Tutorial 3: Iteration

Part I: Tutorial Exercises

These exercises are designed to help you practice using and designing `Iteration` abstractions.

1. Write a program named `First10Primes` that creates a list containing the first 10 prime numbers. Print the elements of this list out on the standard output.

2. Write a program named `OddAlphabetList` that creates a list containing all the letters of the English alphabet, whose character codes are odd numbers. Print this list out on the standard output using its iterator.

3. Write a program named `RandomNums` that creates a list containing 10 randomly generated numbers in the range `[1,100]`. Print the elements of this list out on the standard output.

4. Write a program named `OddAlphabet` that creates a list `l1` containing all the character codes of the letters of the English alphabet and uses an Iterator of `l1` to create another list `l2` containing a sub-set of `l1` that includes only the odd character codes. Print the elements of both `l1` and `l2` out on the standard output.

5. Specify and implement a sub-type of `LinkedList<Integer>` called `IntegerLinkedList` and iteration abstraction `IntegerLinkedList.evenIterator` that returns an `Iterator` for only the even elements of the list.

6. Specify and implement a sub-type of `LinkedList<Integer>` called `PrimeLinkedList` and iteration abstraction `PrimeLinkedList.primeIterator` that return an `Iterator` for only the prime elements of the list.

Part II: Modified textbook exercises

6.1. Specify a procedure, `isPrime`, that determines whether an integer is prime, and then using it to implement `PrimeList`. To do this, you need to design and implement the `PrimeList` class. Note that, unlike `LinkedList`, `PrimeList` is an auto-populated collection.

Submission

Submit a **zip** file containing all Java programs to this tutorial's submission box in the course website on FIT Portal.