Review

• Stacks
  • Push, pop, peek
  • Linked list and vector implementations
  • Reverses order

• Queues ("FIFO buffers")
  • enqueue/push, dequeue, peek
  • Linked list and circular buffer implementations
  • Maintains order

• Deque
  • Stack-queue
  • Pronounced “deck”

Postfix Evaluation Algorithm

• Input: queue of tokens
• Output: number
• Internal state: stack of numbers

while len(Q) > 0:
  t = dequeue(Q)
  if t is a number:
    push(S, t)
  else # t is an operator
    Pop from $ the number of args that t consumes
    Push onto $ the result of applying t to the args in reverse order
return pop(S)

Evaluate the following infix expressions by hand:

1 + 2
10 + 4 / 2
(10 + 4) / 2
6 > 10 + 1

Evaluate the following postfix expressions by hand:

1 2 +
5 3 –
7 3 >
10 2 + 4 6 +*
1 2 3 * +
Convert the following \textbf{infix} expressions to \textbf{postfix}:

\textit{Hint: Numerals should not change order}

\begin{itemize}
  \item $5 < 100$
  \item $1 + 4 / 2$
  \item $7 * 2 * 3$
  \item $(5 - 1) / 2$
  \item $10 - 9 + 4 * 2 - 7$
\end{itemize}

\textbf{Dijkstra’s Shunting Yard}

\textbf{C++ Operator Precedence}

\textbf{Enjoy “Spring” Break}