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Professor Egbert
CPE 301
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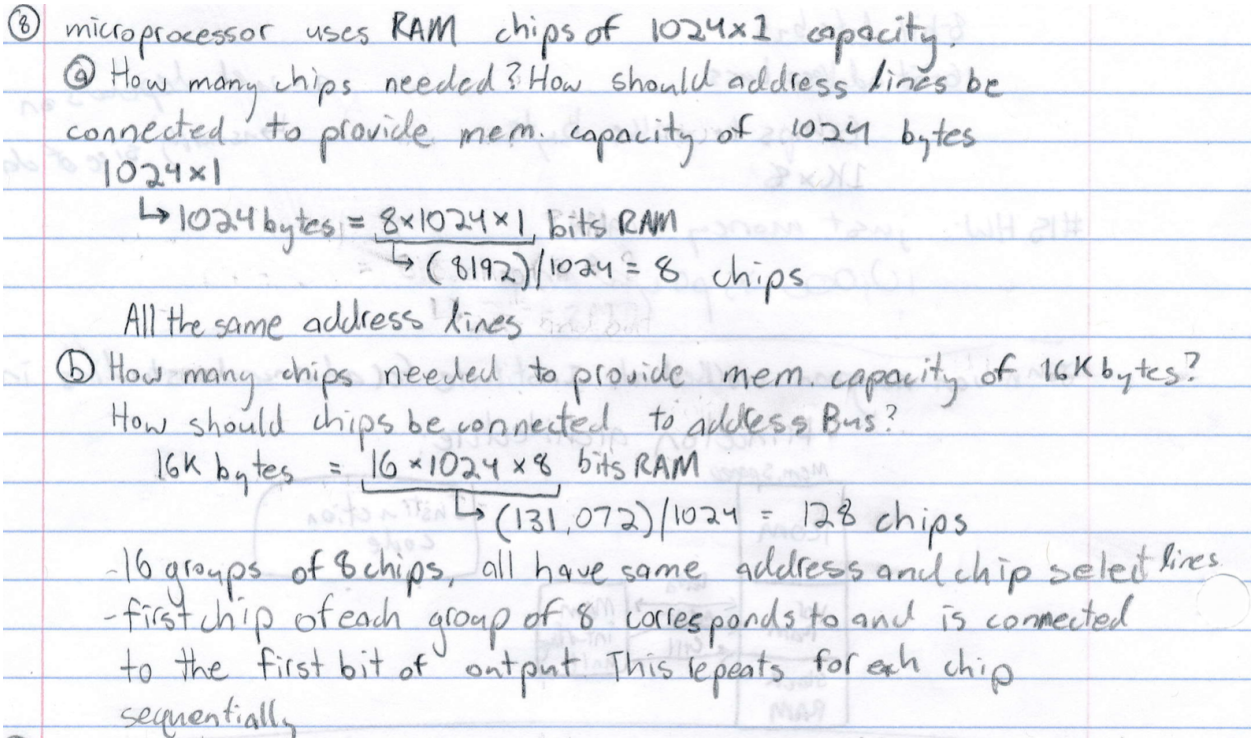
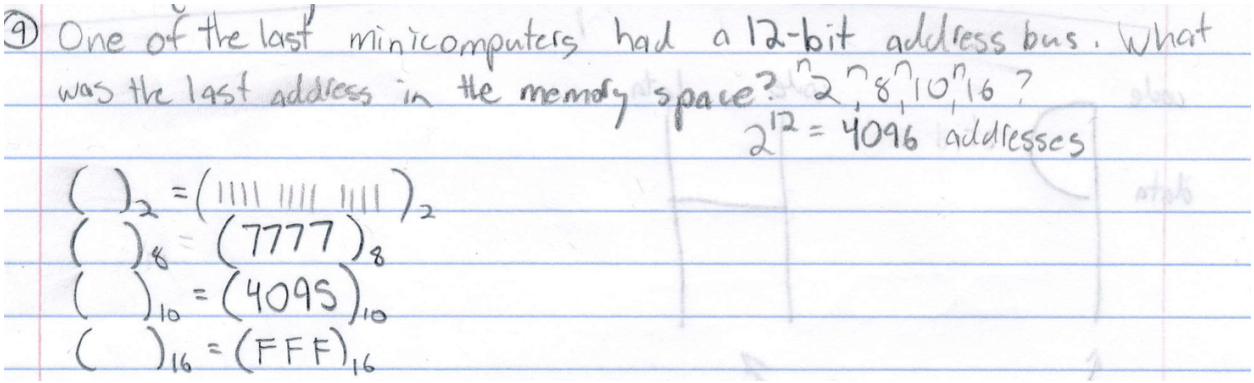
HW 2 part 2



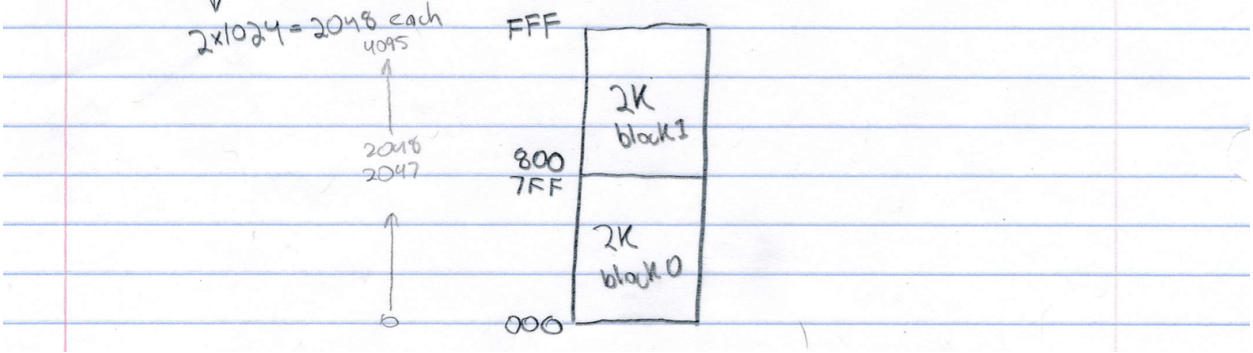
8)

a) 8 chips, the same address lines are connected to each.
b) 128 chips, 16 groups of 8, all have the same address and chip select lines, first chip of each group of 8 corresponds to and is connected to the first bit of output. This repeats for each chip sequentially.



