

Question 1

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Below are the signatures, purposes and stubs for several functions.

Which of the following functions will require a context preserving accumulator (select all that apply)?



```
;; (listof String) -> (listof String)
;; filter out any elements of the list that are not in alphabetical order
(define (alphabetical-only los) empty)
```



```
;; (listof Number) -> (listof Number)
;; produce a list of only the numbers in the list greater than 5
(define (greater-than-five lon) lon)
```



```
;; (listof Natural) -> (listof Image)
;; produce a list of alternating black and white squares of size corresponding with the numbers in the list
(define (black-white-squares lon) empty)
```



```
;; (listof Image) -> Image
;; produce a single image of all images in the list side by side
;; (define (images-beside loi) empty-image)
```




Explanation

In `alphabetical-only` we must make sure that each subsequent element of the list is alphabetically after the previous element. To do this, we must keep track of the previous element of the list using a context-preserving accumulator.

In `black-white-squares` we need a context-preserving accumulator to decide whether the current square will be black or white.

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