APPLIED COMPUTER SCIENCE

ACS-2906-070
Computer Architecture and System Software

Fall 2024

Laboratory 7

Due date: November 6th, 11:59 PM   **Total marks: 10**

Motivation

The goal of this laboratory is to reinforce Assembly Language Programming Concepts.

Questions

1. (10 points) Write an assembly program that reverses a string (maximum length 15). Sample Output:

   ```
   Enter a string :
   Hello
   The reversed string is:
   olleH
   ```

   Hint:

   - Remember that when a StringBuffer is stored in memory, two additional bytes are included. The first byte indicates the maximum capacity of the StringBuffer, and the second byte indicates how many characters the user actually inputted.

   - Using the instruction LEA, you can obtain the address of the first byte of the StringBuffer that indicates the maximum capacity. Increasing that address by one will point to the second byte, which is the byte that indicates how many characters the user actually inputted. If you increase it one more time, you will point to the first character of the StringBuffer.

   - For this exercise, your objective is to find how to reference the last character and start printing backward until you reach the first character. The equivalent Java code appears as follows:

     ```java
     String myStrBr = "Hello";
     for(int i = myStrBr.length()-1; i >= 0; i--){
         System.out.println(myStrBr.charAt(i) );
     }
     ```

Evaluation:

- Outputting the answer without the string will receive 7 marks, and 10 marks will be awarded to the complete solution.

Submission instructions

Submit your laboratory solutions via Nexus.