자료구조론 CC343_2207

Programming assignment 8

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Programming Example

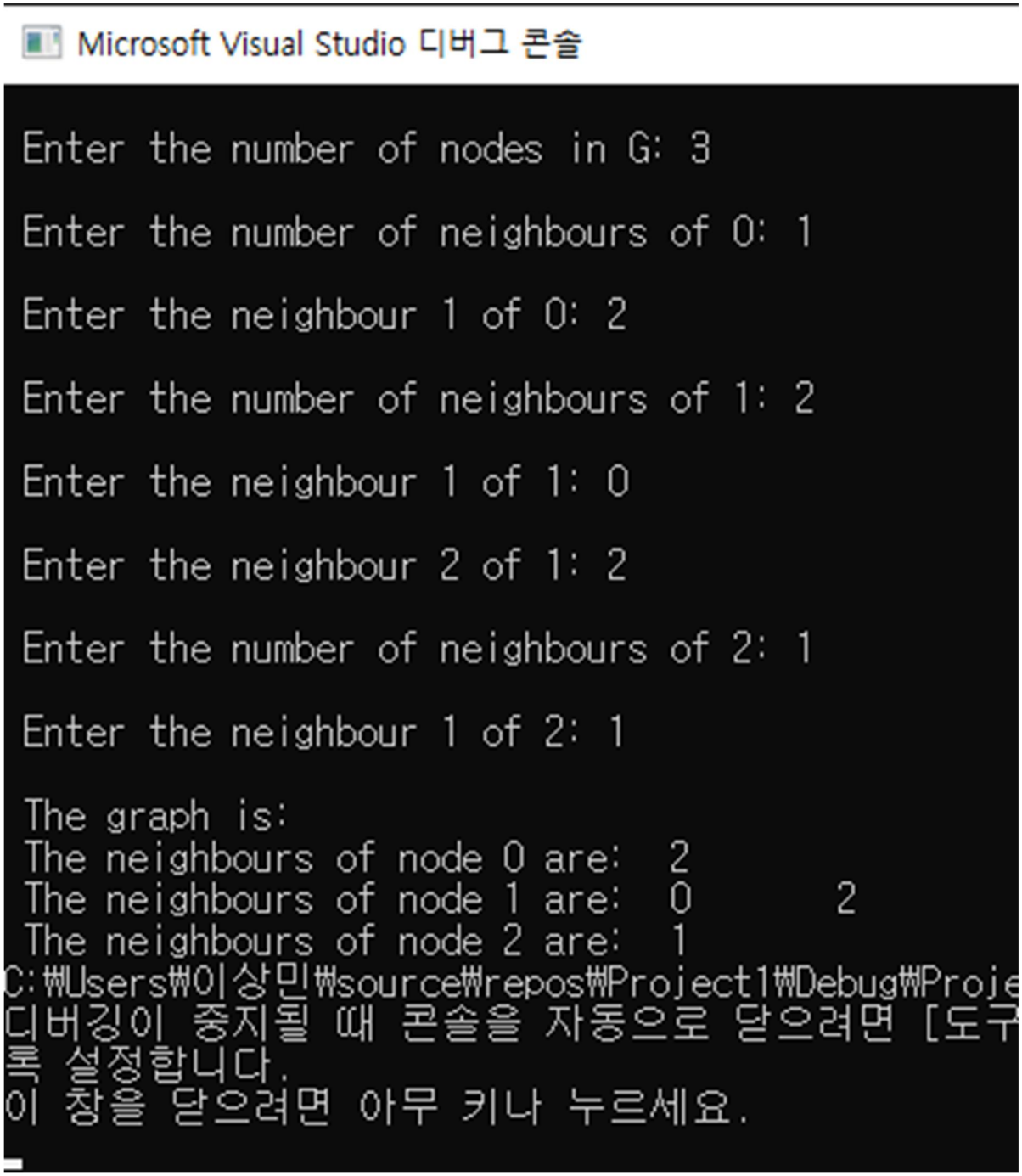
```c
#include <stdio.h>
#include <conio.h>

struct node
{
    char vertex;
    struct node *next;
};

struct node *gnode;
void displayGraph(struct node *adj[], int no_of_nodes);
void deleteGraph(struct node *adj[], int no_of_nodes);
void createGraph(struct node *adj[], int no_of_nodes);
int main()
{
    struct    node    *Adj[10];
    int i, no_of_nodes;
    printf("₩n Enter the number of nodes in G: ");
    scanf("%d", &no_of_nodes);
    for (i = 0; i < no_of_nodes; i++)
        Adj[i] = NULL;
    createGraph(Adj, no_of_nodes);
    printf("₩n The graph is: ");
    displayGraph(Adj, no_of_nodes);
    deleteGraph(Adj, no_of_nodes);
    _getch();
    return    0;
}
```

```c
void createGraph(struct node *Adj[], int no_of_nodes)
{
    struct node *new_node, *last;
    int i, j, n, val;
    for (i = 0; i < no_of_nodes; i++)
    {
        last = NULL;
        printf("\n Enter the number of neighbours of %d: ", i);
        scanf("%d", &n);
        for (j = 1; j <= n; j++)
        {
            printf("\n Enter the neighbour %d of %d: ", j, i);
            scanf("%d", &val);
            new_node = (struct node *) malloc(sizeof(struct node));
            new_node -> vertex = val;
            new_node -> next = NULL;
            if (Adj[i] == NULL)
                Adj[i] = new_node;
            else
                last -> next = new_node;
            last = new_node;
        }
    }
}
```

```c
void displayGraph(struct node *Adj[], int no_of_nodes)
{
    struct node *ptr;
    int i;
    for (i = 0; i < no_of_nodes; i++)
    {
        ptr = Adj[i];
        printf("\n The neighbours of node %d are:", i); while (ptr != NULL)
        {
            printf("\t%d", ptr -> vertex);
            ptr = ptr -> next;
        }
    }
}
void deleteGraph(struct node *Adj[], int no_of_nodes) {
    int i;
    struct node *temp, *ptr;
    for (i = 0; i <= no_of_nodes; i++)
    {
        ptr = Adj[i];
        while (ptr != NULL)
        {
            temp = ptr;
            ptr = ptr -> next;
            free(temp);
        }
        Adj[i] = NULL;
    }
}
```


Microsoft Visual Studio 디버그 콘솔
Enter the number of nodes in G: 3
Enter the number of neighbours of 0: 1
Enter the neighbour 1 of 0: 2
Enter the number of neighbours of 1: 2
Enter the neighbour 1 of 1: 0
Enter the neighbour 2 of 1: 2
Enter the number of neighbours of 2: 1
Enter the neighbour 1 of 2: 1
The graph is:
The neighbours of node 0 are: 2
The neighbours of node 1 are: 0 2
The neighbours of node 2 are: 1
C:₩Users₩이상민₩source₩repos₩Project1₩Debug₩Proje
디버깅이 중지될 때 콘솔을 자동으로 닫으려면 [도구
록 설정합니다.
이 창을 닫으려면 아무 키나 누르세요.