National University of Computer and Emerging Sciences, Lahore Campus

Course:	Computer Organization and Assembly Language Lab	Course Code:	EL229
Program:	BS (Computer Science)	Semester:	Fall 2019
Duration:	2 Hours	Total Marks:	50 (25+25)
Paper Date:	29-Nov-2019	Weight	40%
Section:	All Sections	Page(s):	2
Exam:	Lab Final Exam	Reg. No	

Important Instructions (Please read them before attempting the exam):

- Understanding the question statement is also part of the exam, so do not ask for any clarifications.
- Use of the cell phones, internet, notes, codes, lab manuals, and flash drives is strictly prohibited. You are only allowed to use the soft copy of book.
- Copy the soft copy of book from the following path **\\cactus\Xeon\Fall 2019\Hamna Waseem\Assembly Lab**. Place the book in your D drive, and then **unplug the Ethernet cable.**
- You can get afd tools from the path **\\cactus\Xeon\Fall 2019\Hamna Waseem\Assembly Lab\Tools.**
- Talking/Discussion is not allowed. If you're found doing so, your exam will be canceled there and then.
- It is your responsibility to protect your code and save it from being copied. If you don't protect it all matching codes will be considered copy/cheating cases and **plagiarism** will result in **F grade** in lab.
- Keep saving your .asm file after every 2 minutes. In case of power cut, you'll not be given any extra time.
- Submit **ONLY .asm file** renamed with your roll numbers as 18L-7894.
- Submit your Q1 and Q2 in separate folders. Failure to comply might result in a penalty.
- Submission path for Section-X (here X will be your section A or B or C etc.) and *'n' is the Question No.*
  \\cactus\Xeon\Fall 2019\Hamna Waseem\Assembly Lab\Final Submission\COAL-X\Qn
- You must ensure that you have made proper submission of your code. No Issues will be entertained later on.
- In case of multiple submissions, only the latest submission will be considered.
- Code must be commented and indented properly; failure to comply will incur a penalty.

Question No. 01:

A basic calculator has 4 operators i.e. +, -, * and /. You are required to write a code for this basic calculator. Operands of any operation shall be 8-bit numbers and the result of an operation shall not exceed 16 bits. Each operation will have 2 operands. 0-256

You shall take input via **int 0x16**. The user shall indicate end of input by pressing enter. After the user has pressed enter, you have to display the answer on screen.

After the output has been displayed, the user can choose to end the program by pressing escape. If user doesn't press escape, continue with the next input. Please note that there'll be no space in between operand and operator. You can create variables to store the operands and operator.

For example:

Input: 15+8

Output: 23

Input: 54*3

Output: 162

Input: 98/5

Output: 19

Question No. 02:

Write a TSR in which you move an asterisk from one screen location to the next after each second. But whenever left shift key is pressed, the asterisk moves to the next location in slower speed and if right shift key is pressed, the movement of asterisk becomes fast. No other key should work.

Hint: You have to use both int 8h and 9h.

Take input from the user until press enter