1 Your Job

In this assignment you will learn about using Strings, String methods and non-trivial problem solving. This assignment requires you to write a class named `SwapWords`. This class must be in the package named `pa1`.

Note that the description of a programming assignment is not a linear narrative and often require multiple readings before things start to click.

2 Problem Description

For this assignment you write a program to manipulate the text entered by the user. The program should have the following behavior.

- It asks the user to enter a sentence with at least three words (words are separated by a single whitespace character).
- Then, the program asks the user to enter any word of the sentence except the last two words. Lets call the word that the user entered `firstWord`.
- The program will find the word that comes after the `firstWord` and forms a new sentence by swapping these two words.
- The program outputs the new sentence formed.

The following describes a sample run of the program. **Boldface letters indicate the user input.**

```
Please enter a sentence with at least three words. Words must be separated by a single whitespace character:
This programming assignment is fun
Please enter any word (except last two words) from above sentence: programming
Here is the new sentence: This assignment programming is fun
```

Here is another sample run.

```
Please enter a sentence with at least three words. Words must be separated by a single whitespace character:
I am James Bond 007
Please enter any word (except last two words) from above sentence: James
Here is the new sentence: I am Bond James 007
```
3 Suggestions

Since your program must deal with Strings, you will be using \texttt{String} methods. The only \texttt{String} methods that you are allowed to use are: \texttt{length}, \texttt{substring}, \texttt{indexOf}. Please make sure you understand the functionality of these methods. If your solution uses any other \texttt{String} methods, you may not receive full credit. To read the input from the user use \texttt{nextLine} method of \texttt{Scanner}. Do not read input using the method \texttt{next}.

Always, it is a good practice to write the pseudo code first. Once you have written the pseudo code, identify the variables that you need and their types. Then, consider each step of the pseudo code and think about translating them into Java statements. Sometimes you may need to write more than one Java statement to implement a single step of pseudo code.

Since this is the first programming assignment, we are giving a high-level pseudo code. However, we encourage you to write down your own pseudo code and translate it into a Java program. Please note that for future programming assignments, we will not be providing pseudo code. Below is the pseudo code.

1. Prompt the user to enter a sentence with at least three words.
2. Read the user input into a variable named \texttt{sentence}.
3. Prompt the user to enter a word of the sentence (except last two words).
4. Read the user input into a variable named \texttt{word}.
5. Find the index at which \texttt{word} appears in \texttt{sentence}.
6. Compute the index at which the next word appears.
7. Find the first occurrence of whitespace character starting from the index computed in Step 6.
8. From the data computed in previous two steps compute the word that comes after \texttt{word}. Store this in a variable named \texttt{nextWord}.
9. Form a substring of \texttt{sentence} that comes before \texttt{word}.
10. Form a substring of \texttt{sentence} that comes after \texttt{nextWord}.
11. Compute the new string and output it.

Please note that you may have to write more than one Java statement to implement a step of the above pseudo code.

4 Specifications

You must follow the specifications exactly. For example, your program must be named \texttt{SwapWords} and should be in a package named \texttt{pa1}. Please note that Java is case-sensitive. Your program must behave exactly as described. Failure to follow the specifications (even if your solution is correct) will cause you to lose points.

Submit \texttt{SwapWords.java} via blackboard.