# TASK 1:

#include <stdio.h>

int main()

{

int n, m;

printf("Enter the number of processes: ");

scanf("%d", &n);

printf("Enter the number of resources: ");

scanf("%d", &m);

int alloc[n][m], max[n][m], avail[m];

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

{

printf("Enter the allocation matrix for process P%d: ", i);

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

{

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

}

}

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

{

printf("Enter the maximum matrix for process P%d: ", i);

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

{

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

}

}

printf("Enter the available resources: ");

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

{

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

}

int f[n], ans[n], ind = 0;

for (int k = 0; k < n; k++)

{

f[k] = 0;

}

int need[n][m];

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

{

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

{

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

}

}

int y = 0;

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

{

for (int j = 0; j < n; j++)

{

if (f[j] == 0)

{

int flag = 0;

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

{

if (need[j][k] > avail[k])

{

flag = 1;

break;

}

}

if (flag == 0)

{

ans[ind++] = j;

for (int y = 0; y < m; y++)

{

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

}

f[j] = 1;

}

}

}

}

int flag = 1;

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

{

if (f[i] == 0)

{

flag = 0;

printf("The following system is not safe");

break;

}

}

if (flag == 1)

{

printf("Following is the SAFE Sequence\n");

for (int i = 0; i < n - 1; i++)

{

printf(" P%d ->", ans[i]);

}

printf(" P%d", ans[n - 1]);

}

return 0;

}

# OUTPUT:

