- Don't forget to set your Eclipse workspace and working set.
- **You must submit the JAR file, exported (with source code), from your Eclipse project.**
- **You must check your JAR file to make sure all the source files (.java files) are present. It can be opened with file compression programs such as 7-zip or Winrar.**
- **Failure to export properly will result in your work not getting marked.**

Linked List

1. Objective

1) Be able to understand the concept of using linked structure to save implementation time.

2. Instruction

1) Create Java Project in Eclipse.
2) Copy all folders in **"Week04_Q1"** to your project directory src folder.
3) You are to implement the following class:

    a) **ShiftableList**

JUnit for testing is in files ShiftableListTest.java and TestNoLoop.java.

4) **To submit:**
    - **Export your project to a JAR file, with source code.**
    - **Name your JAR file ID_Week04_Q1.jar. For example, 6723110021_Week04_Q1.jar**
    - **Submit the JAR file on MyCourseville.**

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Q1. Linked List (14 marks)

You are given all classes for coding a Linked List that stores characters (one character per node).
The list is an extended version of the list in the lecture (it's a circular doubly linked list).

- The class you must modify is ShiftableList.

Your task is to write the following methods:

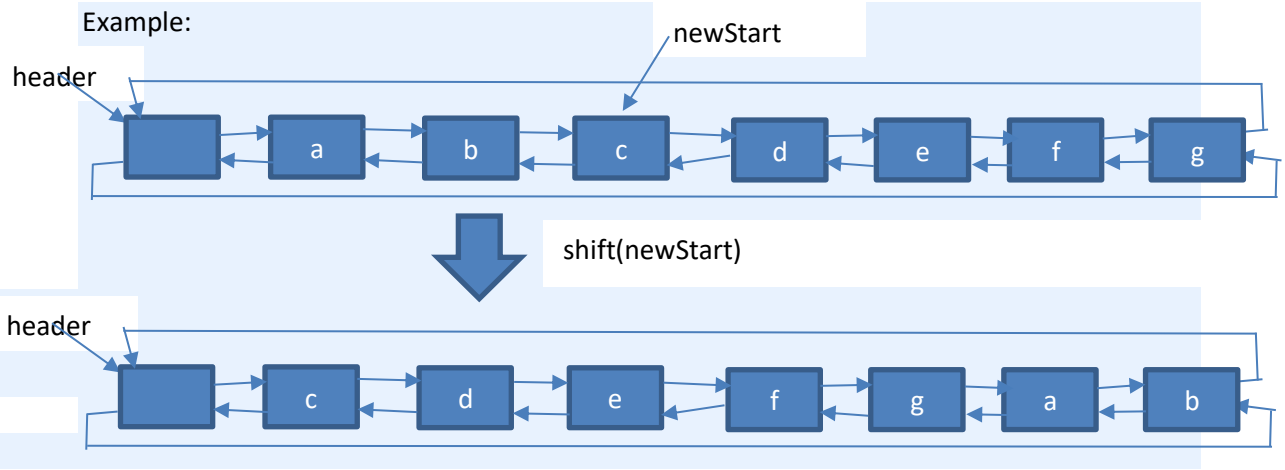
a) **(10 marks)** `public void shift(DListNode newStart) {`

- This method shifts contents in the list such that the data at position marked by newStart becomes the first data. newStart always marks an actual node that stores data.
- You must not use loop, if you do, you will lose 10 points.
- This method must be the last method in the class. The auto grader will not give you score if you do not follow this instruction.

The test scores are as follows (in file ShiftableListTest.java):

- `testShiftSimple01()` 1 mark
- `testShiftSimple02()` 1 mark
- `testShift1()` 2 marks
- `testShift2()` 2 marks
- `testShift3()` 2 marks
- `testShift4()` 2 marks
- testNoLoop() in TestNoLoop.java (10 marks deducted if you do not write proper code)

Example:



b) (4 marks) `public void shift(int n) throws Exception {`

- This method changes the nth data (counting from header) to be a new first data of the list. Assume that the value of n never exceeds the number of data.
- The test scores are as follows (in file ShiftableListTest.java):

- testShiftN1() 1 mark
- testShiftN2() 1 mark
- testShiftN3() 1 mark
- testShiftN4() 1 mark

Example:

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