Assignment - 03

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COURSE :- Data Structure

COURSE CODE: CSA0389

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1. Illustrate the queue operation using following function calls of Size=5. Enqueue (25), Enqueue (37), Enqueue (90), Dequeue)
  Enqueue (15), Enqueue (40), Enqueue (12), Dequeue (1), Dequeue(1),
  Dequence >, Dequence >.
   To illustrate the queue operations for a queue of size
  5 with the given sequence of function calls, let's -through
  each step:
  Initial Queue state:
  * The queue is empty instially
  -x maximum size of the queue:5
  operations.
   1. Enqueue (25)!
                    point by - most - position is all a
    -x auche: '[25]'
                                       "Poll : cours x
    - Front = 0, Rear = 0
                                     extent is four to
  2. Enqueue (37):
    * Queue: '[25,37]
  * Front=0, Rear =1
                             ton works many war a
  3. Enqueue (70):
    * Queue: '[25,37,90]'
    * Front=0, Rear=2
 i. Dequeue ( ):
    + 25 is semoved from the queue
    + Queue: [37,907'
    + Front = 1 , Rear = a
  s. Enqueue(15):
   ->- Queue: `[37,90,15] (
   * Front = 1, Rear = 3
  6. Enqueue (40):
   x Queue: [37,90,15,40]
      Front=1, Rear=4
```

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7. Enqueue (12):
  + Queue: [37,90,15,40,12]
S. Dequeue () Dan = 5
  * 37 is semoved from the queue
  * Queue : [90, 15, 40,12]
 * front = 2, Rear = 5
9. Dequeue ():
                  illustrated the gives resorted
 +90 is semoved from the queue
                         dina obsessed tone
 * Queue: [15,40,12]
  * Front=3, Rear=5
 10. Dequeule >:
  + PIS is semoved from the queue
  + Queue : [40,12]
  * Front = 4, Rear = 5 1 sury but to 1590 mande 10 1
 11. Dequere ():
  +40 is removed from the queue
  * Queue: [T2]
  - Front = 5, Rear = 5
                                      i carulus (xar :
   Final Queue State:
  + The queue Contains '(12)' after all operations are perform
 + Front = 5; Roax = 5
                                     gright committee .
                                 2 Margue - 128, 1, 2076
  Summary of operations:
 > The operations performed show how elements are enqueued
    and dequeued from the queue
 The queue's maximum size is never exceed, and elements
   are dequeued in the order they were enqueued, following
  the first - In- First-out [FIFO] principle.
                              Carried of Lett. At 18 cm.
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White a c program to implement Queue operations Such as
ENQUEUE, DEQUEUE and DISPLAY
  # include 2 stdio. h>
 # include < stdlib.h>
 #define SIZE 5
  Struct Queue &
     int items [SIZE]; will " busines of small ) quel por
     int rear;
                   This be ( " minute is my till to " ) if
  Struct Queue* Create Queue() {
     Struct avent queue = (struct avent) malloc(sizeof(struct avend);
      queue -> front = -1;
      return queue;
  Int is full (struct onene + queue) &
     if (queue → rear = = SIZE-D
     seturn 0; ( ) mont stand should trust
  ant is Empty (Struct Queue + queue) &
      of Cqueue ->front == -111 queue -> front > queue -> rear)
        · Veturn 1:
     return of
  void enqueue (struct Queue † queue, sint value) {
      if (is full (queue)) ¿
         print f (" oucue is full ! cannot enqueue "lod in", value);
      3 clsc &
         if (queue -> front == -1)
             queue -> front=0;
          queuc -> vear ++!
          queue - ? tems[queuc -> rear] = value;
          Prointh ("Enqueued %din", value);
     void dequeux (Struct Queux+ queux) &
         of (is Empty (queue)) &
```

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Pointf ("Queue is Empty 1 Cannot Cdaqueue (n");
    3clse &
        Point ["Dequeued old in", queue - items [quaie > front]).
         2 were - front ++;
       3
    4
        display (struct Queue + queue) &
    Void
        of Ciscopey (queuc)) {
           Point ("Queue is empty! (n");
       Jelse E
            Point ("Queue: ");
           for (Int i=queue > front; i = queue > rear; i++) {
               Printf ("of.d", queue -> ?tems[1);
            Pointf("(n");
                       bell firster rugue " group &
  int main() {
     Struct queue * queue = Create Queuer);
      enqueue (queue, 10); (mont onance donne )
    onqueue (queue, 20);
       enqueue (queue, so);
       enqueue (queue, 40);
       enqueue (queue, so):
      display (queue);
                      mont prince with then Inden
       display (queue);
                                & Courters 1 Here &
Soplay (queue);
       enqueue Cqueue, 60);
       display (queue);
       display (queue);
       Asplay (Queue);
        Asplay ( Eyeye);
                            BURNE Willens THERE
        Seturn: O ; Int " 14/1 of bearing ") of the
    z
                Francis Character Anna Campel Ind
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& C. mant Millians

Output:

Enqueued 10

Dequeue 10

Enqueued 20

Queue: 20 30

Enqueued 30

Enqueued 40

enqueued 50

Queue: 10 20 30 40 50

Dequeued 10

Queue: 20 20 40 50

Dequeue is full! Cannot enqueue 60

Queuc: 20 30 40 50

Dequened 20

Dequeued 30

Queue: 40 50