Alexandria University
Faculty of Engineering
Computer and Systems Engineering Department

CS122: Data Structures I
Assigned: Friday, Febraury 26th, 2016
Due: Thursday, March 10th, 2016

Programming Assignment 2
Hangman Game

1 Objectives

1. Getting Started with JAVA Programming Language.
2. Becoming familiar with loops, Strings, arrays and I/O in JAVA.
3. Becoming familiar with some of the famous JAVA libraries.

2 Environment Setup

1. First of all, you have to install Java Development Kit (JDK). You can read more about what is JDK via http://en.wikipedia.org/wiki/Java$_Development_Kit$. You can download it from http://www.oracle.com/technetwork/java/javase/downloads/index.html . Follow the setup instructions accordingly.
2. You are free to use any IDE of your choice as eclipse or netbeans. However, It's recommended to use eclipse for JAVA. You can download it from https://www.eclipse.org/downloads/ .

3 Hangman Game

1. Hangman is a traditional children's game, typically played with words. For the main body of the assignment, you'll be implementing traditional, guess-a-word-one-letter-at-a-time Hangman.
2. First of all, your program must read a dictionary of words from file and store them in an array in the memory. You are free to use any valid file format.
3. Your program must then pick a random word from the dictionary to be the secret word.
4. Users shall start guessing characters. For each correct guess, all occurrences of this character must be revealed to the user. On the other hand, for each wrong guess, there should be a counter showing how many wrong guesses are allowed.
5. The program must detect winning and losing states. A player is considered a winner when he guesses all the word characters and is considered a loser if he exceedes the maximum number of wrong guesses.

4 Integration

Organize your code under package with name

`eg.edu.alexu.csd.datastructure.hangman.cs<your-two-digits-class-number>`

and you will need to implement the following interface by your implementation:

```
package eg.edu.alexu.csd.datastructure.hangman;

public interface IHangman {
    /**
     * Set dictinary words to pick secret words from
     * @param words an array of words
     */
    void setDictionary(String[] words);

    /**
     * Pick a random secret word from dictionary and reutns it
     * @return secret word
     */
    String selectRandomSecretWord();

    /**
     * Receive a new user guess, and verify it against the secret word.
     * @param c
     *    case insensitive user guess.
     *    If c is NULL then ignore it and do no change
     * @return
     *    secret word with hidden characters (use '-' instead unsolved
     *    characters), or return NULL if user reached max wrong guesses
     */
    String guess(Character c);

    /**
     * Set the maximum number of wrong guesses
     * @param max
     *    maximum number of wrong guesses, If is NULL, then assume it 0
     */
    void setMaxWrongGuesses(Integer max);
}
```

5 Notes

- Check **BufferedReader**, **InputStreamReader**, **FileReader**, **Random**, and **String** classes in JAVA Libraries.
- Try the game online to get more ideas and insight on how it's played. http://www.hangman.no/
- Try out your code using http://alexcs.noip.me/OnlineTester
- You should work individually.
- Late submission is accepted for only one week.

6 References

1. Installing Java and Eclipse.
2. http://www.vogella.com/tutorials/JavaIntroduction/article.html
3. http://docs.oracle.com/javase/tutorial/java/javaOO/

Good Luck