CSC 220 – Project3

Project Details:

Write a Java program name `FindWords.java` to find **words** in a matrix. The letters in the matrix look random, but there are several hidden words in the matrix. You program will use a dictionary (provided) to find all the hidden words, and print them out. For example, you will find a file 0606matrix on Canvas, it reads:

```
6 6
t h e w d q
c g u x o x
s t b o x n
x z a v t w
k v i k z c
n s o c q h
```

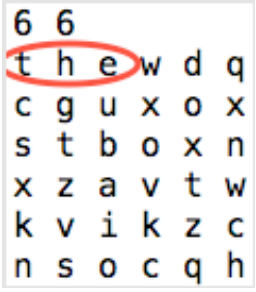
Here, the first number 6 is the number of rows, the second number 6 is the number of columns. The program name is `FindWords.java`. We type the following command

```
%java FindWords < 0606matrix
```

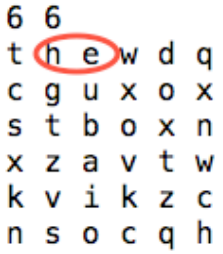
The result will be:

```
the
he
hew
ox
box
ox
so
```

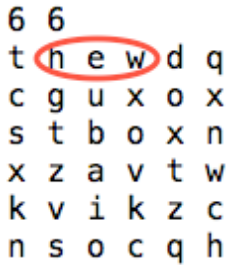
The first word “the” is indicated in the following graph.



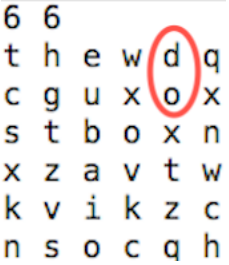
The word “he” is indicated in the following graph.



The word “hew” is labeled in the following graph.



Similarly, you can locate the other words in the matrix. Please note that when you are trying to find the words in the matrix, you only consider the situation where letters are on the SAME row. The letters of the same word must be adjacent to each other, from left to right. In this project, we do not consider the situation that letters lying out vertically or diagonally. For example, the following combination is **not** considered in this project.



How to determine a sequence of letters is a word? The provide skeleton code reads strings (each is a word) from file “*words*” and saves these strings to an array called *wordlist*. To determine whether a sequence of letters is a word or not, the program compares the sequence of letters (it is a string) against the elements of array *wordlist*. If there is a match, then this sequence of letters is a word.

Can one letter be counted as a word? NO. In our project, we assume each word has at least two letters.

How can I compare two strings are equal or not? Use the equals() method in String object. For example, if you have two strings x and y. If they have the same values, x.equals(y) will return Boolean value true. If not, it returns false.

How can I read the matrix in my program? You can use Scanner class, such as

Scanner scan = new Scanner(System.in);
Once the Scanner object is generated, you can use scan.nextInt() to read an integer. You can also use scan.next() to read a token (imagine it is a letter in this project, but Java treats each token as a String instead of a char). Once you get the token (pointed by a String variable, such as myIn), then you can use myIn.charAt(0) to get the first letter as a char. The letters in the matrix can be saved to a 2D array, which can be char data type or String data type. It is your choice.

Wrap up: Please jar every Jave file, class file and matrices files to project3.jar. Upload project3.jar to CANVAS.