Practical Exercise 3 (assessed)

1. To do

Write a program in assembly that:

1. Read a number, `counter`;
2. Go around in a loop where alpha-numerical characters are read from the user. When an uppercase character is read increase a variable, `UPaccount` by 1, while when a lowercase character is read increase a variable, `LOWaccount` by 1. When an even number is entered increase a variable, `EVENamount` by 1, while when an odd number is entered increase a variable, `ODDamount` by 1. Exit looping whenever '/' is read or it has looped 'counter' number of times.
3. Finally, print out the values of `UPaccount, LOWaccount, EVENamount` and `ODDamount`.

Learning outcome

1. To understand the components of a computer system, their functions and interactions
2. To develop inline assembly programming skills

3. Requirements

Your program should satisfy the following requirements.

1. If the input to `counter` is zero or negative, jump to the end without doing anything.
2. If the input to `counter` is positive, show the number before starting the loop.
3. In each round of the loop, show a message after the input to indicate whether the input is uppercase, lowercase, even or odd.
4. Accept alpha-numerical character input from the user and exit if the input is '/', otherwise process the input to update `UPaccount, LOWaccount, EVENamount` or `ODDamount.`
5. Before exiting, print out the number of times your program has looped and output the values for `UPaccount, LOWaccount, EVENamount` and `ODDamount.`

4. Sample output

A sample output from the program is shown below.

```
Please input the number of loops: 5
The loop will run 5 times.


Please input an alpha-numerical character: a
Lowercase
Please input an alpha-numerical character: G
Uppercase
Please input an alpha-numerical character: 1
Odd
Please input an alpha-numerical character: 8
Even
Please input an alpha-numerical character: /
Exiting
Looped 4 times:
The number of lowercase characters is 1.
The number of uppercase characters is 1.
The number of odd numbers is 1.
The number of even numbers is 1.
```

5. Assessment

This assignment will be assessed during the due date by your TAs or demonstrators. You will demo the following: a. your program can compile and run, b. your program generates the output correctly, c. your knowledge of the program THAT IS WRITTEN BY YOU.

What to do during the assessment upon the due date?

a. Sign for attendance at the pre-scheduled assessment timeslot.

b. Demonstrate and explain to the lab demonstrator that your program works for the problem assigned.

c. Hand in a well-commented, stapled **program listing** with the module title and your name/student number shown on the title page. Your program listing should not exceed 4 pages. You should also sign and declare non-plagiarism.

6. Deadline

12-3pm, 31nd Oct. 2016 at Lab 546.