CSE 1241 - COMPUTER PROGRAMMING I
Programming Assignment # 4
DUE DATE: 19/12/2022 - 23:59 (No extension)

In this homework, you will write a program which will perform the following operations:

- Changing case of a given String,
- Counting occurrences of a given word in a given sentence,
- Encryption of a given String based on a given pattern,
- Printing the statistics about all inputs by implementing several methods.

If the option is printing statistics, then your program should print a two-line statistical report: the first line prints ***the total number of words the user has entered***, and the second line prints ***the total number of alphabetic letters*** the user has entered. Note that we only count the 26 letters in the alphabet. For example, if a user has entered the following string, i.e. "We love CSE1141 course a lot!!", the following should be printed to screen:

```
The number of words: 6
The number of alphabetic letters: 19
```

To implement this program, you need to define following methods:

- **`public static void main(String[] args)`**
  - add two variables, both of type **int**, to the "main" method to store the total number of words and the total number of letters the user has entered since your program starts. You can create an infinite loop in the "***main***" method; in each iteration of the loop, first ask to select an option from the user and then ask inputs for the processing. You can invoke related methods based on the option selected.

- **`public static int updateLetterCount(int count, String str)`**
  - takes as input the current count of the letters and the string the user has just entered. This method updates and ***returns the new letter count value***. This method should be called each time the user enters a new string.

- **`public static int updateWordCount(int count, String str)`**
  - takes as input the current count of the words and the string the user has just entered. This method updates and ***returns the new word count value***. This method should be called each time the user enters a new string.

- **`public static void printStat (int wordCount, int letterCount)`**
  - takes as input the total word count and the total letter count, and prints the above-mentioned two-line statistical report on screen, with ***no return value***.

- **`public static String changeCase (String str)`**
  - ***returns a new string*** in which the uppercase letters are changed to lowercase and lowercase letters are changed to uppercase.

- **`public static int countOccurences (String[] sentence, String word)`**
  - takes a String array to represent a sentence and an input String word, and ***returns an integer*** which counts the number of occurrences of given word in the given sentence in a case insensitive way.

- **`public static String encryption (String str, int pattern)`**
  - encrypts a given input String **`str`** based on the given pattern and returns the encrypted version of the String.
  - The method should take an input string, convert it into uppercase, then process it using the integer pattern.
  - Suppose that the input String is "**WE LOVE CSE1141 a lot**", and the pattern is 3, then you should embed the String in the following zig-zag pattern:

W	.	.	.	V	.	.	.	E	.	.	.	1	.	.	.	T
.	E	.	O	.	E	.	S	.	1	.	4	.	A	.	O	.
.	.	L	.	.	.	C	.	.	.	1	.	.	.	L	.	.

  - Here, the number of rows is 3 since the input pattern is 3.
  - Then, you should read the String in the table with a row-wise fashion and return the following String as the encrypted version:
    WVE1TEOES14AOLC1L
  - Please note that, you should consider also different patterns. For example, if the pattern is 5 for the same input, your output String should be:
    WETES1OLC1LOE4AV1

Example run:

```
Menu:
1. Change Case
2. Count occurrences
3. Encryption
4. Statistics
5. Exit

Please select an option: 1
Please enter an input String: heLLo world :)
HEllO WORlD :)

Menu:
```

```
1. Change Case
2. Count occurrences
3. Encryption
4. Statistics
5. Exit

Please select an option: 2
Please enter an input sentence: Welcome to Marmara University, in
Marmara Region!
Please enter an input word: marmara
marmara appears 2 time(s) in the sentence.

Menu:
1. Change Case
2. Count occurrences
3. Encryption
4. Statistics
5. Exit

Please select an option: 3
Please enter an input String: WE love CSE1141 A LOT
Enter an integer pattern: 5
Source: WE love CSE1141 A LOT
Encrypted: WETES1OLC1LOE4AV1

Menu:
1. Change Case
2. Count occurrences
3. Encryption
4. Statistics
5. Exit

Please select an option: 4
The number of words: 15
The number of alphabetic letters: 71

Please select an option:
1. Change Case
2. Count occurrences
3. Encryption
4. Statistics
5. Exit

Please select an option: 5
Program ends. Bye :)
```