# /*deadlock detection*/

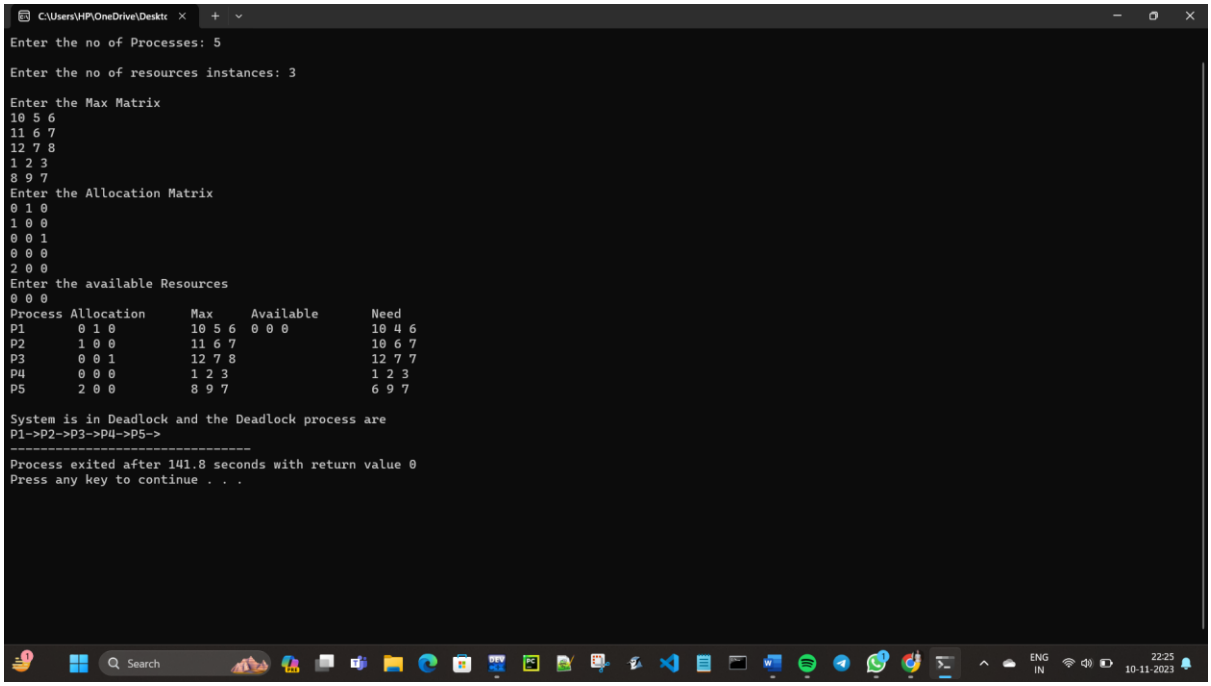
```
#include<stdio.h>
int max[100][100];
int alloc[100][100];
int need[100][100];
int avail[100];
int n,r;
void input();
void show();
void cal();
int main()
{
int i,j;
printf("**Deadlock Detection Algo**\n");
input();
show();
cal();
return 0;
}
void input()
{
int i,j;
printf("Enter the no of Processes: ");
scanf("%d",&n);
printf("\nEnter the no of resources instances: ");
scanf("%d",&r);
printf("\nEnter 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\tAllocation\tMax\tAvailable\tNeed\t");
for(i=0;i<n;i++)
{
printf("\nP%d\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");
if(i==0)
{
for(j=0;j<r;j++)
printf("%d ",avail[j]);
}
printf("\t\t");
for(j=0;j<r;j++)
{
printf("%d ",max[i][j]-alloc[i][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->",i+1);//printf("P%d\t",dead[i]);
}
}
else
{
printf("\nNo Deadlock Occur");
}
}
```


C:\Users\HP\OneDrive\Desktc
Enter the no of Processes: 5
Enter the no of resources instances: 3
Enter the Max Matrix
10 5 6
11 6 7
12 7 8
1 2 3
8 9 7
Enter the Allocation Matrix
0 1 0
1 0 0
0 0 1
0 0 0
2 0 0
Enter the available Resources
0 0 0
Process Allocation Max Available Need
P1 0 1 0 10 5 6 0 0 0 10 4 6
P2 1 0 0 11 6 7 10 6 7
P3 0 0 1 12 7 8 12 7 7
P4 0 0 0 1 2 3 1 2 3
P5 2 0 0 8 9 7 6 9 7
System is in Deadlock and the Deadlock process are
P1->P2->P3->P4->P5->
Process exited after 141.8 seconds with return value 0
Press any key to continue . . .
Search
ENG
IN
22:25
10-11-2023