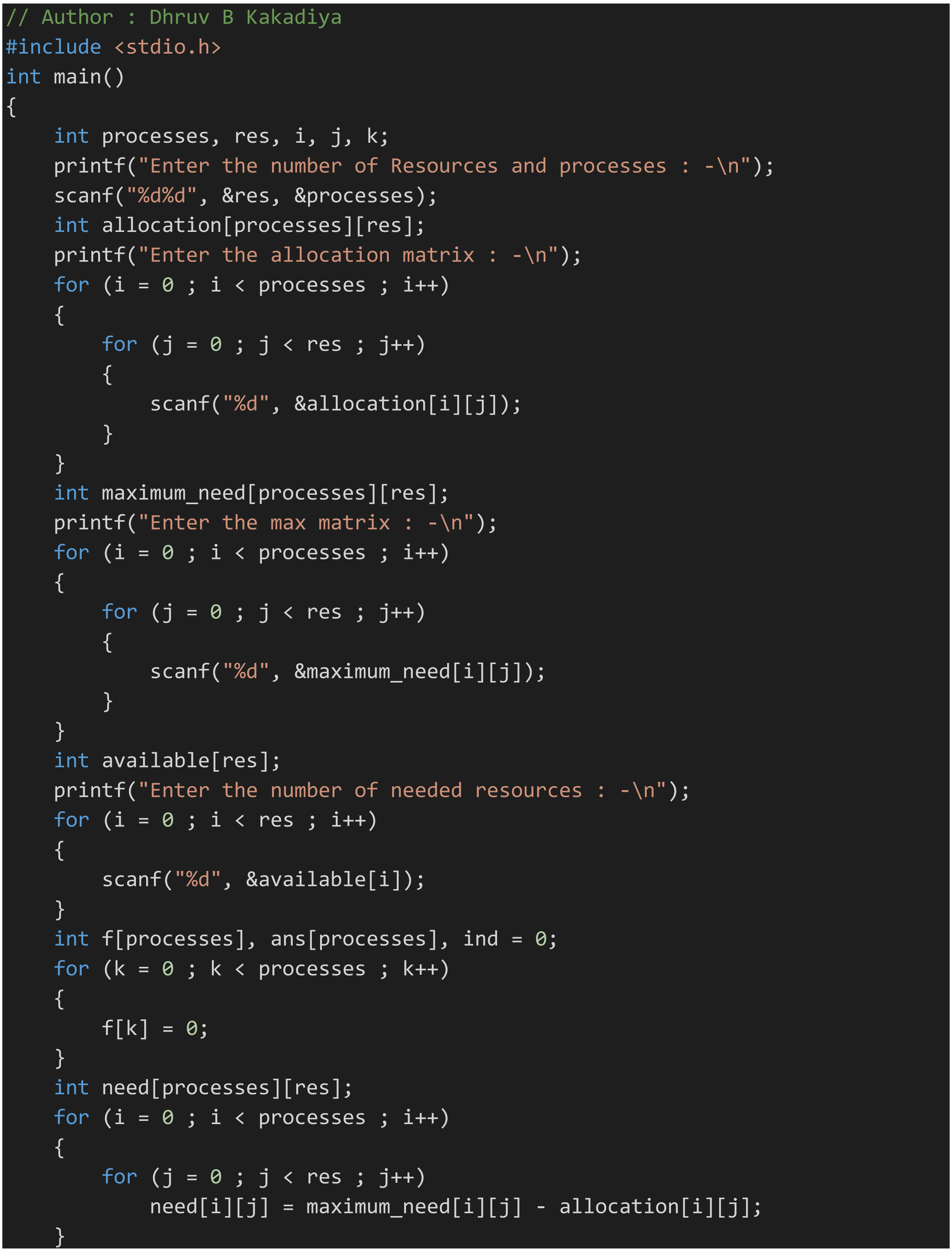
OS_LAB_12_Assignment

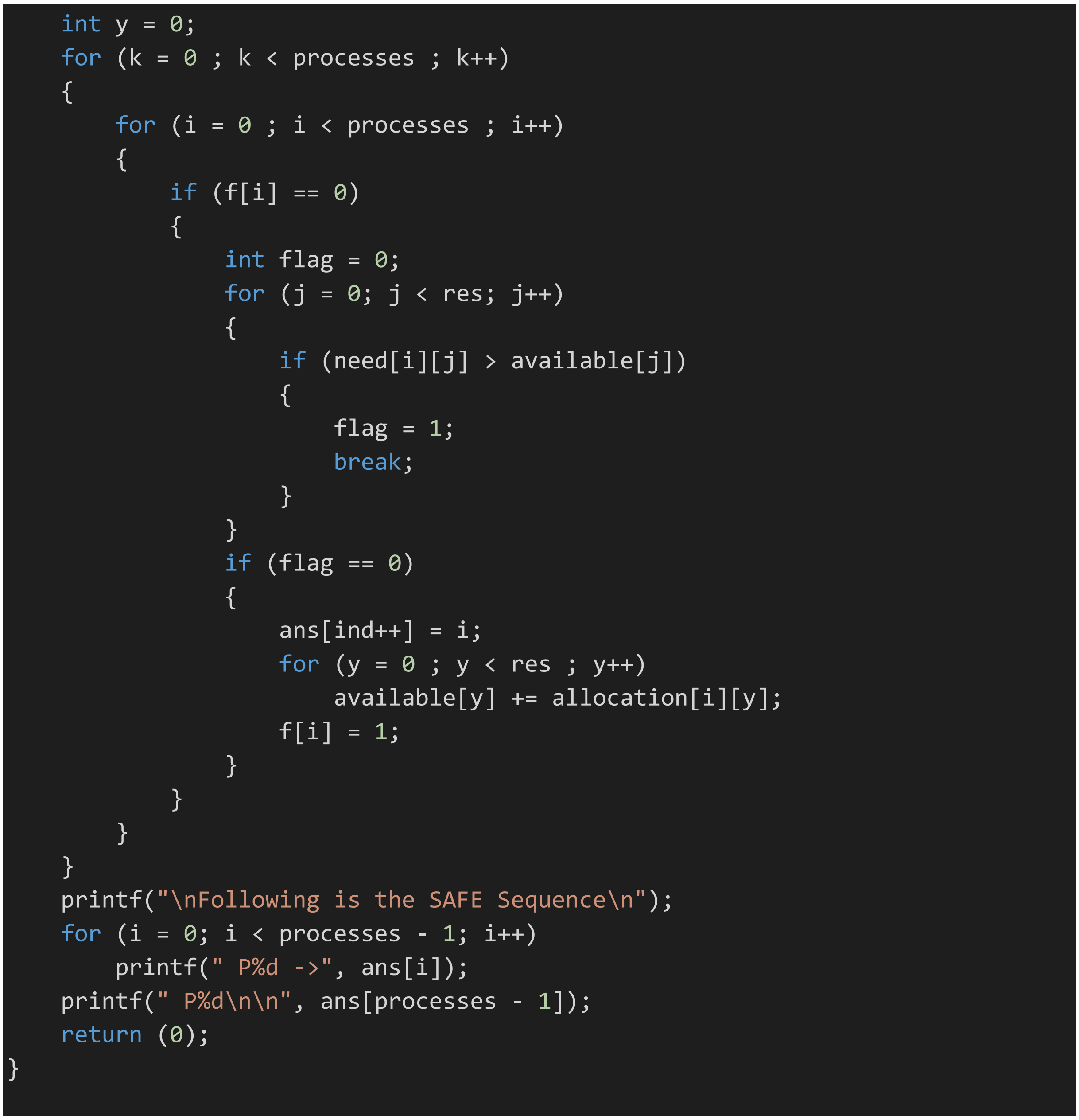
CE_054

Aim :- Implementation of banker's Algorithm in C language.

