

Project 1

Due August 14, 2018 at 11:59 PM

This project specification is subject to change at any time for clarification. For this project you will be working alone. You will be implementing an integer list abstract data type. As part of the project your implementation will be required to pass a set of GoogleTest tests that will be provided. The list data type has the following member functions:

```
// IsEmpty returns if the list is empty
bool IsEmpty() const noexcept;

// Count returns the number of integers in the list
int Count() const noexcept;

// Front provides a reference to the first element in the list
reference Front();
const_reference Front() const;

// Back provides a reference to the last element in the list
reference Back();
const_reference Back() const;

// PushFront inserts val as the first element in the list
void PushFront(int val);

// PushBack inserts val as the last element in the list
void PushBack(int val);

// PopFront removes the first element in the list
void PopFront();

// PopBack removes the last element in the list
void PopBack();

// begin/cbegin returns an iterator or const_iterator
iterator begin();
const_iterator begin() const;
const_iterator cbegin() const;

// end/cend returns an iterator or const_iterator
iterator end();
const_iterator end() const;
const_iterator cend() const;
```

A working example can be found on the CSIF in /home/cjnitta/ecs60/. Your program is expected to run in approximately the same amount of time as the provided example. The use of the C++ STL containers is prohibited. All other STL structures must be approved prior to use. Your program may not have memory leaks and will be tested using valgrind. You can check a program for memory leaks using valgrid with the command:

```
valgrind --tool=memcheck program [arguments ...]
```

You **must** submit the source file(s), the provided unmodified Makefile, and README.txt file, in a tar.gz archive. You can tar gzip a directory with the command:

```
tar -zcvf archive-name.tar.gz directory-name
```

You should avoid using existing source code as a primer that is currently available on the Internet. You **must** specify in your readme file any sources of code that you have viewed to help you complete this project. All class projects will be submitted to MOSS to determine if students have excessively collaborated. Excessive collaboration, or failure to list external code sources will result in the matter being referred to Student Judicial Affairs.