

HW 5

For HW 5 we will write a Java program that defines and uses a linked list interface to that forces implementors of the interface to support very basic linked list functionality. The file `Main.java` contains the main function. Your code should work with it and produce output similar to what is shown in the file `output.txt`. ***Your code does not have to have the same number of lines listed below, these are basically guidelines to let you know approximately how long the code will be.***

Note that I am ok with output like that in `output1.txt` or `output2.txt`. This means that the orders I ask for elements to be placed into the linked list in `public IntList(IntList n, int data)` and `public LongList(LongList n, long data)` is relaxed.

You will create three .java files with the following functionality:

MyList.java (6 lines, including blank lines, in my implementation): This defines the *MyList* interface, which defines two abstract methods:

```
public MyList next( );
```

```
public void printNode( );
```

IntList.java (20 lines, including blank lines, in my implementation): This defines the *IntList* class which implements the *MyList* interface.

This class has two fields, *next*, which is a *IntList* reference, and *data*, which is an *int*.

The class defines a constructor and several functions:

```
public IntList(IntList n, int data) which adds n to the tail of the linked list.
```

```
public int getData( ) which returns the value of data;
```

```
public IntList next( ) which returns the next node in the linked list. Note that this is the implementation of public MyList next( ); in the MyList interface.
```

```
public void printNode( ) which uses System.out.print to print the kind of node, and the value of data. Note that this is the implementation of public void printNode( ); in the MyList interface.
```

LongList.java (20 lines, including blank lines, in my implementation): This defines the *LongList* class which implements the *MyList* interface. The functions are very similar to those in *IntList*.

This class has two fields, *next*, which is a *LongList* reference, and *data*, which is a *long*.

The class defines a constructor and several functions:

public LongList(LongList n, long data) which adds *n* to the front of the linked list;

public long getData() which returns the value of *data*;

public LongList next() which returns the next node in the linked list;

public void printNode() which uses *System.out.print* to print the kind of node, and the value of data. Note that this is the implementation of *public void printNode();* in the *MyList* interface.

What should be turned in.

Your .java files should be in a directory called *userid*, where *userid* is your Purdue login name. It should be possible for a grader to go into *userid* and execute *javac HW5.java* followed by *java HW5* and to compile and execute your program. **Your directory should contain no .class files.** Zip up the *userid* directory and turn it in. Do not use other compression schemes (e.g. .rar files or .7z files) unless you have no choice. If you don't have a choice, email me and let me know why.