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CIS 112 ONL01

22 October 2022

Lab #6

Do Exercise #5, 7, 36 at the end of Chapter 6 (p.410-418).

Exercise #5:

5. Based on the definition of ListInterface and assuming strings is a list of

String objects which has just been instantiated, show the output of:

a.

System.out.println(strings.isEmpty()); // true

System.out.println(strings.add("alpha")); // true

strings.add("gamma");

strings.add("delta");

System.out.println(strings.add("alpha")); // true

System.out.println(strings.remove("alpha")); // true

System.out.println(strings.isEmpty()); // false

System.out.println(strings.get("delta")); // error (must be index)

System.out.println(strings.contains("delta")); // true

System.out.println(strings.contains("beta")); // false

System.out.println(strings.contains("alpha")); // true

System.out.println(strings.size()); // 3

b.

strings.add(0,"alpha")); strings.add(0,"gamma"); // error (remove extra paren)

strings.add(1,"delta"); strings.add(1,"beta");

strings.add(1,"alpha"); strings.add(3,"omega");

strings.add(2,"pi"); strings.set(1,"comma");

strings.remove(3);

for (String hold: strings)

System.out.println(hold);

Output without error:

gamma

comma

pi

omega

delta

alpha

c.

strings.add(0,"alpha")); strings.add(0,"gamma"); // remove extra paren

strings.add(1,"delta"); strings.add(1,"beta");

strings.add(1,"alpha"); strings.add(3,"omega");

strings.add(2,"pi"); strings.set(1,"comma");

Iterator<String> iter; String temp; // needs iter = string.iterator()

// temp should be Object

while (iter.hasNext())

{

temp = iter.next();

if (temp.equals("alpha")) iter.remove();

}

for (String hold: strings)

System.out.println(hold);

Output without errors:

Exercise #7:

7. Show the values contained in the instance variables of the sample list after each of the following sequences of operations.

a.

ABList<String> sample = new ABList<String>(5);

sample.add("A"); sample.add("C"); sample.add("D");

sample.add("A"); sample.contains("D"); sample.remove("C");

[A, D, A]

b.

ABList<String> sample = new ABList<String>(5);

sample.add("A"); sample.add(0,"C"); sample.add(0,"D");

sample.contains("E"); sample.remove(2); sample.set(1,"Z");

sample.get("A"); sample.add(1,"Q");

[D, Q, Z]

c.

LBList<String> sample = new LBList<String>();

sample.add("A"); sample.add("C"); sample.add("D");

sample.add("A"); sample.contains("D");

sample.remove("C");

[A, D, A]

d.

LBList<String> sample = new LBList<String>();

sample.add("A"); sample.add(0,"C"); sample.add(0,"D");

sample.contains("E"); sample.remove(2); sample.set(1,"Z");

sample.get("A"); sample.add(1,"Q");

[D, Q, Z]

Exercise #36:

36. Use the linked lists contained in the array pictured in Figure 6.10 to answer these questions. Each question is to be considered independently of the ot-her questions.

1. What is the order in which array positions (indices) appear on the free space list?

First node is 2

2 points to 3.

3 points to 9.

9 points to 0.

0 points to 6.

6 points to null.

1. Draw a figure that represents the array after the addition of “delta” to the list.

Table

Description automatically generated

1. Draw a figure that represents the array after the removal of “gamma” from the list.

Table

Description automatically generated