```c
#include <stdio.h>
int main() {
    int n = 5, m = 4, i, j, k;
    int alloc[5][4] = {
        {4, 0, 0, 1},
        {1, 1, 0, 0},
        {1, 2, 5, 4},
        {0, 6, 3, 3},
        {0, 2, 1, 2}
    };
    int max[5][4] = {
        {6, 0, 1, 2},
        {1, 7, 5, 0},
        {2, 3, 5, 6},
        {1, 6, 5, 3},
        {1, 6, 5, 6}
    };
    int avail[4] = {3, 2, 1, 1};
    int need[5][4];
    int f[5] = {0};
    int ans[5], ind = 0;
    for (i = 0; i < n; i++) {
        for (j = 0; j < m; j++) {
            need[i][j] = max[i][j] - alloc[i][j];
        }
    }
    int y = 0;
    for (k = 0; k < n; k++) {
        for (i = 0; i < n; i++) {
            if (f[i] == 0) {
                int flag = 0;
                for (j = 0; j < m; j++) {
                    if (need[i][j] > avail[j]) {
                        flag = 1;
                        break;
                    }
                }
                if (flag == 0) {
                    ans[ind++] = i;
                    for (y = 0; y < m; y++) {
                        avail[y] += alloc[i][y];
                    }
                    f[i] = 1;
                }
            }
        }
    }
    int flag = 1;
    for (i = 0; i < n; i++) {
        if (f[i] == 0) {
            flag = 0;
            break;
```

```c
            }
        }
        if (flag == 0) {
            printf("The following system is not safe\n");
        } else {
            printf("Following is the SAFE Sequence: \n");
            for (i = 0; i < n - 1; i++) {
                printf("P%d -> ", ans[i]);
            }
            printf("P%d\n", ans[n - 1]);
            printf("\nSafe Sequence Matrix (Need Matrix):\n");
            printf("Process\t");
            for (j = 0; j < m; j++) {
                printf("R%d\t", j+1);
            }
            printf("\n");
            for (i = 0; i < n; i++) {
                printf("P%d\t", i);
                for (j = 0; j < m; j++) {
                    printf("%d\t", need[i][j]);
                }
                printf("\n");
            }
        }
    return 0;
}
```



```
                    computer@computer: ~/Desktop

 File  Edit  View  Search  Terminal  Help
(base) computer@computer:~$ cd Desktop
(base) computer@computer:~/Desktop$ touch exp7.c
(base) computer@computer:~/Desktop$ gcc exp7.c
(base) computer@computer:~/Desktop$ ./a.out
Following is the SAFE Sequence:
P0 -> P2 -> P3 -> P4 -> P1


Safe Sequence Matrix (Need Matrix):
Process R1          R2          R3          R4
P0        2          0          1          1
P1        0          6          5          0
P2        1          1          0          2
P3        1          0          2          0
P4        1          4          4          4
```