#include<stdio.h>

#include<conio.h>

#include<string.h>

void main()

{

int alloc[10][10],max[10][10];

int avail[10],work[10],total[10];

int i,j,k,n,need[10][10];

int m;

int count=0,c=0;

char finish[10];

clrscr();

printf("Enter the no. of processes and resources:");

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

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

finish[i]='n';

printf("Enter the claim matrix:\n");

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

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

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

printf("Enter the allocation matrix:\n");

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

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

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

printf("Resource vector:");

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

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

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

avail[i]=0; for(i=0;i<n;i++)

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

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

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

work[i]=avail[i];

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

work[j]=total[j]-work[j];

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

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

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

A:

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

{

c=0;

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

if((need[i][j]<=work[j])&&(finish[i]=='n'))

c++;

if(c==m)

{

printf("All the resources can be allocated to Process %d", i+1);

printf("\n\nAvailable resources are:");

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

{

work[k]+=alloc[i][k];

printf("%4d",work[k]);

}

printf("\n");

finish[i]='y';

printf("\nProcess %d executed?:%c \n",i+1,finish[i]);

count++;

}

}

if(count!=n)

goto A;

else

printf("\n System is in safe mode");

printf("\n The given state is safe state");

getch();

}

OUTPUT

Enter the no. of processes and resources: 4 3

Enter the claim matrix:

3 2 2

6 1 3

3 1 4

4 2 2

Enter the allocation matrix:

1 0 0

6 1 2

2 1 1

0 0 2

Resource vector:9 3 6

All the resources can be allocated to Process 2

Available resources are: 6 2 3

Process 2 executed?:y

All the resources can be allocated to Process 3 Available resources

are: 8 3 4

Process 3 executed?:y

All the resources can be allocated to Process 4 Available resources

are: 8 3 6

Process 4 executed?:y

All the resources can be allocated to Process 1

Available resources are: 9 3 6

Process 1 executed?:y

System is in safe mode

The given state is safe state.