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// Created by Ritwik Chandra Pandey on 08/02/21.
// 183215
// UCS-3 Assignment
// Queue using Linked List

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



struct queue {
   int data;
   struct queue *next;
};

typedef struct queue *Q;



void enqueue(int element, Q *front,Q *rear) {
   Q temp = NULL;
   temp = (Q)malloc(sizeof(struct queue));
   if(temp == NULL) {
      printf("Queue overflow.\n");
           } else {
              temp -> data = element;
              temp -> next = NULL;

              if(*front == NULL) {
                 *front = temp;
              } else {
                 (*rear) -> next = temp;
              }
              *rear = temp;
              printf("Successfully inserted.\n");
           }
           }
           void dequeue(Q *front,Q *rear) {
              Q temp = NULL;
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        if(*front == NULL) {
            printf("Queue underflow.\n");
        } else {
            temp = *front;
            if (*front == *rear) {
                *front = *rear = NULL;
            } else {
                (*front) = (*front) -> next;
            }
            printf("Deleted value = %d.\n", temp -> data);
            free(temp);
        }
    }


    void display(Q*front,Q* rear) {
        if(*front == NULL) {
            printf("Queue is empty.\n");
        } else {
            Q temp = *front;
            printf("Elements are : ");
            while(temp != NULL) {
                printf("%d ", temp -> data);
                temp = temp -> next;
            }
        }
    }

    Q DeleteQueue(Q* front,Q*rear)
{ if(*front==NULL){
   printf("queue underflow!");
   return *front;
}
   Q current =*front;
   Q next;

   while (current != NULL)
   {
      next = current->next;
      free(current);
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      current = next;
    }

    *front = NULL;
    return *front;
}

    int main(){
        Q front = NULL , rear = NULL;
        int select = 0,x;
        printf("\t\tQUEUE USING LINKED LIST\n\n");
        do{
            printf("\t1.ENQUEUE\n\t2.DEQUEUE\n\t3.DISPLAY\n\t4.DELETE QUEUE\n\t5.EXIT\n");


            printf("\tPlease Enter Your Choice\n");
            scanf("%d",&select);
            switch(select)
            {
                case 1:
                    printf("Enter element : ");
                    scanf("%d", &x);

                    enqueue(x,&front,&rear);


                    printf("-------------------------------------------------------\n");
                    break;
                case 2:
                    dequeue(&front,&rear);
                    printf("-------------------------------------------------------\n");
                    break;
                case 3:
                    display(&front,&rear);
                    printf("-------------------------------------------------------\n");
                    break;
                case 4:
                    if(front!=NULL){
                        printf("Queue deleted");
                    }
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            DeleteQueue(&front,&rear);

            printf("-------------------------------------------------------\n");
            break;

        case 5:
            break;

        default:
            printf("\t\n\nYou have not entered the right choice\n\n");

      }
   }while(select!=5);

}
```