

problem statements used in computer programming it a queues are frequently used in computer programming it a queues are frequently used in computer programming it a queues are frequently used in the creation of Job queue by an operating system. If the operating system doesn't use priorities, thou system the jobs are processed in the order they enter the system. Write it program for simulating job queue write functions to add job & delete job from queue.

probectives of queue data structure & implement various operations of queue.

2 Emplement job queue using queue data structure.

* entronnes

1> Implement queue data structure using arrays.

2) Menu kosed program for job simulation in operating

system. based program for job smulation in operating

+ Hardware requirement:

Manufacturer & model: Acer swiff-3

Processor: Intel core is 8th gen (82654 @ 1.6 4Hz)

Intalled memory: 8GB RAM, 1/2 GB 55P

Architecture: 64-bit

\$ Software requirement:

operating system: Obusty 20.04LTS on oracle virtual machine

(3 processors & 4096MB base memory is allocated)

ett version: C+114

Compiler for (H: 9# (version: 10.1.0)

Code editor: Subtime Tons (Bull 2011)

Theory

Jueues

A queue is a linear data iterature which follows a posticular order by which the operations are performed. The order is fifo

operations on queue

Enqueue: Add as item to the gueue.

Dequeue: Removes Item from gueue.

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front: Get the front item of queue.

Real: Get the last Hem of the queue.

Bendo Code:

Operations of gueue:

Algorithm: (sEmpty() of 11 checks for empty queue.
retwelf (front == rear):

Algorithm isfull () { //check if queue is full return (rearty) % p == front);

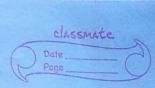
Algorithm Front () & // returns front of queue returnt are [Front +1];

Algorithm insert (Tx) of //inserts element in queue

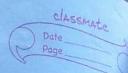
1'f (1sfull()) return.

deso. rear = (zear +1) % p

arr[rear] = x.



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Algorithm remove() of " Aremove's from queue.
1 (ISEMPTY) refuer.
plex from (Front H) % D;
The same of which the column doct
the state of the s
ADT of clanes
A TANK TANK THE PROPERTY OF THE PARTY OF THE
y class Job & 11 This class simulate job of operating spiles
pavale:
strung job title;
inf job-number;
static int job-count;
Job (string job= "1)? // constructos.
job_title=job;
void selvata () y 11 to set values of private void void voide
11 code variables
void get Title() x /1 for to get title of Job
11 rock avant i francis sut gatoria
C solo & some coo solo and materials sold
So believe it and
2) template < class T> 100 and mallings
class Queue of 11 Array band implementation of queue.
private: A Array based implementation of queue.
To are post of southers of
inf from, rear;
public:
guere () ~ 11 construtor to initialize data nembers
(1) cocu



Muners is queue is empty/not bool is Empty () & 11 wde bool isfull ? 11 cheeks if queue is full Inox 11 code 11 return front element of queue T feon () of 11 code void insext oxx // insext x into the queue 11 code void remove () of 1/2 emove first element from queue 1 11 code Analysis of algorithms Operations of queue (Assuming Cocular queues) This algorithm takes out time & also no expose space is needed. > Remove the element from queue: Algorithm takes O(1) time & no extra space. 3> tet front of queue: Algorithm takes o(1) time of no extra space as checking for empty & Third queue.

both operations sequired const. space of time.

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0	Date_ Page		3
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Test cases.	Box Hawani Jana was min	
Test care	Experted orutpent	Actual Optput
Adding Job to queue. 1/p: Job title: Jobi	Job should be added successfully	Job added . Successfully
Adding Job 10 1000	The job shouldnibe added.	failed to add a job.
Remove the current	The alorent job should be removed from queue.	Job removed
gaing the overent	The algorithm should show	Successfully, the algorithm
pb	the current front of	shows the details

The algorithm should

paint all the jobs

queue

present in the queue. jobs present in The algorithm should 9 Removing job from doesn't do anything to empty queue. queul. Error message experted.

OF Job at front of queue The algorithm prints all the the queue. The error message is as follows: Nothing to work on

Applications

Queues are useful in

& painting all jobs in

the queue.

1) BFS of graph 2) whou resources are shared among multiple consumers.

3) asher data is transferred asynchronously blu two Processes.

eg. To Buffers, pipes, files I o etc.

