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// Implementation of Bankers Algorithm

#include<stdio.h>
#include<conio.h>

void main()
{
 int available[5],max[5][5],allocation[5][5],need[5][5],seq[5];
 int i,j,m,n,finish[5]={0},work[5],s=0,c=0,p=0,add=0,k;
 clrscr();
 printf("\n Enter the no of resourses:");
 scanf("%d",&n);
 printf("\n Enter the no of process:");
 scanf("%d",&m);
 printf("\n Enter the allocation matrix :\n\n");

 for(i=0;i<m;i++)
 for(j=0;j<n;j++)
 scanf("%d",&allocation[i][j]);
 printf("\n Enter the maximum demand matrix :\n\n");

 for(i=0;i<m;i++)
 for(j=0;j<n;j++)
 {
  scanf("%d",&max[i][j]);
  need[i][j]=max[i][j]-allocation[i][j];
 }
 getch();   // clrscr();
 printf("\n Enter the available resorces\n");

 for(i=0;i<n;i++)
 {
  printf("\n Enter the resourse:%d:",i);
  scanf("%d",&available[i]);
  work[i]=available[i];
 }
 do
 {
  add=0;

  for(i=0;i<m;i++)
  {
   if(finish[i]==0)
   {
    c=0;
    for(j=0;j<n;j++)
    if(need[i][j]<=work[j])
    c++;
    if(c==j)
    {
     for(j=0;j<n;j++)
     work[j]=work[j]+allocation[i][j];
     add=1;
     finish[i]=1;
     seq[p++]=i;
```

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    }

}

}

  if(p==m)
  {
   s=1;
   printf("\n system is in safe state");
   printf("\n\n The sequence of process is to be executed :");
   for(j=0;j<m;j++)
   printf("P%d ->",seq[j]);
  }
  }
  while(!s&&add);
  if(add==0&&s!=1)
  printf("\n system is not in safe state");
  getch();
}
```