

CS150 - Computer Organization and Architecture

Homework #5 - Spring 2023

1. The diagram below depicts a portion of program memory in a running atmega328P. Please decode each of the instructions that appear in memory and place the assembly language mnemonic for each instruction on the line appearing to its right. The first instruction has already been decoded for you.

Program Memory		
x00FF	1 1 1 0 0 0 0 1 0 0 1 0 1 0 0 0	ldi r18,0x18
x0100	1 1 1 0 0 1 1 1 0 0 0 1 1 0 0 0	
x0101	1 0 0 1 0 0 1 1 0 0 1 1 0 0 0 0	
x0102	0 0 0 0 0 0 0 0 0 1 0 1 1 1 0 1	
x0103	0 0 0 0 1 1 1 0 0 0 0 0 0 0 1 0	
x0104	1 1 0 0 1 1 1 1 1 1 1 1 1 1 1 1	

2. The following is a snippet of an assembly language program that will be hosted on the atmega328P. Please encode each of the instructions that appear in this snippet into its machine code equivalent on the line appearing to its right. The first instruction has already been encoded for you.

	Program Memory
push r18	1001 0011 0010 1111
or r19, r18	
com r19	
eor r18, r18	
eor r18, r19	
pop r18	