11) Queues are frequently used in computer programming, and a typical example is the creation of a job queue by an operating system. If the operating system does not use priorities, then the jobs are processed in the order they enter the system. Write C++ program for simulating job queue. Write functions to add job and delete job from queue.

***CODE :-***

#include <iostream>

using namespace std;

class JobQueue

{

private:

int \*queue;

int front, rear, size, capacity;

public:

JobQueue(int maxJobs)

{

capacity = maxJobs;

queue = new int[capacity];

front = rear = -1;

size = 0;

}

bool isEmpty()

{

return size == 0;

}

bool isFull()

{

return size == capacity;

}

void addJob(int jobID)

{

if (isFull())

{

cout << "Queue is full! Cannot add more jobs.\n";

} else {

if (front == -1)

{

front = 0;

}

rear = (rear + 1) % capacity;

queue[rear] = jobID;

size++;

cout << "Job " << jobID << " has been added to the queue.\n";

}

}

void deleteJob()

{

if (isEmpty())

{

cout << "No jobs to process. The queue is empty.\n";

} else

{

int processedJob = queue[front];

cout << "Job " << processedJob << " is being processed.\n";

front = (front + 1) % capacity;

size--;

if (size == 0)

{

front = rear = -1;

}

}

}

void displayJobs()

{

if (isEmpty())

{

cout << "The queue is empty.\n";

} else

{

cout << "Current Jobs in the Queue: ";

int i = front;

for (int count = 0; count < size; count++)

{

cout << queue[i] << " ";

i = (i + 1) % capacity;

}

cout << endl;

}

}

~JobQueue()

{

delete[] queue;

}

};

int main()

{

int maxJobs;

cout << "Enter the maximum number of jobs the job queue can handle: ";

cin >> maxJobs;

JobQueue jobQueue(maxJobs);

int choice, jobID;

do

{

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

cout << "1. Add Job\n";

cout << "2. Process Job (Delete)\n";

cout << "3. Display Jobs\n";

cout << "4. Exit\n";

cout << "Enter your choice: ";

cin >> choice;

switch (choice)

{

case 1:

cout << "Enter Job ID: ";

cin >> jobID;

jobQueue.addJob(jobID);

break;

case 2:

jobQueue.deleteJob();

break;

case 3:

jobQueue.displayJobs();

break;

case 4:

cout << "Exiting the program...\n";

break;

default:

cout << "Invalid choice! Please try again.\n";

break;

}

} while (choice != 4);

return 0;

}

***OUTPUT :-***





