**Experiment 1**

**Addressing Modes I**

**Part1: Register & Immediate Addressing Modes.**

**Program 1**: this program illustrates two types of instructions that use register & immediate addressing modes.

**Procedure:**

1. Write down the following program in the text editor and make #COM file.

2. Compile & emulate the program to its Hex code.

3. Compare between the assembled and disassembled programs.

4. Write down the machine instructions (Hex code) of the program

5. Use the single step execution command to run the program.

6. Verify the contents of the registers used in the program including the IP in

 each step of the execution.

**MOV AL, 44H**

**MOV AH, AL**

**MOV DX, 256**

**MOV BL, BH**

**MOV CH, 01000111B**

**MOV CL,’A’**

**MOV DL, 174 O**

**MOV DH, DL**

**MOV DS, AX**

**MOV SS, BX**

**MOV ES, CX**

**HLT**

**Discussions:**

 1. What are the data representation types used in the program and what

are their letter indication.

2. What is the data size movement used by each instruction.

3. What are the start and end addresses for each segment after the

 execution of the program.

**Part2: Direct & Indirect Addressing Modes.**

**Program 2**: this program illustrates two types of instructions that use direct & indirect addressing modes.

**Procedure:**

1. Write down the following program in the text editor and make # COM file.

2. Compile & emulate the program to its Hex code.

3. Compare between the assembled and disassembled programs.

4. Write down the machine instructions (Hex code) of the program

5. Use the single step execution command to run the program.

6. Verify the contents of the registers used in the program including the IP in each step of the execution.

7. Verify for all memory locations used in this program.

**MOV AX, 0F000H**

**MOV DS, AX**

**MOV CX, 1234H**

**MOV [0000H], CL**

**MOV [0001H], CH**

**MOV [000FH], CX**

**MOV DX, [000FH]**

**MOV AX,’AB’**

**MOV SS, AX**

**MOV ES:[0008H], AX**

**MOV BX, 0H**

**MOV AX, [BX]**

**MOV [BP], AL**

**MOV DI, 04H**

**MOV [DI], BH**

**MOV ES:[DI], BH**

**HLT**

**Discussions:**

1. What are the data representation types used in the program and what are their letter indication.

2. We used MOVAX, 0F000H

 MOV DS, AX

To initialize the data segment. Can we use MOV DS, 0F000H directly? Why?

3. If we want to store CX in the data segment what is the byte order

 storage (L-H) or (H-L).

4. Investigate the retrieving byte order from the memory to CX

5. Can we use other [BX, DI, SI, BP] for indirect addressing?