DATE: 16/8/23

Write a c program to simulate deadlock detection.

```
#include <stdio.h>
#define MAX_Process 10
#define MAX_Resource 10

int process, resources;
int allocation [MAX_processes] [MAX_Resources];
int max_need [MAX_process] [MAX_Resources];
int available [MAX_Resources];
int marked [MAX_process];
int finished [MAX_processes];

Void initialize () {
printf ("Enter the number of processes:");
Scanf ("%d", & processes);
printf ("Enter the number of resources:");
 Scanf ("%d", & resources);
printf ("Enter the allocation matrix:\n");
  for (int i=0; i< process; i++)
{
   for (int j=0; j< resources; j++) {
    Scanf ("%d", & allocation [i][j]);
   {
  }

Printf ("Enter the max need matrix:\n");
  for (int i=0; i<process; i++)
{
  for (int j=0; j< resources; j++)
   Scanf ("%d", & max [i][j]);
}
```

```
printf("Enter the available resources:\n");
    for(int i=0; i<resources; i++)
    {
    scanf("%d", &available[i]);
    }
}
void detectdeadlock()
{
 for(int i=0; i<processes; i++)
{
 marked[i]=0;
 finished[i]=0;
}
 int marked_count=0;
 while(marked_count<processes)
{
 int found=0;
  for(int i=0; i<processes; i++)
{
 if(!finished[i] && !marked[i])
{
 int can_allocate=1;
for(int j=0; j<resources; j++)
{
if[max_need[i][j]-allocation[i][j]>available[i];
{
 can_allocate=0;
   break;
 {
 {
```

```
if(can_allocate)
{
marked[i]=1;
marked_count++;
found=1;
for(int j=0;j<resources;j++)
{
available[j]+=allocation[i][j];}}
}
break;
{
}
}
if(!found){
    printf("Deadlock detected! processes involved in
        deadlock:\n");
for(int i=0;i<process;i++)
{
  if(!finished[i]&&!marked[i]){

printf("process %d\n",i);
}}
return;
}}
printf("No deadlock detected:\n");
}
int main()
{
initialize();
detectDeadlock();
return();
}
```

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Output

Enter the no. of processes : 5
Enter the no. of resources : 3
Enter the allocation matrix :

0 1 0
2 0 0
3 0 2
2 1 1
0 0 2

Enter the max need matrix :

7 5 3
3 2 2
9 0 2
2 2 2
4 3 3

Enter the available resources

3 3 2

No deadlock detected

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```
Enter the number of the process and resources: 3 3
Enter the total amount of each resource available: 1 2 4
Enter the request matrix:
1 0 2
2 0 9
1 1 0
Enter the allocation matrix:
0 0 1
1 3 6
9 5 1

No Deadlock detected
```