8085 Simulator based on Java

8085 is one of the most important microprocessors in the development history of the microprocessors. It is the one that led to the development of processors as we see them today. It is, therefore, essential for any student to first learn the basics and master the working of this processor in order to learn and master the advanced concepts on which later microprocessors like the 8086 and the x86 family are based.

Essentially, hardware kits are used to train students on how to program an 8085 system. While this is quiet convenient and easy, it has disadvantages like

- A student needs to assemble his program himself.
- He then manually must input the program, byte by byte, into the system.
- After the execution of the program, he also must access the registers and the memory manually in order to search for the desired result.

This is a time consuming and cumbersome task. To eliminate these drawbacks, a simulator has been coded based on Java. The reason for which Java programming language was used because it offered platform independence allowing the simulator to run on any system easily with the only requirement being the freely available Java Virtual Machine.

Features of the 8085 Simulator based on Java

- Ability to type program directly in mnemonic language and save it for further use. The simulator also supports direct entry of hexadecimal opcode into the memory for execution.
- Access to memory (including stack), registers, stack as well as the access to the input/output ports. One can read them and also explicitly set them to desired values through the GUI.
- Ability to provide interrupts to the program (TRAP, RST7.5, RST6.5, RST5.5, INTR). This is not possible so easily in the hardware kits.
- Ability to perform line-by-line execution in order to see what really is happening under the hood.
- Ability to manage the CLOCK FREQUENCY of the processor simulated.

This IDE comes along with the full instruction-set of the 8085 explained in detail and also detailed help contents. Thus, using this software, it will become very easy for the students to learn and master the 8085 system using their PC and without the use of hardware kits.

References

1. 8 Bit Microprocessor; V.J. Vibhute, P.B.Borole
2. How to Program: Java; Deitel and Deitel