SLIIT UNI
THE KNOWLEDGE UNIVERSITY

Faculty of Computing

Year 1 Semester 1 (2024)

IIT1140 – Fundamental of Computing Lab Sheet 01

Assembly language is a low-level programming language that is very fast, uses fewer resources compared to higher-level languages, and can be executed by translating directly to machine language via an assembler.

The processor/ CPU executes all types of operations, effectively working as the brain of a computer. However, it only recognizes strings of 0's and 1's. So, the low-level assembly language was designed for a specific family of processors that represents various instructions in symbolic code which is far easier to understand for a human being

Let's Start

Developing code in assembly language is challenging and somewhat inconvenient. However, learning assembly offers several advantages:

- Improve your abilities.
- Master the fastest language besides machine code.
- Integrate assembly language into a higher-level language to access features it doesn't support or for better performance.
- Bridge the knowledge gap to understand the origins of higher-level languages.

The emu8086 editor

Code editors are software in which you can write the code, modify, and save it to a file. The emu8086 is a such editor that supports assembly language.

Open emu8086 editor

1. Click on emu8086 to open the software.
2. Select "New" from the list and create a new working area.

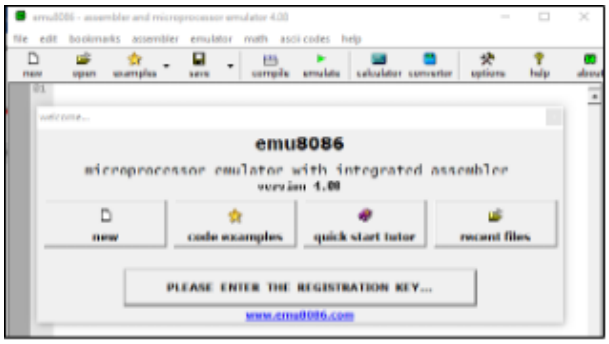

Figure 1.1

3. Click on "OK" to start.

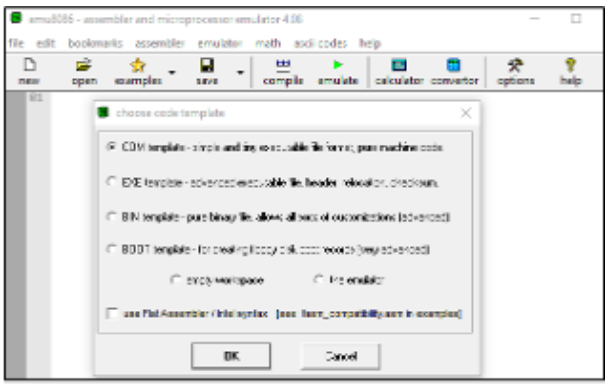

Figure 1.2

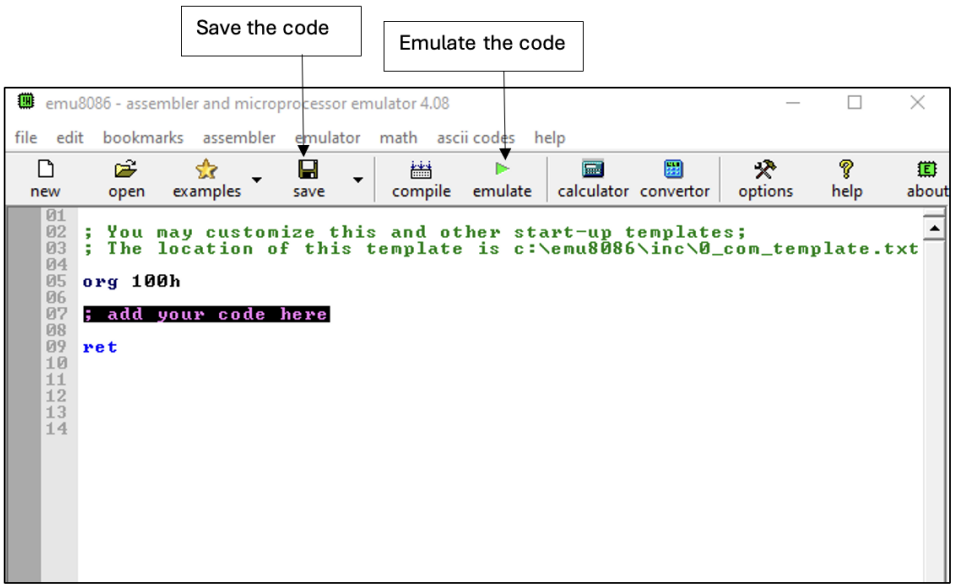

Figure 1.3

Once you write the, save it as a .asm file and click on to emulate the code. Finally, you can click on to run your assembly code.

