**Implementation of Queue Using Linked List**

#include <stdio.h>

#include <stdlib.h>

typedef struct node

{

  int data;

  struct node \*link;

} Node;

Node \*rear = NULL;

Node \*front = NULL;

void insert();

void dequeue();

void peek();

void isEmpty();

void display();

void search();

int main()

{

  int ch;

  while (1)

  {

    printf("\nQueue Operations: ");

    printf("\n1. insert\n2. delete\n3. peek\n4. isEmpty\n5. display\n6. search\n7. exit");

    printf("\nEnter your choice: ");

    scanf("%d", &ch);

    switch (ch)

    {

    case 1:

      insert();

      break;

    case 2:

      dequeue();

      break;

    case 3:

      peek();

      break;

    case 4:

      isEmpty();

      break;

    case 5:

      display();

      break;

    case 6:

      search();

      break;

    case 7:

      printf("\nExited\n");

      exit(0);

      break;

    default:

      printf("\nInvalid choice, try again.\n");

    }

  }

  return 0;

}

void insert()

{

  Node \*new = (Node \*)malloc(sizeof(Node));

  printf("\nEnter value: ");

  scanf("%d", &new->data);

  new->link = NULL;

  if (rear != NULL)

    rear->link = new;

  rear = new;

  if (front == NULL)

    front = new;

  printf("Inserted\n", new->data);

}

void dequeue()

{

  if (rear == NULL)

  {

    printf("\nQueue is empty\n");

    return;

  }

  Node \*temp = front;

  front = front->link;

  if (front == NULL)

    rear = NULL;

  printf("\nDeleted %d\n", temp->data);

  free(temp);

}

void peek()

{

  if (rear == NULL)

  {

    printf("\nQueue is empty\n");

    return;

  }

  printf("\nPeek element: %d\n", front->data);

}

void isEmpty()

{

  printf("\nisEmpty: %s\n", rear == NULL ? "true" : "false");

}

void display()

{

  if (rear == NULL)

  {

    printf("\nNo elements in the queue\n");

    return;

  }

  Node \*temp = front;

  printf("\nElements in the queue are: \n");

  printf("front");

  while (temp != NULL)

  {

    printf(" --> %d", temp->data);

    temp = temp->link;

  }

  printf(" <-- rear");

  printf("\n");

}

void search()

{

  if (rear == NULL)

  {

    printf("\nNo elements in the queue\n");

    return;

  }

  int key;

  printf("\nEnter the key: ");

  scanf("%d", &key);

  Node \*temp = front;

  int flag = 1, pos = 1;

  while (temp != NULL)

  {

    if (temp->data == key)

    {

      printf("Found at position: %d\n", pos);

      flag = 0;

    }

    temp = temp->link;

    pos++;

  }

  if (flag)

    printf("Key not found\n");

}