in Deadlock and the Deadlock process are\n");

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

printf("P%d\t", dead[i]);

}

} else {

printf("\nNo Deadlock Occur");

}

}

**OUTPUT:**

