***NAME : MOHIL MANDAPE***

***MIS NO. : 112316028***

***#include <stdio.h>***

***void inputMatrix(int mat[][10], int row, int col, char \*name) {***

***printf("Enter the %s matrix (%d x %d):\n", name, row, col);***

***for (int i = 0; i < row; i++)***

***for (int j = 0; j < col; j++)***

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

***}***

***void inputArray(int arr[], int size, char \*name) {***

***printf("Enter the %s array (%d):\n", name, size);***

***for (int i = 0; i < size; i++)***

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

***}***

***void calculateNeed(int need[][10], int max[][10], int allocate[][10], int p, int r) {***

***for (int i = 0; i < p; i++)***

***for (int j = 0; j < r; j++)***

***need[i][j] = max[i][j] - allocate[i][j];***

***}***

***int isSafe(int p, int r, int allocate[][10], int max[][10], int available[]) {***

***int need[10][10], finish[10] = {0}, safeSeq[10], work[10];***

***calculateNeed(need, max, allocate, p, r);***

***for (int i = 0; i < r; i++)***

***work[i] = available[i];***

***int count = 0;***

***while (count < p) {***

***int found = 0;***

***for (int i = 0; i < p; i++) {***

***if (!finish[i]) {***

***int j;***

***for (j = 0; j < r; j++)***

***if (need[i][j] > work[j])***

***break;***

***if (j == r) {***

***for (int k = 0; k < r; k++)***

***work[k] += allocate[i][k];***

***safeSeq[count++] = i;***

***finish[i] = 1;***

***found = 1;***

***}***

***}***

***}***

***if (!found) {***

***printf("System is in an unsafe state.\n");***

***return 0;***

***}***

***}***

***printf("System is in a safe state.\nSafe Sequence: ");***

***for (int i = 0; i < p; i++)***

***printf("%d ", safeSeq[i]);***

***printf("\n");***

***return 1;***

***}***

***int main() {***

***int p, r;***

***int allocate[10][10], max[10][10], available[10];***

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

***scanf("%d", &p);***

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

***scanf("%d", &r);***

***inputMatrix(allocate, p, r, "Allocation");***

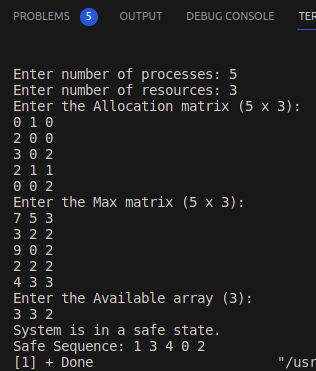
***inputMatrix(max, p, r, "Max");***

***inputArray(available, r, "Available");***

***isSafe(p, r, allocate, max, available);***

***return 0;***

***}***

******