BLM19103E - COMPUTER PROGRAMMING I
Programming Assignment # 2
DUE DATE: 09/04/2021 - 23:59 (No extension)

In this homework, you will write a program which will take an input, if the word is either "**exit**" or "**Exit**" or "**EXit**" (all variations of the word "exit"), your program should terminate; otherwise, your program will execute the related code block based on the user choice. **You cannot use String functions (replace, split, insert, indexOf, substring etc.). You can only use equals, charAt, toLowercase and toUpperCase functions.**

Example:

```
Welcome to our String Analyzer Program.
     1. Count number of chars
     2. Print the words in a sentence
     3. Delete substring
     4. Replace substring
     5. Insert substring
     6. Hash code of a string
Please enter your menu choice:
```

1. You should implement the following code for option 1 that takes an input string and an input character and prints the number of occurrences of the character (case insensitive) in the given input string.

   Example:

```
Welcome to our String Analyzer Program.
     1. Count number of chars
     2. Print the words in a sentence
     3. Delete substring
     4. Replace substring
     5. Insert substring
     6. Hash code of a string
Please enter your menu choice: 1
Enter an input string: HEllo Dear
Enter an input char: e
The number of e in HEllo Dear is 2.
```

2. You should implement the following code for option 2 that takes an input sentence as a string and prints the words inside it. A word is a sequence of characters without any whitespaces and punctuation marks. The only punctuation marks that you have to consider are:

, (comma)	. (period)
! (exclamation mark)	? (question mark)
_ (underscore)	- (hyphen)
( ) (parentheses)	white-space

Example:

```
Welcome to our String Analyzer Program.
     1. Count number of chars
     2. Print the words in a sentence
     3. Delete substring
     4. Replace substring
     5. Insert substring
     6. Hash code of a string
Please enter your menu choice: 2
Enter an input string: !!!The second BLM19103E homework is due on 09-Apr-2021 (Friday).!!!
The output is:
The
second
BLM19103E
homework
is
due
on
09
Apr
2021
Friday
```

3. You should implement the following code for option 3 that finds a substring in a given string and delete its first occurrence if the type value is 0 or delete its all occurrences if the type value is 1.

   Example:

```
Welcome to our String Analyzer Program.
     1. Count number of chars
     2. Print the words in a sentence
     3. Delete substring
     4. Replace substring
     5. Insert substring
     6. Hash code of a string
Please enter your menu choice: 3
Enter an input string: I AM DOING MY HOMEWORK AT MY HOME.
Enter a substring: HOME
Enter a type: 0
I AM DOING MY WORK AT MY HOME.
```

```
Welcome to our String Analyzer Program.
     1. Count number of chars
     2. Print the words in a sentence
     3. Delete substring
     4. Replace substring
     5. Insert substring
     6. Hash code of a string
Please enter your menu choice: 3
Enter an input string: This homework is so easy!
Enter a substring: is
Enter a type: 1
Th homework  so easy!
```

4. You should implement the following code for option 4 that finds a substring (subStr1) in the given string (str) and replaces it's all occurrences with the given substring as the third argument (subStr2).

   Example:

```
Welcome to our String Analyzer Program.
     1. Count number of chars
     2. Print the words in a sentence
     3. Delete substring
     4. Replace substring
     5. Insert substring
     6. Hash code of a string
Please enter your menu choice: 4
Enter an input string (str): This homework is not so easy
Enter the first substring (subStr1): is not
Enter the second substring (subStr2): is
This homework is so easy
```

5. You should implement the following code for option 5 that insert the substring given in a string.

Example:

```
Welcome to our String Analyzer Program.
     1. Count number of chars
     2. Print the words in a sentence
     3. Delete substring
     4. Replace substring
     5. Insert substring
     6. Hash code of string
Hash code of a string Please enter your menu choice: 5
Enter an input string: I will pass this course
Enter an input substring: work hard and
Enter an index: 7
I will work hard and pass this course
```

6. You should implement the following code for option 6 that finds and print a hash code of a given string based on an integer value.

   The hash code of a string is calculated based on the following formula:

$$hashCode(s, b) = s_0 * b^{(n-1)} + s_1 * b^{(n-2)} + \ldots + s_{n-1}$$

   where s_i is `s.charAt(i)` and `b` is an integer given as the second argument.

   Example:

```
Welcome to our String Analyzer Program.
     1. Count number of chars
     2. Print the words in a sentence
     3. Delete substring
     4. Replace substring
     5. Insert substring
     6. Hash code of a string
Please enter your menu choice: 6
Enter an input string: ABC
Enter a value for b: 31
The hash code for ABC is 64578.
```

```
Welcome to our String Analyzer Program.
     1. Count number of chars
     2. Print the words in a sentence
     3. Delete substring
     4. Replace substring
     5. Insert substring
     6. Hash code of a string
Please enter your menu choice: 6
Enter an input string: Welcome
Enter a value for b: 31
The hash code for Welcome is -1397214398.
```

Note: This computation can cause an overflow for long strings, but it is not problem.

7. Main method

To implement this program, you need to create an infinite loop in the "***main***" method; in each iteration of the loop, first ask the user to enter an option and request the inputs related with the option. Then, invoke related code block with the required inputs based on the option selected. Lastly, print the output of the selected option. If the input is "**exit**" (all variations) your program should terminate. When given inputs greater than 6 or less than 1 (alphabetical or alphanumerical input except 'exit'), should be printed warning message that "Input must be between 1-6 or exit".

Example:

```
Welcome to our String Analyzer Program.
     1. Count number of chars
     2. Print the words in a sentence
     3. Delete substring
     4. Replace substring
     5. Insert substring
     6. Hash code of a string
Please enter your menu choice: exit
Program ends. Bye :)
```

Submission Instructions

Please zip and submit all your files using filename NameSurnameHW2.zip (ex: ZekiKusHW2.zip) to Moodle. Your zip file should contain the followings:

1. Java source code for HW2 (HW2NameSurname.java)