Laboratory Exercise 2: Collatz Conjecture

Introduction

The Collatz conjecture named after the 20th Century mathematician Lothar Collatz states that

$$f(n) = \begin{cases} \dfrac{n}{2} \ if \ even \\ 3n + 1 \ otherwise \end{cases}$$

Conjectured but not yet proven that all positive integers will eventually terminate to 1.

Learning Outcomes:

- Implement an assembly code to generate count the Collatz sequence for a given integer.
- Store the result of the count to memory.

Problem Background:

Declare a word memory as input and another as storage for the output.

Count the Collatz cycles of your input value to terminate to 1.

Store the Collatz cycles to the memory location of your ouput