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<b>Due Date:</b>	By 11:59pm Friday February 5, 2021
<b>Evaluation:</b>	2% of final mark (see marking rubric at the end of handout)
<b>Late Submission:</b>	none accepted
<b>Purpose:</b>	The purpose of this assignment is to help you learn Java identifiers, assignments, input/output and if and if/else statements.
<b>CEAB/CIPS Attributes:</b>	Design/Problem analysis/Communication Skills

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**General Guidelines When Writing Programs:**

Include the following comments at the top of your source codes

```
// -----  
// Assignment (include number)  
// Written by: (include your name and student id)  
// For COMP 248 Section (your section) - Winter 2021  
// -----
```

- In a comment, give a general explanation of what your program does. As the programming questions get more complex, the explanations will get lengthier.
- Include comments in your program describing the main steps in your program. Focus in your comments rather on the why than the how.
- Display a welcome message.
- Display clear prompts for users when you are expecting the user to enter data from the keyboard.
- All output should be displayed with clear messages and in an easy to read format.
- End your program with a closing message so that the user knows that the program has terminated.

**Question 1 - Password Encryption** (4 pts)

Write a complete program that ask the user prompt a number with **6 digits** and output the encrypted password.

Your program should behave as follow:

1. Display a welcome message.
2. Ask the user for the input number.
3. Use a constant variables to store the value 10 in the program.
4. Display the encrypted number, which is equivalent by
  - 1) Swap the 1<sup>st</sup> and 6<sup>th</sup> digits
  - 2) Replace the second digit with the remainder of the second digit divided by 2.
  - 3) **Minus** 1 to the third digit of your input.
  - 4) Replace the fourth digit with the remainder of the third digit divided by 3.
  - 5) Swap the 4<sup>th</sup> and 5<sup>th</sup> digits.
5. Display a farewell message, so that the user knows that the program has terminated normally.

Following are the sample screen shots to illustrate the expected behavior of your program. Assume a perfect user who will always enter a correct input with 6 digits.

**Note:** Your program must display the same information and formatted the same.

```
*****
Welcome to Password Encryption Program
*****

Please enter a 6-digits number : 123456

Generating the encrypted number...

The encrypted 6-digits number is : 602521

Thank you for using Password Encryption Program!
```

*Figure 1. Sample output of Question#1*

```
*****
Welcome to Password Encryption Program
*****

Please enter a 6-digits number : 009871

Generating the encrypted number...

The encrypted 6-digits number is : 108720

Thank you for using Password Encryption Program!
```

*Figure 2. Sample output of Question#1*

## **Question 2 – Letter Encryption (8 points)**

Write a program that prompts the user for two words (W1 and W2) with 3 characters.

Your program should behave as follow:

1. Display a welcome message.
2. Ask the user for the inputs of two words.
3. Display the lengths of both words.
4. Use a new string to merge two words. The new word should follow:
  - a. The sequence: 3<sup>rd</sup> character of W1 + 3<sup>rd</sup> character of W2 + 1<sup>st</sup> character of W1 + 1<sup>st</sup> character of W2 + 2<sup>nd</sup> character of W1 + 2<sup>nd</sup> character of W2, display the new generated word.
  - b. Swap the 2<sup>nd</sup> and 6<sup>th</sup> characters of the new word.
  - c. Swap the 1<sup>st</sup> and 5<sup>th</sup> characters of the new word.
5. Display the new word.

6. Display a farewell message, so that the user knows that the program has terminated normally.

**Restrictions:** No looping statements allowed (or needed). This question requires the use of the functions: `length()`, `substring()`.

Following are the sample screen shots to illustrate the expected behavior of your program. Your program should work with any word with 3 characters entered by the user. Assume a perfect user who will always enter a word with exactly 3 characters.

**Note:** Your program must display the same information and formatted the same.

```
*****
Welcome to Letter Encryption Program
*****

Enter the first word with 3 characters: abc
Enter the second word with 3 characters: cde

The length of the word abc is 3.
The length of the word cde is 3.

The encrypted word is: ceacbd.

Generating the encrypted word...

The encrypted word is: bdacce.

Thank you for using Letter Encryption Program!
```

*Figure 3. Sample output of Question#2*

```
*****
Welcome to Letter Encryption Program
*****

Enter the first word with 3 characters: 12?
Enter the second word with 3 characters: p)+

The length of the word 12? is 3.
The length of the word p)+ is 3.

The encrypted word is: ?+1p2).

Generating the encrypted word...

The encrypted word is: 2)1p?+.

Thank you for using Letter Encryption Program!
```

*Figure 4. Sample output of Question#2*

## Submitting Assignment 1

Please check your course Moodle webpage on how to submit the assignment.

## Evaluation Criteria for Assignment 1 (20 points)

<b>Source Code</b>	
<b>Comments for all 2 questions (5 pts.)</b>	
Description of the program (authors, date, purpose)	2 pts.
Description of variables and constants	1 pt.
Description of the algorithm	2 pts.
<b>Programming Style for all 2 questions (3 pts.)</b>	
Use of significant names for identifiers	1 pt.
Indentation and readability	1 pt.
Welcome Banner or message/Closing message	1 pt.
<b>Question 1 (4 pts.)</b>	
Prompt and display the user's input	1 pt.
Follow the rules to encrypt the password	2 pts.
Display the correct result	1 pt.
<b>Question 2 (8 pts.)</b>	
Prompt user's inputs	1 pt.
Display the length of two words	1 pt.
Follow the rules to generate the encrypted words	4 pts.
Display result	2 pts.
<b>TOTAL</b>	<b>20 pts.</b>