```
#include<stdio.h>
int work[3];
int alloc[5][3]={{0,1,0},{2,0,0},{3,0,2},{2,1,1},{0,0,2}};
int max[5][3]={{7,5,3},{3,2,2},{9,0,2},{2,2,2},{4,3,3}};
int avail[3]={3,3,2};
int need[5][3];
int finish[5];
void calculate_need()
{
	for(int i=0;i<5;i++)
	{
		for(int j=0;j<3;j++)
		{
			need[i][j]=max[i][j]-alloc[i][j];
		}
	}

}
int compare(int i)
{
	for(int j=0;j<3;j++)
		if(need[i][j]>work[j])
			return 0;
	return 1;
}
void add(int i)
{
```

```
        for(int j=0;j<3;j++)
                work[j]+=alloc[i][j];
}
void banker()
{

        for(int i=0;i<3;i++)
        {
                work[i]=avail[i];
        }
        while(1)
        {
                int i;
                for( i=0;i<5;i++)
                {
                        if(finish[i]==0 && compare(i)==1)
                        {
                                finish[i]=1;
                                add(i);
                                printf("P%d->",i);
                                break;
                        }
                }
        if(i==5)
        {

                for(int j=0;j<5;j++)
```

```
                {
                        if(finish[j]==0)
                        {
                                printf("Unsafe state");
                                return;
                        }
                }
        printf("safe state");
        return;
        }
  }/*End of while*/
}
void main()
{
        calculate_need();
        banker();
}
```