Design Assignment 1: Due Date: See Website

Q: Write, simulate, and demonstrate using Microchip Studio 7 an assembly code for the AVR ATMEGA328P/PB microcontroller that performs the following functions:

1. Store a 16-bit number 0x1234 at SRAM location 0x402. Verify the number stored in the location.
2. Store a 16-bit number in 0x5678 at SRAM location 0x410. Verify the number stored in the location.
3. Sum the above two numbers and store the result in EEPROM starting location. Verify the number stored in the location.
4. Store 10 16-bit numbers starting from 0x0910 at Program Memory location using code and retrieve them to 0x500 SRAM location using X pointer. Sum the 10 numbers and store the sum in SRAM location 0x406.

Submission:

The following are required for successful completion of the design assignment:

a. AVR assembly code that has been assembled and working. Only the source files required.
b. The assembly should be well documented with explanation of every instruction/line.
c. A word document that contains the assembly along with the screenshots of the Microchip Studio 7 during debugging at the beginning and end of Task 1.
d. Submit one solution folder, with doc and video/snapshot file. See assignment submission guidelines through github posted in the class website.

Evaluation Rubrics:

See class website for the DA evaluation rubrics.

Student Learning Outcome:

1. Introduction to Assembly program.
2. Use of assembly simulation and debugging tools.
3. Direct memory access in assembly programing.