

# **EECE.3220: Data Structures**

Spring 2017

Lecture 21: Key Questions

March 20, 2017

1. Describe the general design of a stack data structure, as well as some basic applications in which it is useful.

2. Describe how an array can be used to implement a stack class.

3. Write (in code or pseudo-code) definitions for each function below, assuming an array-based stack with data members `StackElement myArray[CAPACITY]` and `int myTop`:

```
// Default constructor
Stack::Stack()
{

}

// True if list is empty
bool Stack::isEmpty() {

}

// Add new value to top of stack
void Stack::push(const StackElement &val) {

}

// Remove element at top of stack
void Stack::pop() {

}

// Retrieve value of element at top of stack
StackElement Stack::top() {

}
```

4. Explain how a linked stack is implemented.

5. Write (in code or pseudo-code) definitions for each function below, assuming a linked stack with data member `Node *myTop`:

```
// Default constructor
Stack::Stack()
{
}

// True if list is empty
bool Stack::isEmpty() {

}

// Add new value to top of stack
void Stack::push(const StackElement &val) {

}

// Remove element at top of stack
void Stack::pop() {

}
```

5 (continued)

```
// Retrieve value of element at top of stack  
StackElement Stack::top() {
```

```
}
```