

Chapter 5 Answers to some of questions

Short-Answer questions

1) a) using linked list implementation

push: $\Theta(n)$, although it can be improved to $\Theta(1)$, if we keep track of the last element

pop: $\Theta(n)$, although it can be improved if we keep track of the last element (but not to $\Theta(1)$)

top: $\Theta(n)$, although it can be improved to $\Theta(1)$, if we keep track of the last element

size: $\Theta(1)$, since we keep this information in attribute `self.size`

b) using Python's list implementation

push: $\Theta(1)$, on average append operation on lists takes $\Theta(1)$ time

pop: $\Theta(1)$

top: $\Theta(1)$

size: $\Theta(1)$, since `len(self.items)` runs $\Theta(1)$