**queue-using-linked-list.c**

//write a program to implement queue using linked list.

#include <stdio.h>

#include <stdlib.h>

typedef struct Queue{

int data;

struct Queue \*next;

}queue;

int len(queue \*q){

int count = 0;

while(q){

q = q->next;

count++;

}

return count;

}

int isEmpty(queue \*q){

return (q == NULL);

}

void enqueue(queue \*\*q, int data){

queue \*new\_node = (queue\*)malloc(sizeof(queue));

new\_node->data = data;

new\_node->next = \*q;

\*q = new\_node;

}

int dequeue(queue \*\*q){

if(isEmpty(\*q)){

return -1;

}

if (!(\*q)->next) {

int data = (\*q)->data;

\*q = NULL;

return data;

}

queue \*temp = \*q;

while (temp->next->next) {

temp = temp->next;

}

int data = temp->next->data;

free(temp->next);

temp->next = NULL;

return data;

}

void display(queue \*q){

while(q){

printf("%d ",q->data);

q = q->next;

}

printf("\n");

}

void main(){

queue \*q1 = NULL;

if(isEmpty(q1)){

printf("The queue is empty.\n");

}else{

printf("The queue is not empty.\n");

}

printf("the length of the queue is %d\n",len(q1));

enqueue(&q1,10);

printf("the length of the queue is %d\n",len(q1));

enqueue(&q1,102);

enqueue(&q1,15);

enqueue(&q1,13);

enqueue(&q1,12);

display(q1);

printf("the length of the queue is %d\n",len(q1));

dequeue(&q1);

dequeue(&q1);

dequeue(&q1);

display(q1);

}

**OUTPUT**

PS S:\WorkSpace\CollegeWork\DataStructure\Temp> gcc .\queue-using-linked-list.c

PS S:\WorkSpace\CollegeWork\DataStructure\Temp> ./a

The queue is empty.

the length of the queue is 0

the length of the queue is 1

12 13 15 102 10

the length of the queue is 5

12 13

PS S:\WorkSpace\CollegeWork\DataStructure\Temp>