**Implementation of Queue Using Array**

// Implementing queue using arrays

#include <stdio.h>

#include <stdlib.h>

void enqueue();

void dequeue();

void peek();

void isEmpty();

void isFull();

void display();

void search();

int queue[100], rear = -1, front = -1, num;

int main()

{

  printf("\nEnter the size of the queue: ");

  scanf("%d", &num);

  int ch;

  while (1)

  {

    printf("\nQueue Operations: ");

    printf("\n1. enqueue\n2. dequeue\n3. peek\n4. isEmpty\n5. isFull\n6. display\n7. search\n8. exit");

    printf("\nEnter your choice: ");

    scanf("%d", &ch);

    switch (ch)

    {

    case 1:

      enqueue();

      break;

    case 2:

      dequeue();

      break;

    case 3:

      peek();

      break;

    case 4:

      isEmpty();

      break;

    case 5:

      isFull();

      break;

    case 6:

      display();

      break;

    case 7:

      search();

      break;

    case 8:

      printf("\nExited\n");

      exit(0);

      break;

    default:

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

    }

  }

  return 0;

}

void enqueue()

{

  if (rear == (num - 1))

  {

    printf("\nQueue is full\n");

    return;

  }

  int x;

  printf("\nEnter value: ");

  scanf("%d", &x);

  rear++;

  queue[rear] = x;

  printf("Inserted\n");

}

void dequeue()

{

  if (rear == -1)

  {

    printf("\nQueue is empty\n");

    return;

  }

  front++;

  int x = queue[front];

  if (front == rear)

    front = rear = -1;

  printf("\nDeleted %d\n", x);

}

void peek()

{

  if (rear == -1)

    printf("\nQueue is emprty\n");

  else

    printf("\nPeek element: %d\n", queue[front]);

}

void isEmpty() {

  printf("\nisEmpty: %s\n", rear == -1 ? "true" : "false");

}

void isFull() {

  printf("\nisFull: %s\n", rear == (num - 1) ? "true" : "false");

}

void display()

{

  if (rear == -1)

  {

    printf("\nThere are no elements in the queue\n");

    return;

  }

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

  for (int i = 0; i < num; i++)

  {

    if (i <= front || i > rear)

      printf("- ");

    else

      printf("%d ", queue[i]);

  }

  printf("\n");

}

void search()

{

  if (rear == -1)

  {

    printf("\nThere are no elements in the queue\n");

    return;

  }

  int key;

  printf("\nEnter the key value: ");

  scanf("%d", &key);

  int flag = 1;

  for (int i = front + 1; i <= rear; i++)

  {

    if (queue[i] == key)

    {

      printf("Found at position: %d\n", i + 1);

      flag = 0;

    }

  }

  if (flag)

    printf("Key not found in the queue\n");

}