

CSL331 - System Software and Micro Processors Lab

Lab Cycle 2 – String and Integer Processing in Assembly using NASM

July 29, 2025

1. **Character Frequency Counter – Single Character:** Write a NASM program to read a string and a character from the user. Count how many times the character appears in the string and print the result.
2. **Character Frequency Counter – All Characters:** Write a NASM program to read a string from the user and, for each character in the string, count and display how many times it appears. Format the output as:

<character>: <count>

3. **String Equality Checker:** Write a NASM program to read two strings from the user and compare them character by character. Print whether the strings are equal or not.
4. **String Concatenation:** Write a NASM program to read two input strings from the user, concatenate them, and display the result.
5. **Palindrome Checker (Case-Sensitive):** Write a NASM program to read a string from the user and check whether it is a palindrome (case-sensitive). Print the result.
6. **Palindrome Checker (Case-Insensitive):** Write a NASM program to read a string from the user and check whether it is a case-insensitive palindrome (e.g., **MadAm** should be accepted as a palindrome). Print the result.
7. **String Reversal:** Write a NASM program to read a string from the user, reverse the string, and print the reversed result.
8. **Substring Search:** Write a NASM program to read a main string and a substring from the user. Check whether the substring occurs inside the main string and print **found** or **not found** accordingly.
9. **Case Toggle:** Write a NASM program to read a string from the user and toggle the case of each alphabetic character:
 - Convert lowercase letters to uppercase
 - Convert uppercase letters to lowercase

Display the toggled string.

10. **Even or Odd Checker:** Write a NASM program to read a number from the user and check whether it is even or odd. Display the result accordingly.
11. **Sum and Difference of Two Integers:** Write a NASM program to read two integers from the user. Compute and display their sum and difference using integer arithmetic instructions.
12. **Factorial of a Number:** Write a NASM program to read a positive integer from the user and compute its factorial. Display the result. (Use iterative multiplication.)
13. **Greatest Common Divisor (GCD):** Write a NASM program to read two positive integers from the user and compute their GCD using the Euclidean algorithm. Display the result.
14. **Count of Digits in an Integer:** Write a NASM program to read an integer from the user and count the number of digits it contains. Display the count.
15. **Sum of Digits of an Integer:** Write a NASM program to read an integer from the user and compute the sum of its digits. Display the result.