10 March 2024 20:18

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

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

struct Queue {
   struct Node *front, *rear;
};

struct Node* newNode(int data) {
   struct Node* temp = (struct Node*)malloc(sizeof(struct Node));
   temp->data = data;
   temp->next = NULL;
   return temp;
}

struct Queue* createQueue() {
   struct Queue* queue = (struct Queue*)malloc(sizeof(struct Queue));
   queue->front = queue->rear = NULL;
   return queue;
}

int isEmpty(struct Queue* queue) {
   return (queue->front == NULL);
}

void enqueue(struct Queue* queue, int data) {
   struct Node* temp = newNode(data);

   if (queue->rear == NULL) {
      queue->front = queue->rear = temp;
      return;
   }

   queue->rear->next = temp;
   queue->rear = temp;
}

int dequeue(struct Queue* queue) {
   if (isEmpty(queue))
      return -1;

   struct Node* temp = queue->front;
   queue->front = queue->front->next;

   if (queue->front == NULL)
      queue->rear = NULL;
```

```
    int data = temp->data;
    free(temp);
    return data;
}

void display(struct Queue* queue) {
    struct Node* temp = queue->front;
    printf("Queue: ");
    while (temp != NULL) {
        printf("%d ", temp->data);
        temp = temp->next;
    }
    printf("\n");
}

int main() {
    printf("K.R.Vishnu Chaithanya\n");
    printf("192372057\n");
    struct Queue* queue = createQueue();

    enqueue(queue, 10);
    enqueue(queue, 20);
    enqueue(queue, 30);
    enqueue(queue, 40);

    display(queue);

    printf("Dequeued element: %d\n", dequeue(queue));
    printf("Dequeued element: %d\n", dequeue(queue));

    display(queue);

    return 0;
}
```

```
K.R.Vishnu Chaithanya
192372057
Queue: 10 20 30 40
Dequeued element: 10
Dequeued element: 20
Queue: 30 40
```