Green University of Bangladesh
Department of Computer Science and Engineering (CSE)
Faculty of Sciences and Engineering
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Lab Report No: 01
Course Title: Microprocessor & Microcontroller Lab
Course Code: CSE 304   **Section:** 213D1

Lab Experiment Name: Introduction to assembly language and EMU 8086 instruction set

Student Details

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Lab Report Status
Marks: …………………………………   Signature:…………………
Comments:……………………………………….   Date:…………………………

1. TITLE OF THE LAB REPORT EXPERIMENT

Introduction to assembly language and EMU 8086 instruction set

2. OBJECTIVES/AIM
- To analyze and understand the advantages and disadvantages of assembly language in comparison to high-level languages.
- To learn how to load and move data within registers in assembly language, specifically moving the value 100H into the BX register and then to the AX register.
- To practice basic arithmetic operations in assembly language by adding the value 10H to the contents of the AX register.

3. PROCEDURE

Problem-2:
Step 1: Start
Step 2: Put 100H to register BX,
Step 3 : Move the contents of this register to AX register.
Step 4 : Add 10H to the contents of AX register.
Step 5: End

4. IMPLEMENTATION

Problem-1: Advantages and Disadvantages of Assembly Language Compared to High-Level Languages

Advantages:

Efficiency: Assembly language allows for direct control of the hardware and is more efficient in terms of execution time and memory usage compared to high-level languages.

Hardware Control: It provides detailed control over the hardware, which is crucial for tasks that require direct interaction with the system's physical components.

Optimization: Enables fine-tuning and optimization at the machine level, allowing for the creation of highly optimized and specific code.

Disadvantages:

Complexity: Writing in assembly language is more complex and time-consuming than using high-level languages. It requires a deep understanding of the system's architecture.

Portability: Assembly language is hardware-specific. Code written for one type of processor cannot be run on another without significant modifications.

Maintainability: Code maintenance is difficult due to its complexity and the detailed nature of the code, which can be challenging to understand and modify later.
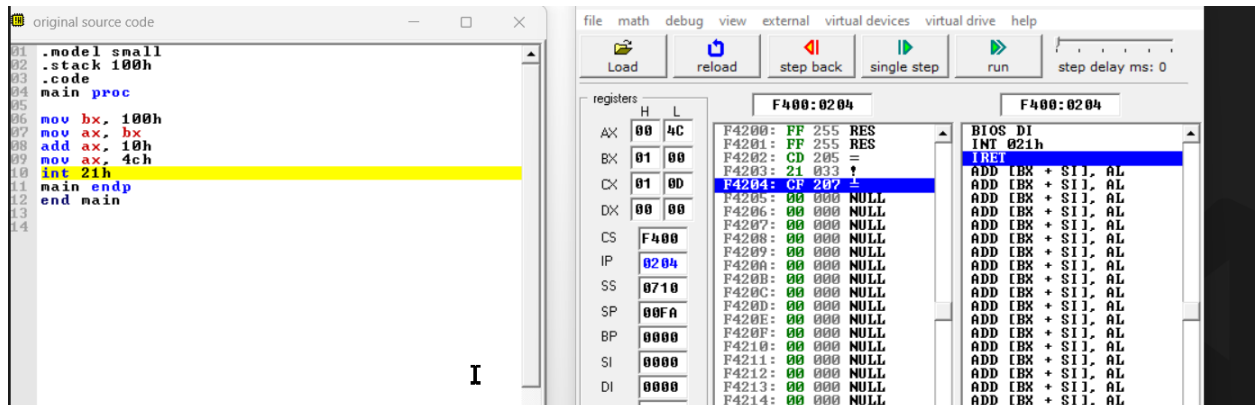
Problem-2: Put 100H to register BX, Then move the contents of this register to AX register.
-After that add 10H to the contents of AX register.

```
.model small
.stack 100h
.code
main proc
mov bx, 100h
mov ax, bx
add ax, 10h
mov ax, 4ch
int 21h
```

```
main endp
end main
```

5.OUTPUT

6. ANALYSIS AND DISCUSSION

The lab exercise highlighted the distinct features of assembly language compared to high-level languages. Assembly language's direct hardware control enables efficient and optimized code but is offset by its complexity and lower portability, being processor-specific. High-level languages offer ease of use and greater portability but may lack detailed hardware control and optimization.

Practical tasks in assembly, such as transferring the value 100H from the BX to the AX register and adding 10H to the AX register, illustrated basic data movement and arithmetic operations. These tasks emphasized the precision and explicit control required in assembly programming, contrasting with the more abstracted approach of high-level languages. This exercise demonstrated the importance of selecting the appropriate programming language based on specific project needs and constraints.

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