Peer Assisted Study Session

FIT2099 - Week 8

Monash University

Objectives

- Practice using Git (do refer to https://git-scm.com/book/en/v2 chapters 1-3)
- Practice using Java collections and iterables

Estimated Time

GIT (15 Minutes)
Question 7 - Question 8 (8 Minutes)
Question 9 (8 Minutes)
Question 10 (20 Minutes)

GIT

1. Install Git from git-scm.com

2. Open git bash

3. Clone the repository from https://github.com/bhanukaManesha/FIT2099-test

4. Change the README.md file and commit changes to master

5. Now pull my changes to your cloned repository. What goes wrong? Fix this.

6. Make some changes to the README.md file and commit and push changes to the github repository. Does git allow you to do it?

Questions

7. Write a generic print method that can print any object to console.

```
public static <T> void print(T t) {
  System.out.println(t);
}
```

8. Write a generic method itemsToList that takes an arbitrary number of arguments and returns an ArrayList that contains those arguments (in order).

```
public static <T> ArrayList<T> itemsToList(T... ts) {
  ArrayList<T> result = new ArrayList<>();
  for (T t : ts) result.add(t);
  return result;
}
```

9. Write a generic method find that takes as arguments a List of items of some type T and an object of type T. It returns the index of the supplied object if found; -1 if not found in the List.

```
public static <T> int find(List<T> haystack, T needle) {
  int i = 0;
  for (T t : haystack) {
    if (t.equals(needle)) return i;
    i++;
  }

  return -1;
}
}
```

10. Write a class FibSeq that can be iterated over using a for-each loop to obtain the first N numbers in the fibonacci sequence. [hint: look at the Iterable and Iterator interfaces]

```
import java.util.*;

class Main {
public static void main(String[] args) {
  print("Question 7");
  print(1.5);
  print(2);
  print("hello");
   print("Question 8");
  ArrayList<Integer> ns = itemsToList(1,2,3);
  ArrayList<String> ss = itemsToList("foo", "bar");
  print(ns);
  print(ss);
   print("Question 9");
  print(find(ns, 3));
  print(find(ns, 0));
   print("Question 10");
  for (int f : new FibSeq(10)) print(f);
}

public static <T> ArrayList<T> itemsToList(T... ts) {
  ArrayList<T> result = new ArrayList<>();
  for (T t : ts) result.add(t);
  return result;
}

public static <T> void print(T t) {
  System.out.println(t);
}

public static <T> int find(List<T> haystack, T needle) {
  int i = 0;
  for (T t : haystack) {
    if (t.equals(needle)) return i;
```

```
    i++;
  }
   return -1;
}

}

class FibSeq implements Iterable<Integer>, Iterator<Integer> {
 /* the two initial values in the sequence */
 int f1 = 0;
 int f2 = 1;
   /* number of values produced and the maximum number to produce */
 int n = 0;
 int nlimit = 1;
 public FibSeq(int lim) {
  nlimit = lim;
}
 public Iterator<Integer> iterator() {
  return this;  // this object is its own iterator
}
 public boolean hasNext() {
  return n < nlimit;
}
 public Integer next() {
  if (n == 0) {
    n++;
    return f1;
  }
   if (n == 1) {
    n++;
    return f2;
  }
   int f3 = f1 + f2;
  f1 = f2;
  f2 = f3;
  n++;
  return f3;
```

```
}
}
```