10.1-3.

Using Figure 10.2 as a model, illustrate the result of each operation in the sequence ENQUEUE(Q, 4), ENQUEUE(Q, 1), ENQUEUE(Q, 3), DEQUEUE(Q), ENQUEUE(Q, 8), and DEQUEUE(Q) on an initially empty queue Q stored in array $Q[1..6]$.

Answer.

Figure 1 shows the result of each operation in the sequence ENQUEUE($Q, 4$), ENQUEUE($Q, 1$), ENQUEUE(Q, 3), DEQUEUE(Q), ENQUEUE(Q, 8), and DEQUEUE(Q) on an initially empty queue Q stored in array $Q[1..6]$.

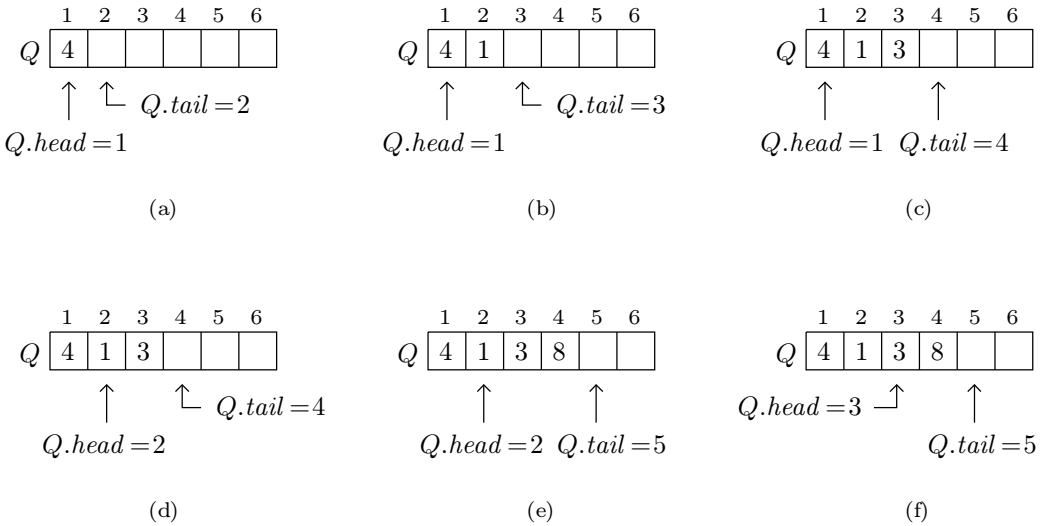

Figure 1. A queue implementation using an array $Q[1..6]$. **(a)** The queue has 1 element in location $Q[1]$, after a ENQUEUE($Q, 4$) operation on an initially empty queue. **(b)** The configuration of the queue after the call ENQUEUE($Q, 1$). **(c)** Queue Q after augmenting the new element 3. **(d)** The configuration of the queue after the call DEQUEUE(Q) returns the key value 4 formerly at the head of the queue. The new head has key 1. **(e)** Queue Q after entering one more element 8 at its rear. **(f)** The configuration of the queue after deleting and returning its head element 1 at location $Q[2]$.

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