CS 696 Mobile Application Development
Fall Semester, 2010
Assignment 1

San Diego State University -- This page last updated 9/7/10

Due Sept 21 23:55

1. (4 pts) Becoming familiar with the documentation is important. Here are some questions to give you some practice at using the documentation. (Try looking for the answers in documentation before using Google.)

   a. What is an NSInteger?

   b. What are the primitive methods of the NSArray class?

   c. What does it mean that the NSDictionary class is toll-free bridged?

   d. What is NS_REQUIRES_NIL_TERMINATION and what is it used for?

2. (6 pts) Add two methods to the NSNumber class - **next** and **callCount**. The instance method **next** returns an NSNumber, whose value is one plus the value of the receiver. The class method **callCount** returns the total number of times the instance method **next** has been called on NSNumber objects in a single run of a program.

3. (5 pts) Create a linked list protocol that contains the instance methods addFirst:, addLast:, removeLast:, removeFirst:. See question 4 for more information about the methods. The protocol needs to define a read-only property **count,** that is an NSNumber object.

4. (12 pts) Using classes implement a single linked list. Each node in the linked list holds an object of any type. A linked list can hold objects of different types. Implement the instance methods listed below on the LinkedList class. Make sure that you retain/copy/release objects when needed. The linked list should use the same memory policy as the NSArray. The linked list class should implement the protocol from problem 3. Make sure that the property count is properly maintained.

   addFirst: - Adds the argument to the front of the list

   addLast: Adds the argument to the end of the list

   removeFirst: Removes the first item in the linked list

   removeLast: Removed the last item in the linked List

   objectAtIndex: (NSInteger) index - Returns the object in the list at the given index. If the index is out of range then raise a NSRangeException.

   componentsJoinedByString:(NSString *)separator - Declare this method so it is not in the header file of the linked list class. There needs to be a separate declaration and implementation of the method. The method constructs and returns an NSString object that is the result of interposing a given separator between the elements of the receiver’s list. If **list**

contains in order the numbers 3, 5, 1, then [list componentsJoinedByString: @"-"] returns the string @"3-5-1".

description - Return an NSString that shows the contents of the linked list. If the linked list contains in order the numbers 3, 5, 1 then description should return the string **(3, 5, 1)**.

5. (9 pts) Add to your Linked List class the following methods.

   - (void)enumerateObjectsUsingBlock:(void (^)(id obj, NSUInteger idx, BOOL *stop))block - Which does the same thing as the same method in NSArray.

   – (id) initWithArray: (NSArray *)anArray - Returns a linked list that contains the objects in the argument anArray.

   + (id) listWithArray: (NSArray *) anArray - Returns a linked list that contains the objects in the argument anArray.

6. (5 pts) Write a function that fileToDictionary that has one NString argument. The argument is the full path to a file. The file has format given below. The function reads the file and add the data to a NSMutableDictionary. The keys are the phone numbers and the values are the names.

   File format: Each line has the same format. The line starts with "name: ". There is a single space after the colon. Then comes a persons name followed by a "," then a space then the string "phone: ". Again there is a space after the colon. The line ends with a phone number and a new line character(s).

   Sample file

   name: Roger Whitney, phone: 619-594-3535
   name: Pete, phone: 858-345-5029
   name: Beck, phone: 919-545-9823

What to turn in

Create one Xcode project that contains all the code for problems 2-6. Add to the project a file called "Problem1.txt" and add the answers to problem one to that file. Add the directory containing your Xcode project and all the contents of that directory into a zip file. Submit your zip file using the course portal. The Xcode project will be compiled when graded.

If you leave out any files and realize this before your assignment is graded you will have to upload the entire assignment to the course portal. **The entire assignment will get the late penalty**. If you are prone to forgetting parts of assignments then download your assignment after you submit it and check it.

Grading

In addition to the points indicated for each problem there will be 5 points for style. Style includes formatting your code reasonably and consistently, using Objective C naming conventions and using the appropriate language constructs.