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EX-12: Performing Topological Sorting

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#include<stdio.h>
#include<stdlib.h>

int s[100], j, res[100]; /*GLOBAL VARIABLES */

void AdjacencyMatrix(int a[][100], int n) { //To generate adjacency
matrix for given nodes
    int i,
    j;
    for (i = 0; i < n; i++) {
    for (j = 0; j <= n; j++) {
    a[i][j] = 0;
        }
        for (i = 1; i
< n; i++) {
        for (j = 0; j
< i; j++) {
            a[i][j] =
rand() % 2;
            a[j][i] =
0;
        }
    }
}

void dfs(int u, int n, int a[][100]) { /* DFS */
    int v;
    s[u] = 1;
    for (v = 0; v < n - 1; v++) {
    if (a[u][v] == 1 && s[v] == 0) {
    dfs(v, n, a);
        }
    }
    j += 1;
    res[j] = u;
}

void topological_order(int n, int a[][100]) { /* TO FIND TOPOLOGICAL
ORDER*/
    int i, u;
    for (i = 0; i < n; i++) {
    s[i] = 0;
        }
    j = 0;
    for (u = 0; u < n; u++) {
    if (s[u] == 0) {
    dfs(u, n, a);
        }
    }
    return; }
int main() {
    int a[100][100], n, i, j;

    printf("Enter number of vertices\n"); /* READ NUMBER OF VERTICES */
    scanf("%d", &n);
```

```

AdjacencyMatrix(a, n); /*GENERATE ADJACENCY MATRIX */

printf("\t\tAdjacency Matrix of the graph\n"); /* PRINT ADJACENCY
MATRIX */
    for (i = 0; i < n; i++) {
for (j = 0; j < n; j++) {
printf("\t%d", a[i][j]);
        }
        printf("\n");
    }
    printf("\nTopological order:\n");

    topological_order(n, a);
    for (i = n; i >= 1; i--) {
printf("-->%d", res[i]);
    }
return 0;
}

```