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1: #include<stdio.h>
2: #include<stdlib.h>
3: #define size 100
4:
5: struct graph* gr=NULL;
6: struct queue* q=NULL;
7:
8: struct queue{
9:     int items[size];
10:    int front,rear;
11: };
12:
13: struct node{
14:     int dest;
15:     struct node* next;
16: };
17:
18: struct adj_list{
19:     struct node* head;
20:
21: };
22:
23: struct graph{
24:     int v;
25:     struct adj_list* array;
26: };
27:
28: struct node* cnode(int dest){
29:     struct node* temp=(struct node*)malloc(sizeof(struct node));
30:     temp->dest=dest;
31:     temp->next=NULL;
32:     return(temp);
33: }
34:
35: struct graph* cgraph(int v){
36:     struct graph* gr=(struct graph*)malloc(sizeof(struct graph));
37:     gr->v=v;
38:     gr->array=(struct adj_list*)malloc(v*sizeof(struct adj_list));
39:     int i=0;
40:     for(i=0;i<v;++i){
41:         gr->array[i].head=NULL;
42:     }
43:     return(gr);
44: }
45: void add_edge(struct graph* gr,int src,int dest){
46:     struct node* temp=cnode(dest);
47:     temp->next=gr->array[src].head;
48:     gr->array[src].head=temp;
49:     temp=NULL;
50:     free(temp);
51: }
52:
53: struct queue* cqueue(){
54:     struct queue* q=(struct queue*)malloc(sizeof(queue));

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55:     q->front=-1;
56:     q->rear=-1;
57:     return(q);
58:
59: }
60:
61: int isEmpty(struct queue* q) {
62:     if(q->rear == -1)
63:         return 1;
64:     else
65:         return 0;
66: }
67:
68: void enqueue(struct queue* q, int value){
69:     if(q->rear == size-1)
70:         printf("\nQueue is Full!!");
71:     else {
72:         if(q->front == -1)
73:             q->front = 0;
74:         q->rear++;
75:         q->items[q->rear] = value;
76:     }
77: }
78:
79: int dequeue(struct queue* q){
80:     int item;
81:     if(isEmpty(q)){
82:         printf("Queue is empty");
83:         item = -1;
84:     }
85:     else{
86:         item = q->items[q->front];
87:         q->front++;
88:         if(q->front > q->rear){
89:             q->front = q->rear = -1;
90:         }
91:     }
92:     return item;
93: }
94:
95: void t node* cnode(int dest){
96:     int indegree[gr->v];
97:
98:     for(int i=0;i<gr->v;++i)
99:         indegree[i]=0;
100:
101:     for(int i=0;i<gr->v;++i){
102:         struct node* temp=gr->array[i].head;
103:         while(temp!=NULL){
104:             int k=temp->dest;
105:             indegree[k]++;
106:             temp=temp->next;
107:         }
108:     }

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109:     for(int v=1;v<gr->v;v++){
110:         if(indegree[v]==0){
111:             indegree[v]=-1;
112:             enqueue(q,v);
113:
114:             while(isEmpty(q)==false){
115:                 int u=dequeue(q);
116:                 indegree[u]=-1;
117:                 printf("%d --->",u);
118:                 struct node* temp=gr->array[u].head;
119:                 while(temp!=NULL){
120:                     int k=temp->dest;
121:                     indegree[k]=indegree[k]-1;
122:                     if(indegree[k]==0)
123:                         enqueue(q,k);
124:
125:                     temp=temp->next;
126:                 }
127:             }
128:         }
129:     }
130: }
131:
132: int main(){
133:     gr = cgraph(9);
134:     add_edge(gr, 1,5);
135:     add_edge(gr, 1,4);
136:     add_edge(gr, 1,3);
137:     add_edge(gr, 2,3);
138:     add_edge(gr, 2,8);
139:     add_edge(gr, 3,6);
140:     add_edge(gr, 4,6);
141:     add_edge(gr, 4,8);
142:     add_edge(gr,5,8);
143:     add_edge(gr, 6,7);
144:     add_edge(gr, 7,8);
145:     printf("Topological order of given graph is:\n");
146:     q=cqueue();
147:     topl_order();
148:     return 0;
149: }

```