

MCQs on Queue with answers

1. A linear list of elements in which deletion can be done from one end (front) and insertion can take place only at the other end (rear) is known as a ?

- a) Queue
- b) Stack
- c) Tree
- d) Linked list

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ANSWER: a) Queue

2. The data structure required for Breadth First Traversal on a graph is?

- a) Stack
- b) Array
- c) Queue
- d) Tree

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ANSWER: c) Queue

3. Let the following circular queue can accommodate maximum six elements with the following data

front = 2 rear = 4

queue = _____; L, M, N, ____, ____

What will happen after ADD O operation takes place?

- a) front = 2 rear = 5

queue = _____; L, M, N, O, ____

b) front = 3 rear = 5

queue = L, M, N, O, ____

c) front = 3 rear = 4

queue = _____; L, M, N, O, ____

d) front = 2 rear = 4

queue = L, M, N, O, ____

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ANSWER: a)

4. A queue is a ?

a) FIFO (First In First Out) list

b) LIFO (Last In First Out) list.

c) Ordered array

d) Linear tree

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ANSWER: a) FIFO (First In First Out) list

5. In Breadth First Search of Graph, which of the following data structure is used?

a) Stack

b) Queue

c) Linked list

d) None

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ANSWER: b) Queue

6. If the elements "A", "B", "C" and "D" are placed in a queue and are deleted one at a time, in what order will they be removed?

a) ABCD

b) DCBA

c) DCAB

d) ABCD

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ANSWER: a) ABCD

7. In linked list implementation of a queue, where does a new element be inserted?

a) At the head of link list

b) At the tail of the link list

c) At the centre position in the link list

d) None

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ANSWER: b) At the tail of the link list

8. In the array implementation of circular queue, which of the following operation take worst case linear time?

a) Insertion

b) Deletion

c) To empty a queue

d) None

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ANSWER: d) None

9. In linked list implementation of queue, if only front pointer is maintained, which of the following operation take worst case linear time?

a) Insertion

b) Deletion

c) To empty a queue

d) Both a) and c)

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ANSWER: d) Both a) and c)

10. If the MAX_SIZE is the size of the array used in the implementation of circular queue. How is rear manipulated while inserting an element in the queue?

a) $\text{rear} = (\text{rear} \% 1) + \text{MAX_SIZE}$

b) $\text{rear} = \text{rear} \% (\text{MAX_SIZE} + 1)$

c) $\text{rear} = (\text{rear} + 1) \% \text{MAX_SIZE}$

d) $\text{rear} = \text{rear} + (1 \% \text{MAX_SIZE})$

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ANSWER: c) $\text{rear} = (\text{rear} + 1) \% \text{MAX_SIZE}$

11. If the MAX_SIZE is the size of the array used in the implementation of circular queue, array index start with 0, front point to the first element in the queue, and rear point to the last element in the queue. Which of the following condition specify that circular queue is FULL?

a) $\text{Front} = \text{rear} = -1$

b) $\text{Front} = (\text{rear} + 1) \% \text{MAX_SIZE}$

- c) $\text{Rear} = \text{front} + 1$
- d) $\text{Rear} = (\text{front} + 1) \% \text{MAX_SIZE}$

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ANSWER: b) $\text{Front} = (\text{rear} + 1) \% \text{MAX_SIZE}$

12. A circular queue is implemented using an array of size 10. The array index starts with 0, front is 6, and rear is 9. The insertion of next element takes place at the array index.

- a) 0
- b) 7
- c) 9
- d) 10

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ANSWER: a) 0

13. If the MAX_SIZE is the size of the array used in the implementation of circular queue, array index start with 0, front point to the first element in the queue, and rear point to the last element in the queue. Which of the following condition specify that circular queue is EMPTY?

- a) $\text{Front} = \text{rear} = 0$
- b) $\text{Front} = \text{rear} = -1$
- c) $\text{Front} = \text{rear} + 1$
- d) $\text{Front} = (\text{rear} + 1) \% \text{MAX_SIZE}$

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ANSWER: b) $\text{Front} = \text{rear} = -1$

14. A data structure in which elements can be inserted or deleted at/from both the ends but not in the middle is?

- a) Queue
- b) Circular queue
- c) Dequeue
- d) Priority queue

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ANSWER: c) Dequeue

15. In linked list implementation of a queue, front and rear pointers are tracked. Which of these pointers will change during an insertion into a NONEMPTY queue?

- a) Only front pointer
- b) Only rear pointer
- c) Both front and rear pointer
- d) None of the front and rear pointer

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ANSWER: b) Only rear pointer

16. A normal queue, if implemented using an array of size MAX_SIZE, gets full when

- a) $\text{Rear} = \text{MAX_SIZE} - 1$
- b) $\text{Front} = (\text{rear} + 1) \bmod \text{MAX_SIZE}$
- c) $\text{Front} = \text{rear} + 1$
- d) $\text{Rear} = \text{front}$

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ANSWER: a) $\text{Rear} = \text{MAX_SIZE} - 1$

17. In linked list implementation of a queue, front and rear pointers are tracked. Which of these pointers will change during an insertion into EMPTY queue?

- a) Only front pointer
- b) Only rear pointer
- c) Both front and rear pointer
- d) None

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ANSWER: c) Both front and rear pointer

18. An array of size MAX_SIZE is used to implement a circular queue. Front, Rear, and count are tracked. Suppose front is 0 and rear is MAX_SIZE -1. How many elements are present in the queue?

- a) Zero
- b) One
- c) MAX_SIZE-1
- d) MAX_SIZE

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ANSWER: d) MAX_SIZE

19. Suppose a circular queue of capacity (n-1) elements is implemented with an array of n elements. Assume that the insertion and deletion operations are carried out using REAR and FRONT as array index variables, respectively. Initially REAR=FRONT=0. The conditions to detect queue full and queue is empty are?

- a) Full: $(\text{REAR}+1) \bmod n == \text{FRONT}$

Empty: $\text{REAR} == \text{FRONT}$

- b) Full: $(\text{REAR}+1) \bmod n == \text{FRONT}$

Empty: $(\text{FRONT}+1) \bmod n == \text{REAR}$

- c) Full: $\text{REAR} == \text{FRONT}$

Empty: $(\text{REAR}+1) \bmod n \neq \text{FRONT}$

d) Full: $(\text{FRONT}+1) \bmod n \neq \text{REAR}$

Empty: $\text{REAR} \neq \text{FRONT}$

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ANSWER: a)

20. Consider the following operations along with ENQUEUE and DEQUEUE operations queues, where k is a global parameter.

Multiqueue(Q)

{

$m=k$;

while(Q is not empty) and $(m > 0)$

{

DEQUEUE(Q)

$m=m-1$

}

}

What is the worst case time complexity of a sequence of n queue operations on an initially empty queue?

a) $\theta(n)$

b) $\theta(n + k)$

c) $\theta(nk)$

d) $\theta(n^2)$

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ANSWER: a) $\theta(n)$