Code :-

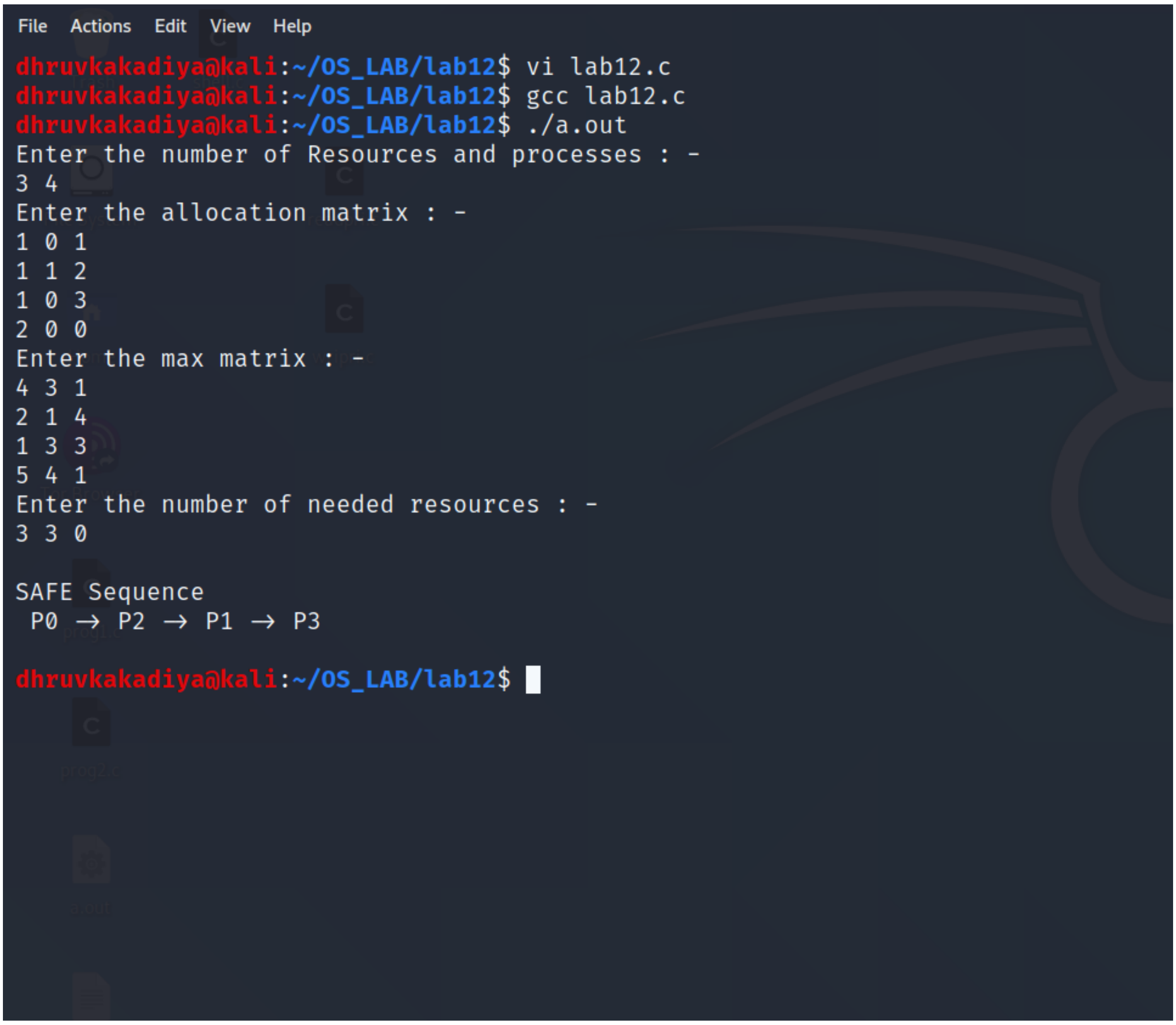


```c
// Author : Dhruv B Kakadiya
#include <stdio.h>
int main()
{
    int processes, res, i, j, k;
    printf("Enter the number of Resources and processes : -\n");
    scanf("%d%d", &res, &processes);
    int allocation[processes][res];
    printf("Enter the allocation matrix : -\n");
    for (i = 0 ; i < processes ; i++)
    {
        for (j = 0 ; j < res ; j++)
        {
            scanf("%d", &allocation[i][j]);
        }
    }
    int maximum_need[processes][res];
    printf("Enter the max matrix : -\n");
    for (i = 0 ; i < processes ; i++)
    {
        for (j = 0 ; j < res ; j++)
        {
            scanf("%d", &maximum_need[i][j]);
        }
    }
    int available[res];
    printf("Enter the number of needed resources : -\n");
    for (i = 0 ; i < res ; i++)
    {
        scanf("%d", &available[i]);
    }
    int f[processes], ans[processes], ind = 0;
    for (k = 0 ; k < processes ; k++)
    {
        f[k] = 0;
    }
    int need[processes][res];
    for (i = 0 ; i < processes ; i++)
    {
        for (j = 0 ; j < res ; j++)
            need[i][j] = maximum_need[i][j] - allocation[i][j];
    }
```



```
    int y = 0;
    for (k = 0 ; k < processes ; k++)
    {
        for (i = 0 ; i < processes ; i++)
        {
            if (f[i] == 0)
            {
                int flag = 0;
                for (j = 0; j < res; j++)
                {
                    if (need[i][j] > available[j])
                    {
                        flag = 1;
                        break;
                    }
                }
                if (flag == 0)
                {
                    ans[ind++] = i;
                    for (y = 0 ; y < res ; y++)
                        available[y] += allocation[i][y];
                    f[i] = 1;
                }
            }
        }
    }
    printf("\nFollowing is the SAFE Sequence\n");
    for (i = 0; i < processes - 1; i++)
        printf(" P%d ->", ans[i]);
    printf(" P%d\n\n", ans[processes - 1]);
    return (0);
}
```

Output :-



```
dhruvkakadiya@kali:~/OS_LAB/lab12$ vi lab12.c
dhruvkakadiya@kali:~/OS_LAB/lab12$ gcc lab12.c
dhruvkakadiya@kali:~/OS_LAB/lab12$ ./a.out
Enter the number of Resources and processes : -
3 4
Enter the allocation matrix : -
1 0 1
1 1 2
1 0 3
2 0 0
Enter the max matrix : -
4 3 1
2 1 4
1 3 3
5 4 1
Enter the number of needed resources : -
3 3 0

SAFE Sequence
 P0 → P2 → P1 → P3

dhruvkakadiya@kali:~/OS_LAB/lab12$ 
```