CSE 3113: Microprocessor and Assembly Language

Objective:

The objective of this lab is to become familiar with using the data region in cortex M4 assembly programming.

Your Task:

i. Explain two directives: **Data** and **Align** with proper example.
ii. Write an assembly program to display the status of each bit of the register **PSR.**
iii. Write an assembly program where the data is declared in Data region and the result will be in Data region.

a) $$S = \sum_{i=1}^{10} i^2$$

b) The Pythagoras Theorem.

File name for data and code needs to be different for the assembler not to get confused.

- AREA Test, CODE ; name the block of code
- AREA Test_data, DATA ; name the block of data

Use the directive **DCD** to define one or more words to memory.

```
data1   DCD     1,5,20      ; Defines 3 words containing
                            ; decimal values 1, 5, and 20
data2   DCD     mem06 + 4   ; Defines 1 word containing 4 +
                            ; the address of the label mem06
AREA   MyData, DATA, READWRITE
```

iv. Write assembly program to perform the String operations
a) Print a String.
b) Reverse a String
c) Length of a String
d) Compare two String and show the status of PSR.
e) Concatenate two Strings.

Submission Guideline:

1. Your Assembly code with proper comments. (*.s file)
2. A document (*.tex file) that contains:
    a. Detail explanation of the code
    b. Detail description of the instruction used to design the program.
    b. Status of the status registers after the operation
    b. Screenshot that shows the state of the system after the code has been loaded.
    c. Screenshot that shows the situation after the code has been executed.
3. Submit as a .zip file. Example: your classroll_lab#.zip (12_lab4.zip)

Thank You !!!!