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Assignment #6

4.1, 4.2, 4.5, 4.6, 4.8, 4.9, 4.11

4.1) Input- The purpose of the input is to send information into the computer.

Output- The purpose of the output is to display information from the computer to the user.

Control Unit-

Keeps track of where the computer is in the process of executing the program and where the computer is in the process of executing each instruction. The control unit coordinates all of the other parts of the von Neumann model to work together.

Processing Unit-

The actual processing of information is done with the processing unit, it contains the ALU which performs arithmetic and logical operations.

Memory- Memory serves to store data and to provide an address for the data to be accessed.

4.2) To LOAD data from memory, the address of the data is written into the Memory Address Register. Then a “read” signal is sent to the memory. The data is read from the Memory Data Register. To STORE data to a location in memory, the data is written to the Memory Data Register. The address is then written into the Memory Address Register and a write signal is sent to memory.

4.5) a) Location 3 = 0000 0000 0000 0000

Location 6 = 1111 1110 1101 0011

b)1) Location 0 = 0001 1110 0100 0011 = 212+ 211 + 210 +29 + 26 21 + 20 = 7747

Location 1 = 1111 0000 0010 0101 = 0000 1111 1101 1011

= 211 + 210 + 29 + 28 + 27 + 26 + 24 + 23 + 21 + 20 = -4059

2) Location 4 = 0000 0000 0110 0101 = 101 =ASCII = e

3) Location 6 = 1111 1110 1101 0011 7= 0000 0110 1101 1001

1.10 110110011111111011010011 x 2 -114

4) Location 0 = 0001 1110 0100 0011 = 212+ 211 + 210 +29 + 26 21 + 20 = 7747

Location 1 = 1111 0000 0010 0101 = 215 + 214 + 213 +212 +25 + 22 + 20 = 61,477

4.5 c) The binary pattern in location 0 would be an ADD instruction if it were an instruction.

d) Location 5 refers to register 5, it contains 0000 0000 0000 0011 .