Exercise #7

(4 pts) For each of the following define a struct, with date of type integer, and provide a simple algorithm for each function of the standard interface:

1. **Stack (FILO):**
   a.) void Push (*stack, int)
   b.) int Peek(*stack)
   c.) void Pop (*stack)
   d.) int isEmpty(*stack)
   
   Note: You should include a diagram of the structure including the pointers. You should use a singly linked list.

2. **Queue (FIFO):**
   a.) void PushBack (*queue, int)
   b.) int PeekFront(*queue)
   c.) void RemoveFront (*queue)
   d.) int isEmpty(*queue)
   
   Note: You should include a diagram of the structure including the pointers. You should use a doubly linked list.

(3 pts) **Lineup:**
Which data structure will you use for the lineups in assignment 4? Design the algorithm(s) to prompt the user for the creature, place them in the lineup in the order entered and to take one fighter from each lineup, resolve the combat, and return the winner to its lineup (at the end).

(3 pts) **Loser pile:**
Which data structure will you use for the loser pile in assignment 4? Design the algorithm to take the loser of each round and place it on the pile. How will you determine the winner of the tournament? Second place? Third place? What if one team has 3 fighters remaining and the other has none?

NOTE: You do not need to use these full stack or queue implementation for the assignment.