Lists: series of indexed objects
   ex: grouping like objects
   ops: add, remove, get, find

Stacks: a list where objects can only be accessed or added from one end.
   LIFO
   ex: undo, error messages
   ops: push, pop, peek

Queue: a list where objects can only be added to the front and removed from the back.
   FIFO
   ex: server requests, waypoints in game
   ops: enqueue, dequeue, head (first, element, examine)
Asymptotic Analysis

\[ 2x^2 \in O(x^2) \Rightarrow \Theta(x^2) \]

upper tight lower

upper \[ 2x^2 \in O(x^2) \]
lower \[ 2x \in \Omega(x) \]

\[ y = \frac{x^2}{2} \]

\[ y = \frac{2}{x^2} \]

\[ y = \frac{2}{x} \]

Ex with Rowling’s game

collisions with player and enemy \( O(n) \)
collisions with bullets and enemy \( O(kn) \)

\[ O(n) + O(kn) = O(n) \]

\[ \Omega(n) \quad \Theta(n) \]