Laboratory Exercise 1: Memory and Register Tracing, Loading and Storing

Introduction

Tracing the memory and registers of the 8086 Architecture is an important skill to understand the flow of data and instruction from memory to CPU. In a way providing visualization of the Random Access Machine (RAM) model from the perspective of the 8086 architecture.

Learning Outcomes:

- Declare the variables of the 8086 processor based on the indicated memory map.
- Retrieve load memory items into register and store register items into memory.

Problem Background:

Memory Map:

Address	Byte (Hex)	Type
07140	A4	Byte
07141	FB	Word
07142	84	
07143	FD	Double Word
07144	45	
07145	BA	
07146	85	
07147	05	Byte Array
07148	06	
07149	07	

Address	Byte (Hex)	Type
0714A	08	/List of Bytes
0714B	0A	
0714C	0B	
0714D	0C	
0714E	8A	Word array / List of words
0714F	07	
07150	53	
07151	94	
07152	1A	
07153	32	

Using the 8086 Emulator, write the appropriate variables on the code segment for the indicated memory map. Take note that the variables in the code segment is stored in the memory on *reverse byte sequence*.

Loaded items to register:

```
AH: <byte variable at address 07140>
AL: <byte variable at address 07147>
BX: <word variable at address 07141 to 07142 >
CX: <word variable at address 0714E to 0714F >
DX: <word content of AX>
```

Stored items to memory from register:

```
07140: <byte item of CH>
07147: <byte item of CL>
07141-07142: <word item of AX>
0714E-0714F: <word item of BX>
```

```
.model small
.stack 64
.data
   ;declare the variables from the memory map here
.code
   main proc near
   mov AX,@data
   mov DS,AX
   mov ES,AX

   ;Write your assembly code here



   mov AX,4C00H
   int 21H

   main endp
```