Homework 2

Due date: Jan 23, 2020, 9:30am

Objective

- Trace operations on stacks, queues, and deques.
- Implement algorithms using stacks and queues.
- Determine which data structure / abstract data type is most suitable to solve a given problem.
- Trace depth-first search.

Exercises

1. (10 points)
   Trace the following program segment given in pseudocode. List the elements in `queue` at the end of the program segment from head to tail. List the elements in `stack` at the end of the program segment from bottom to top.

```
List list = new empty linked list of integers;
Stack stack = new empty stack of integers;
Queue queue = new empty queue of integers;

for (int counter = 1; counter <= 3; counter++) {
   list.addTail(counter);
}
```

// content of list from head to tail: 1, 2, 3

```
for (int counter = 4; counter <= 6; counter++) {
   list.addHead(counter);
}
```

// content of list from head to tail: 6, 5, 4, 1, 2, 3

```
while (list is not empty) {
   stack.push(list.getTail());
   list.removeTail();
}
```

// content of stack from bottom to top: 3, 2, 1, 4, 5, 6

// content of list from head to tail: List should be empty

```
Integer number = stack.pop();
queue.enqueue(stack.pop());
```