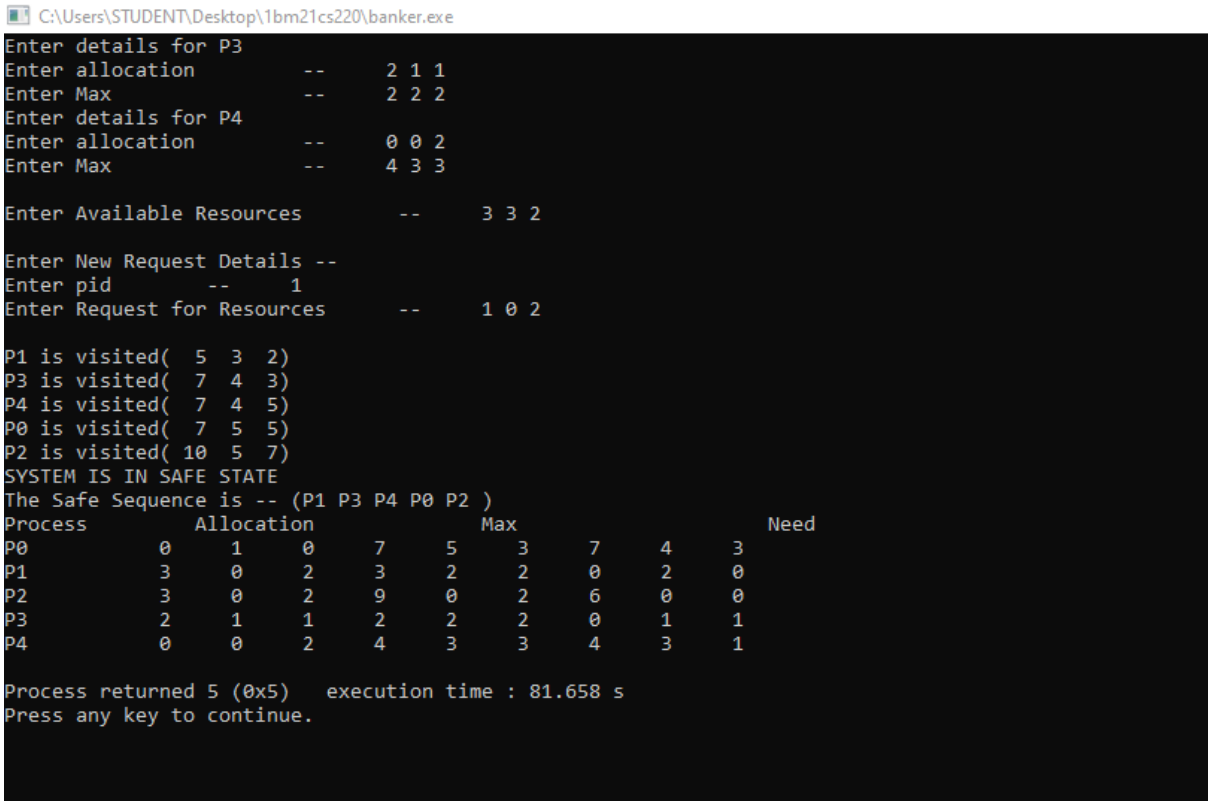


```
#include<stdio.h>
struct file
{
int all[10];
int max[10];
int need[10];
int flag;
};
void main()
{
struct file f[10];
int fl;
int i, j, k, p, b, n, r, g, cnt=0, id, newr;
int avail[10],seq[10];

printf("Enter number of processes -- ");
```

```
scanf("%d",&n);
printf("Enter number of resources -- ");
scanf("%d",&r);
for(i=0;i<n;i++)
{
printf("Enter details for P%d",i);
printf("\nEnter allocation\t -- \t");
for(j=0;j<r;j++)
scanf("%d",&f[i].all[j]);
printf("Enter Max\t\t -- \t");
for(j=0;j<r;j++)
scanf("%d",&f[i].max[j]);
f[i].flag=0;
 }
 printf("\nEnter Available Resources\t -- \t");
 for(i=0;i<r;i++)
 scanf("%d",&avail[i]);
 printf("\nEnter New Request Details -- ");
 printf("\nEnter pid \t -- \t");
 scanf("%d",&id);
 printf("Enter Request for Resources \t -- \t");
 for(i=0;i<r;i++)
 {
scanf("%d",&newr);
f[id].all[i] += newr;
avail[i]=avail[i] - newr;
 }
 for(i=0;i<n;i++)
 {
 for(j=0;j<r;j++)
 {
```

```
f[i].need[j]=f[i].max[j]-f[i].all[j];
if(f[i].need[j]<0)
f[i].need[j]=0;
}
}
cnt=0;
fl=0;
while(cnt!=n)
{
g=0;
for(j=0;j<n;j++)
{
if(f[j].flag==0)
{
b=0;
for(p=0;p<r;p++)
{
if(avail[p]>=f[j].need[p])
b=b+1;
else
b=b-1;
}
if(b==r)
{
printf("\nP%d is visited",j);
seq[fl++]=j;
f[j].flag=1;
for(k=0;k<r;k++)
avail[k]=avail[k]+f[j].all[k];
cnt=cnt+1;
printf("(");
```

```
for(k=0;k<r;k++)
printf("%3d",avail[k]);
printf(")");
g=1;
}
}
}
if(g==0)
{
printf("\n REQUEST NOT GRANTED -- DEADLOCK OCCURRED");
printf("\n SYSTEM IS IN UNSAFE STATE");
goto y;
}
}
printf("\nSYSTEM IS IN SAFE STATE");
printf("\nThe Safe Sequence is -- (");
for(i=0;i<fl;i++)
printf("P%d ",seq[i]);
printf(")");
y: printf("\nProcess\t\tAllocation\t\tMax\t\t\tNeed\n");
for(i=0;i<n;i++)
{
printf("P%d\t",i);
for(j=0;j<r;j++)
printf("%6d",f[i].all[j]);
for(j=0;j<r;j++)
printf("%6d",f[i].max[j]);
for(j=0;j<r;j++)
printf("%6d",f[i].need[j]);
printf("\n");
}
```

}