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

struct TreeNode{
	int val;
	struct TreeNode *left;
	struct TreeNode *right;
};
typedef struct TreeNode *Tree;

struct QueueNode{
	Tree val;
	struct QueueNode *next;
};

struct QueueRecord{
	struct QueueNode *front;
	struct QueueNode *rear;
	int size;
};
typedef struct QueueRecord *Queue;

Tree CreateTree(int, Tree);
void LevelOrderDisplay(Tree);
Queue createQueue();
void Enqueue(Queue, Tree);
Tree Dequeue(Queue);
```

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int main(){
	Tree root = NULL;
	int value, i;
	printf("Please enter a value: ");
	scanf("%d",&value);
	root = CreateTree(value, root);

	for(i=0;i<5;i++){ // since it is written like: "takes 6 elements from the user", I specified like that.
		printf("Please enter a value: ");
		scanf("%d",&value);
		CreateTree(value, root);
	}

	LevelOrderDisplay(root);

	return 0;
}

Tree CreateTree(int x, Tree t){
	if (t == NULL){
		t = (Tree)malloc(sizeof(Tree));

		if (t == NULL){
			printf("Out of space!");
			exit(-1);
		}
		else{
			t->val = x;
			t->left = NULL;
			t->right = NULL;
```

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                }
        }

        else if (x < t->val)
                t->left = CreateTree(x, t->left);

        else if (x > t->val)
                t->right = CreateTree(x, t->right);

        return t;
}

void LevelOrderDisplay(Tree t){
        Tree temp = t;
        Queue q;
        q = createQueue();

        while(temp != NULL){
                printf("%d ",temp->val);
                if (temp->left)
                        Enqueue(q, temp->left);
                if (temp->right);
                        Enqueue(q, temp->right);

                temp = Dequeue(q);
        }
}

Queue createQueue(){
        Queue q;
        q = (Queue)malloc(sizeof(Queue));
```

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	if (q == NULL){
		printf("Out of space!");
		exit(-1);
	}

	q->size = 0;
	q->front = (struct QueueNode*)malloc(sizeof(struct QueueNode));
	if (q->front == NULL){
		printf("Out of space!");
		exit(-1);
	}

	q->front->next = NULL;
	q->rear = q->front;
	return q;
}

void Enqueue(Queue q, Tree x){
	struct QueueNode *temp;
	temp = (struct QueueNode*)malloc(sizeof(struct QueueNode));
	if (temp == NULL){
		printf("Out of space!");
		exit(-1);
	}

	temp->next = NULL;
	temp->val = x;

	q->rear->next = temp;
	q->rear = temp;
	q->size++;
```

```
}

Tree Dequeue(Queue q){
        Tree x;
        struct QueueNode *removal;
        removal = q->front->next;
        x = removal->val;

        q->front->next = removal->next;
        free(removal);
        q->size--;

        if (q->size == 0)
                q->rear = q->front;

        return x;
}
```