## Objectives

The lab objective is to understand how basic instructions are translated into machine language. Also, students will learn how to define and use variables in an assembly language program.

**Task 1:** If it is legal, how can you give data definition for each of the following in assembly language?

1. A word variable A initialized to 52.
2. A word variable WORD1, uninitialized.
3. A byte variable B, initialized to 25h
4. A byte variable C1, uninitialized.
5. A word variable WORD2, initialized to 65536.
6. A word array ARRAY1 initialized to the first five positive integers (i.e. 1-5)
7. A constant BELL equal to 07h.
8. A constant MSG equal to “THIS IS A MESSAGE”

**Task 2:** Define following data in an assembly language program. Give starting offset addresses assigned to each of the following variable along with byte by byte contents (in hex):

A DB 7

B DW 1ABCh

C DB ‘HELLO’

**Task 3:** Using only MOV, ADD, SUB, INC, DEC and NEG, translate following high-level language assignments statements into assembly language. Declare A, B, C as three word variables and assigned any initial values to these variables:

|  |  |  |
| --- | --- | --- |
| **No.** | **Statements** | **Assembly Language Code** |
|  | A = B – A |  |
|  | A = – (A + 1) |  |
|  | C = A + B |  |
|  | B = 3\*B + 7 |  |
|  | A = B – A – 1 |  |