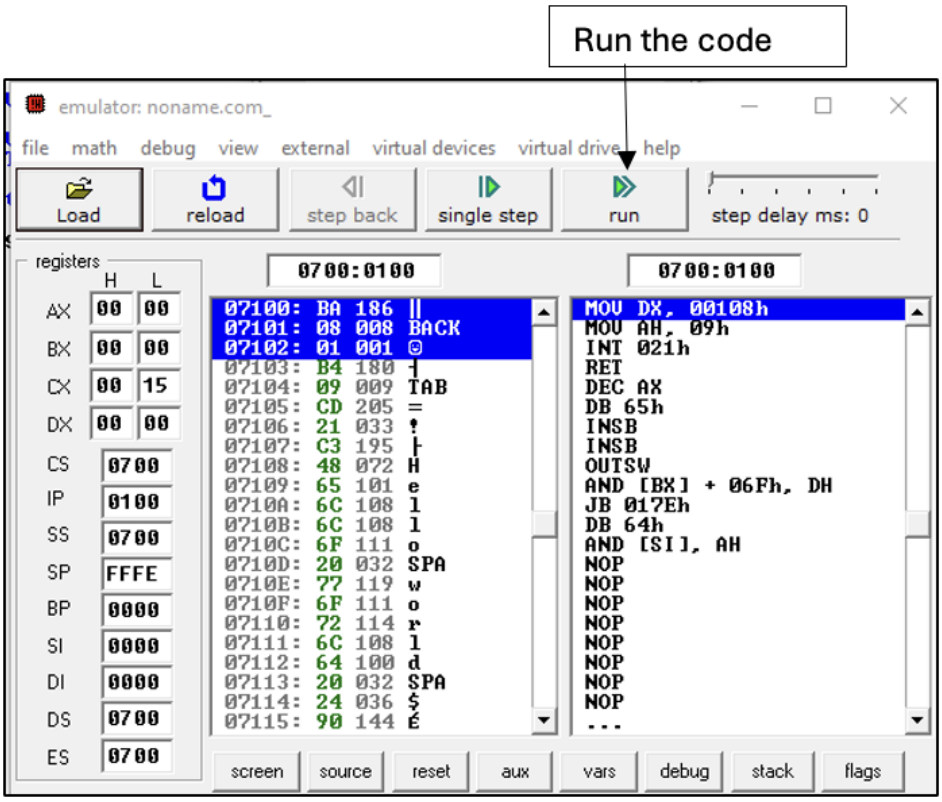

Figure 1.4

Refer to the reading material section 1 to 5 and complete the following activities.

1. Type the program given below in emu8086 and save as first.asm. Then emulate the code and run.

```
05 org 100h
06
07 MOV DX, OFFSET msg
08
09 MOV AH, 9H
10 INT 21H
11
12 ret
13
14 msg DB "Hello world $"
```

Figure 1.5

   (a) Name the variable created in this program.

   .....

   (b) Briefly Explain the purpose of the following line numbers.

   Line 07: .....

   Line 09: .....

   Line 14: .....

2. Consider the program code given below and explain the purpose of each statement.

```
MOV ah, 1h

INT 21h

MOV c, al
```

Figure 1.6

   .....

   .....

   .....

3. Following program is written to read a keyboard input and display it. Modify the program to do the following tasks.

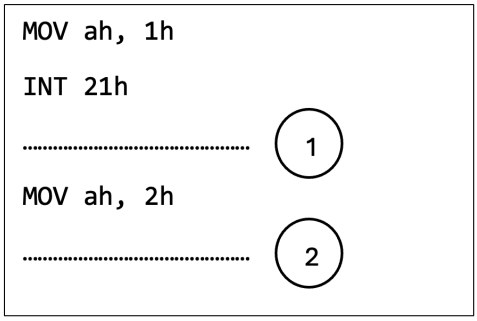

Figure 1.7

(a) Copy the character from al to dl

.....

(b) Display the character in dl

.....