#include <stdio.h>

#include <stdlib.h>

struct node {

int vertex;

struct node\* next;

};

struct adj\_list {

struct node\* head;

};

struct graph {

int num\_vertices;

struct adj\_list\* adj\_lists;

int\* visited;

};

struct node\* new\_node(int vertex) {

struct node\* new\_node = (struct node\*)malloc(sizeof(struct node));

new\_node->vertex = vertex;

new\_node->next = NULL;

return new\_node;

}

struct graph\* create\_graph(int n) {

struct graph\* graph = (struct graph\*)malloc(sizeof(struct graph));

graph->num\_vertices = n;

graph->adj\_lists = (struct adj\_list\*)malloc(n \* sizeof(struct adj\_list));

graph->visited = (int\*)malloc(n \* sizeof(int));

int i;

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

graph->adj\_lists[i].head = NULL;

graph->visited[i] = 0;

}

return graph;

}

void add\_edge(struct graph\* graph, int src, int dest) {

struct node\* new\_node1 = new\_node(dest);

new\_node1->next = graph->adj\_lists[src].head;

graph->adj\_lists[src].head = new\_node1;

struct node\* new\_node2 = new\_node(src);

new\_node2->next = graph->adj\_lists[dest].head;

graph->adj\_lists[dest].head = new\_node2;

}

void bfs(struct graph\* graph, int v) {

int queue[1000];

int front = -1;

int rear = -1;

graph->visited[v] = 1;

queue[++rear] = v;

while (front != rear) {

int current\_vertex = queue[++front];

printf("%d ", current\_vertex);

struct node\* temp = graph->adj\_lists[current\_vertex].head;

while (temp != NULL) {

int adj\_vertex = temp->vertex;

if (graph->visited[adj\_vertex] == 0) {

graph->visited[adj\_vertex] = 1;

queue[++rear] = adj\_vertex;

}

temp = temp->next;

}

}

}

int main() {

struct graph\* graph = create\_graph(6);

add\_edge(graph, 0, 1);

add\_edge(graph, 0, 2);

add\_edge(graph, 1, 3);

add\_edge(graph, 1, 4);

add\_edge(graph, 2, 4);

add\_edge(graph, 3, 4);

add\_edge(graph, 3, 5);

add\_edge(graph, 4,5);

printf("BFS traversal starting from vertex 0: ");

bfs(graph, 0);

return 0;

}

OUTPUT:

BFS traversal starting from vertex 0: 0 2 1 4 3 5

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Process exited after 0.03314 seconds with return value 0

Press any key to continue . . .