BBM436 Microprocessors Lab.
Fall 2020
Assignment 3
"Hello world" for microprocessor circuits

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1 Microprocessor circuit design

Microprocessors have registers to store data, but its not enough. Thus we use RAM and ROM. 8086 processor has 20-bit address bus and 16-bit data bus. So, we can use 1 MB memory.
In this experiment, i used just 8-bit addresses. Because its too enough to run a "Hello World" program.
Firstly, i connected our RAM and ROM to our 8086 microprocessor with address latch and transceiver.

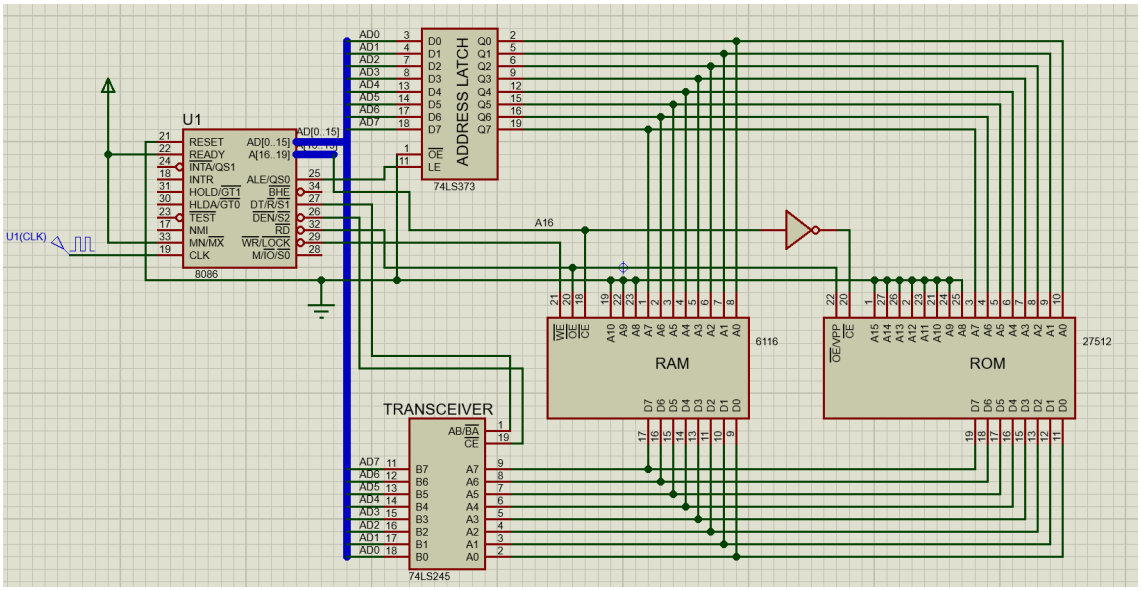
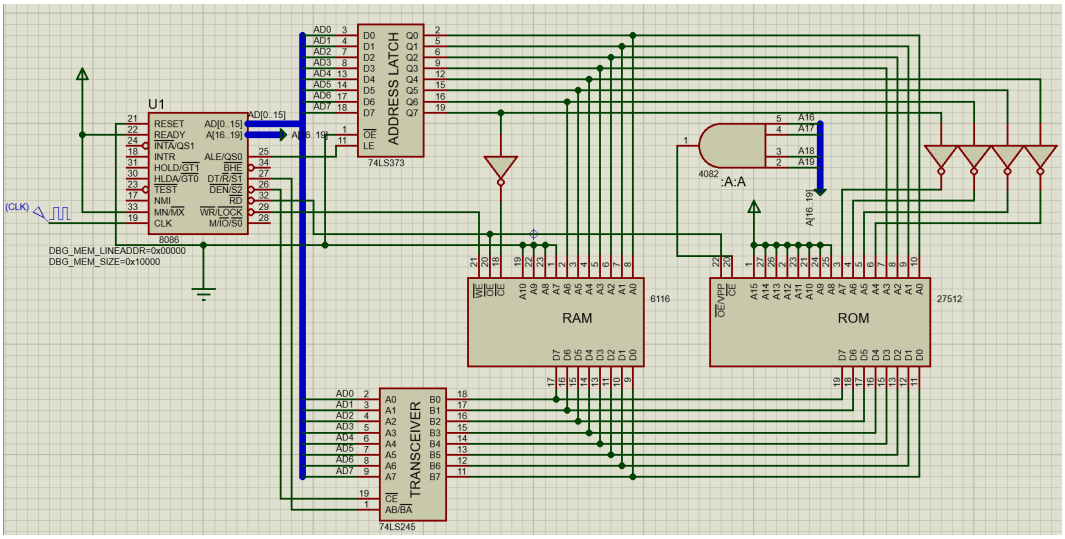


Figure 1: First microprocessor circuit design

Then, i realized that our program will be in ROM. So we must set Reset Vector to ROM's starting adress. Reset Vector in 8086 is 0xFFFF0 . Thus i redesigned that circuit.



2 "Hello World" program

Our design was completed and now, that was time to test it. I write an assembly code and tested it with this circuit. But it wasn't working. Then i researched internet to solve this problem. But i couldn't found anyting useful. So i decided that i will show that program works correctly in different way. Thus, i used LCD to write "Hello World".
In proteus, there is "Internal memory" in 8086. So i didn't connect any memory to 8086. Just used address latch and 8255A (Programmable Peripheral Interface" to manage input-outputs.