Web Page Update Notifier
Due May 10, 23:59

There are times that one would like to know when a web page has been updated. We will build a small system to notify people when web pages have been updated.

1. In Java use the java.net.URL class and the getLastModified() method in URLConnection class to retrieve the last modified date of a web page. That is when the last modified date of the web page changes or is more recent than a given time. Below is an example of using the URL and URLConnection classes.

```
URL address = new URL("http://www.eli.sdsu.edu/");
URLConnection connect = address.openConnection();
long time = connect.getLastModified();
Date modifiedDate = new Date(time);
System.out.println(modifiedDate.toString());
```

2. When a web page has been modified broadcast the change to observers. For this assignment an observer will be specific to a url. That is an observer for page A will only do something when page A changes. We will use two different type of observers. The first type will print a notification to the standard output. The second type will send an email message. (See http://www.javacommerce.com/displaypage.jsp?name=javamail.sql&id=18274 for an example of sending email or http://java.sun.com/developer/onlineTraining/JavaMail/contents.html for more detailed tutorial. See http://www.oracle.com/technetwork/java/javamail/downloads-137827.html to download JavaMail.)

3. One problem is that web pages don't change each time you wish to test your program. So we will use factory method and mock objects. Create a factory method that returns a URL object (or a URLConnection object). Create a subclass that returns a mock object for the URL object. The mock URL object will return a mock URLConnection object. The mock URLConnection object returns the proper value for the getLastModified() method. See http://code.google.com/p/mockito/ for more information on mock objects.

4. For the program to be useful it needs to run continuously. This increases that the program or OS may crash while the program is running. Use the memento pattern to save the state of your program to a file. When the program starts up it can recover its last state from the file.

5. One needs to add a url to the program for it to track. When we add a url we also have to indicate which type of observer we want to use to respond with the web page is updated. We also want to remove urls from being tracked. We will assume that the program is being run on a multiuser machine. When a url is added to the program the name of the user is re-

quired. Only the user that added the url can remove it from the program. Use a proxy to insure that the only correct user can remove a url from the program.