

Code 9

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#include <stdio.h>

int main() {
    int n, m;
    printf("Enter number of processes: ");
    scanf("%d", &n);
    printf("Enter number of resources: ");
    scanf("%d", &m);

    int alloc[n][m], max[n][m], avail[m];
    int need[n][m], finish[n], safeSeq[n];

    printf("Enter Allocation Matrix:\n");
    for(int i=0;i<n;i++)
        for(int j=0;j<m;j++)
            scanf("%d", &alloc[i][j]);

    printf("Enter Max Matrix:\n");
    for(int i=0;i<n;i++)
        for(int j=0;j<m;j++)
            scanf("%d", &max[i][j]);

    printf("Enter Available Resources:\n");
    for(int j=0;j<m;j++) scanf("%d", &avail[j]);

    // Calculate Need matrix
    for(int i=0;i<n;i++)
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    for(int j=0;j<m;j++)
        need[i][j] = max[i][j] - alloc[i][j];

for(int i=0;i<n;i++) finish[i] = 0;

int count = 0;
while(count < n) {
    int found = 0;
    for(int i=0;i<n;i++) {
        if(finish[i] == 0) {
            int j;
            for(j=0;j<m;j++)
                if(need[i][j] > avail[j]) break;
            if(j == m) {
                for(int k=0;k<m;k++) avail[k] += alloc[i][k];
                safeSeq[count++] = i;
                finish[i] = 1;
                found = 1;
            }
        }
    }
    if(found == 0) {
        printf("System is in Unsafe State!\n");
        return 0;
    }
}

printf("System is in Safe State.\nSafe sequence: ");

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for(int i=0;i<n;i++) printf("P%d ", safeSeq[i]);  
printf("\n");  
return 0;  
}
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