

CS-1181 Lab Problem 5: Next-to-Last

PURPOSE: To become familiar with linked lists

DIRECTIONS:

Part A (Due by end of first lab session)

Download the file 'Next_to_Last_starter_code.zip', unzip its contents and import the files into your IDE.

Your task is to complete two methods for the `LinkedList` class: `getFirst()` and `getLast()`. As you might have guessed, `getFirst()` returns the first item in the list and `getLast()` returns the last item. Both methods must return `null` if the list is empty.

Your main method (**downloaded from the .zip file**) should: 1) Create a `LinkedList` and add some items to it 2) Print the list 3) Print the first item 4) Print the last item 5) Print the penultimate item (**this should print "Not Implemented"**)

EXAMPLE: Note: Although the main method has been provided to you, it's your job to test that `getFirst()` and `getLast()` return `null` when appropriate.

```
Full List:
Falcons
Bears
Titans
Eagles
Panthers
Cowboys
Steelers
49ers
Vikings
Saints
Seahawks

First item: Falcons
Last item: Seahawks
Penultimate item: Not Implemented
```

Part B

Now you must fill in the remaining method, `getPenultimate()`, of the `LinkedList` class. The word 'penultimate' means second to last, and as such this method should return the second to last item in the `LinkedList` (**the item before the tail**). If the list has zero or one items, there is no penultimate, so the method should return `null`.

For full credit, ensure that your program is well commented and follows JavaDoc standards for your method(s). Comments are only required for the Part B segment of the lab.

EXAMPLE:

```
Full List:
```

```
Falcons
```

```
Bears
```

```
Titans
```

```
Eagles
```

```
Panthers
```

```
Cowboys
```

```
Steelers
```

```
49ers
```

```
Vikings
```

```
Saints
```

```
Seahawks
```

```
First item: Falcons
```

```
Last item: Seahawks
```

```
Penultimate item: Saints
```

RUBRIC:

[1pt] Documentation

[1pt] Part A correct

[1pt] Part B correct