

10.1-1.

Using Figure 10.1 as a model, illustrate the result of each operation in the sequence $\text{PUSH}(S, 4)$, $\text{PUSH}(S, 1)$, $\text{PUSH}(S, 3)$, $\text{POP}(S)$, $\text{PUSH}(S, 8)$, and $\text{POP}(S)$ on an initially empty stack S stored in array $S[1..6]$.

Answer.

Figure shows the result of each operation in the sequence $\text{PUSH}(S, 4)$, $\text{PUSH}(S, 1)$, $\text{PUSH}(S, 3)$, $\text{POP}(S)$, $\text{PUSH}(S, 8)$, and $\text{POP}(S)$ on an initially empty stack S stored in array $S[1..6]$.

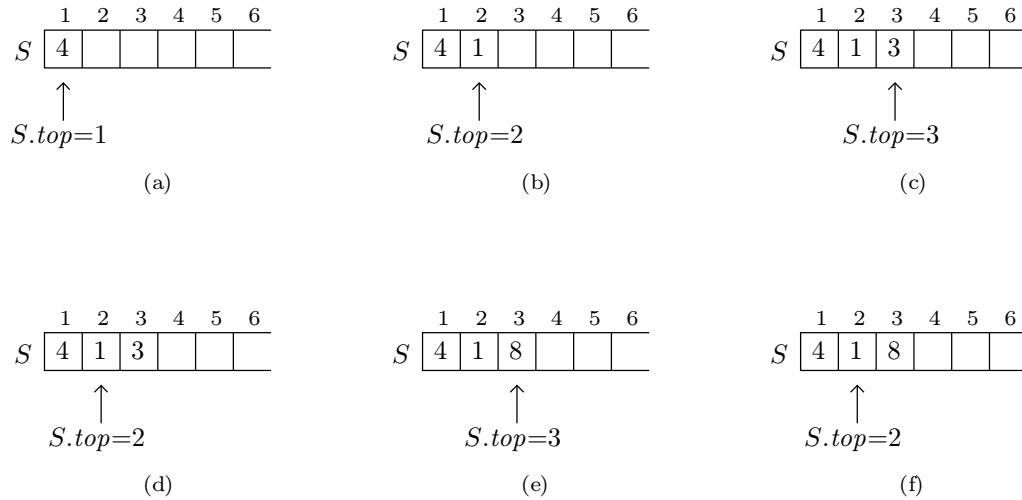


Figure 1. An array implementation of a stack S . **(a)** Stack S has 1 element, after a $\text{PUSH}(S, 4)$ operation on an empty stack. **(b)** Stack S after the call $\text{PUSH}(S, 1)$. **(c)** Stack S after the call $\text{PUSH}(S, 3)$. **(d)** Stack S after the call $\text{POP}(S)$ has returned the element 3. **(e)** Stack S after the call $\text{PUSH}(S, 8)$. **(f)** Stack S after the call $\text{POP}(S)$ has returned the element 8, which is the one most recently pushed. Although element 8 still appears in the array, it is no longer in the stack; the top is element 1.

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