#include <iostream>

using namespace std;

#define MAX 5 // Maximum size of queue

class Queue {

int arr[MAX];

int front, rear;

public:

Queue() {

front = -1;

rear = -1;

}

// Check if queue is empty

bool isEmpty() {

return (front == -1 && rear == -1);

}

// Check if queue is full

bool isFull() {

return (rear == MAX - 1);

}

// Insert element

void enqueue(int x) {

if (isFull()) {

cout << "Queue is Full! Cannot enqueue " << x << endl;

return;

}

if (isEmpty()) {

front = 0;

}

arr[++rear] = x;

cout << x << " enqueued successfully." << endl;

}

// Remove element

void dequeue() {

if (isEmpty()) {

cout << "Queue is Empty! Cannot dequeue." << endl;

return;

}

cout << arr[front] << " dequeued successfully." << endl;

if (front == rear) {

front = rear = -1; // Reset queue

} else {

front++;

}

}

// Peek front element

void peek() {

if (isEmpty()) {

cout << "Queue is Empty!" << endl;

return;

}

cout << "Front element: " << arr[front] << endl;

}

// Display all elements

void display() {

if (isEmpty()) {

cout << "Queue is Empty!" << endl;

return;

}

cout << "Queue elements: ";

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

cout << arr[i] << " ";

}

cout << endl;

}

};

int main() {

Queue q;

int choice, value;

do {

cout << "\n--- Queue Menu ---" << endl;

cout << "1. Enqueue" << endl;

cout << "2. Dequeue" << endl;

cout << "3. Peek" << endl;

cout << "4. Display" << endl;

cout << "5. Check if Empty" << endl;

cout << "6. Check if Full" << endl;

cout << "0. Exit" << endl;

cout << "Enter your choice: ";

cin >> choice;

switch (choice) {

case 1:

cout << "Enter value to enqueue: ";

cin >> value;

q.enqueue(value);

break;

case 2:

q.dequeue();

break;

case 3:

q.peek();

break;

case 4:

q.display();

break;

case 5:

cout << (q.isEmpty() ? "Queue is Empty" : "Queue is not Empty") << endl;

break;

case 6:

cout << (q.isFull() ? "Queue is Full" : "Queue is not Full") << endl;

break;

case 0:

cout << "Exiting program..." << endl;

break;

default:

cout << "Invalid choice! Try again." << endl;

}

} while (choice != 0);

return 0;

}