9) 4096 addresses so the last address is 4095 in decimal, 7777 octal, (1111,1111,1111) in binary, and FFF in hex.

(10) Draw mem. map of system w/ 12-bit address bus, dividing mem space into 2K blocks. Indicate HEX address of first + last add. in blocks.



10) diagram shown above

(11) 68000 microprocessor has 24-bit address bus. Into how many 64K blocks can the 68000's mem. be divided?

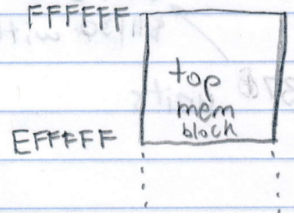
$2^{24} = 16,777,216$ addresses

$64K = 1024 \times 64 = 65,536$ bits

$16777216 / 65536 = 256$ 64K blocks

11) The 68000s's memory space can be divided into 256 64K blocks.

(12) What are the first and last adresses of the 1 M block of mem at the top of the 68000's address space?



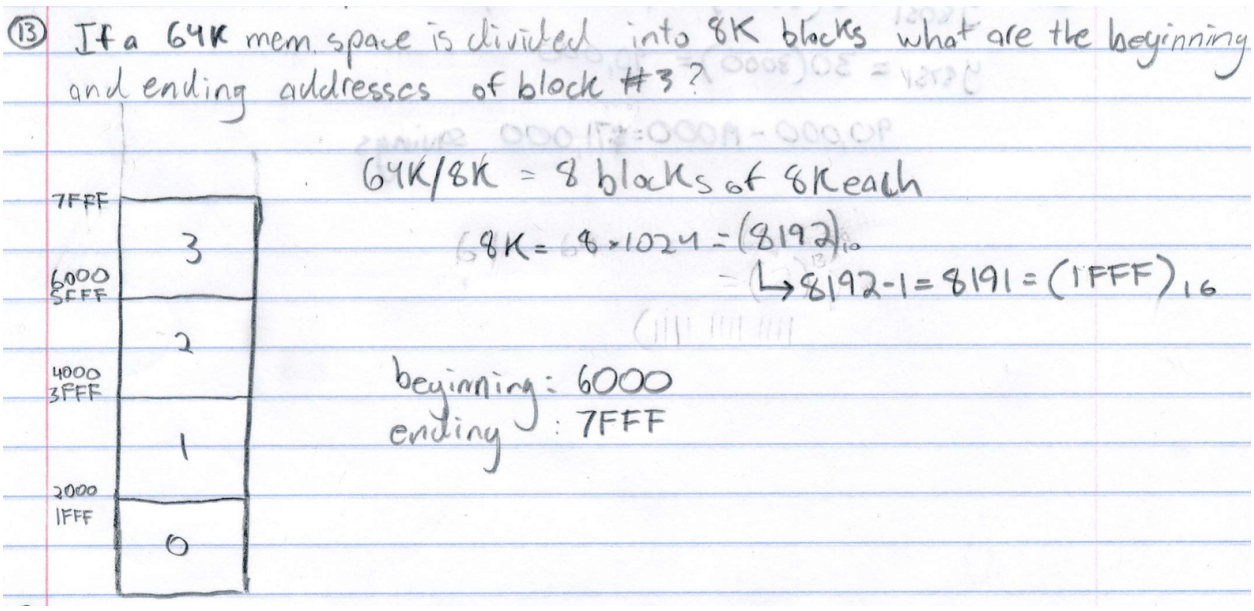
$16777216 - 1 = (16777215)_{10} \rightarrow (FFFFFF)_{16}$

$1M = 1024K$

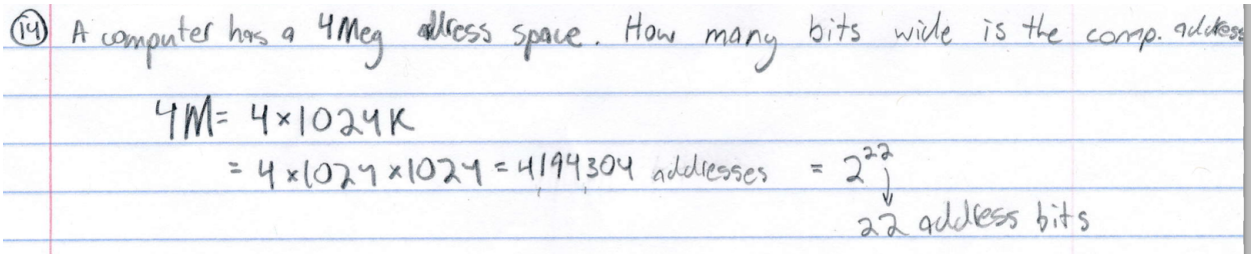
$= 1024 \times 1024 = 1048576$

$16777215 - 1048576 = (15,728,639)_{10} \rightarrow (EFFFFF)_{16}$

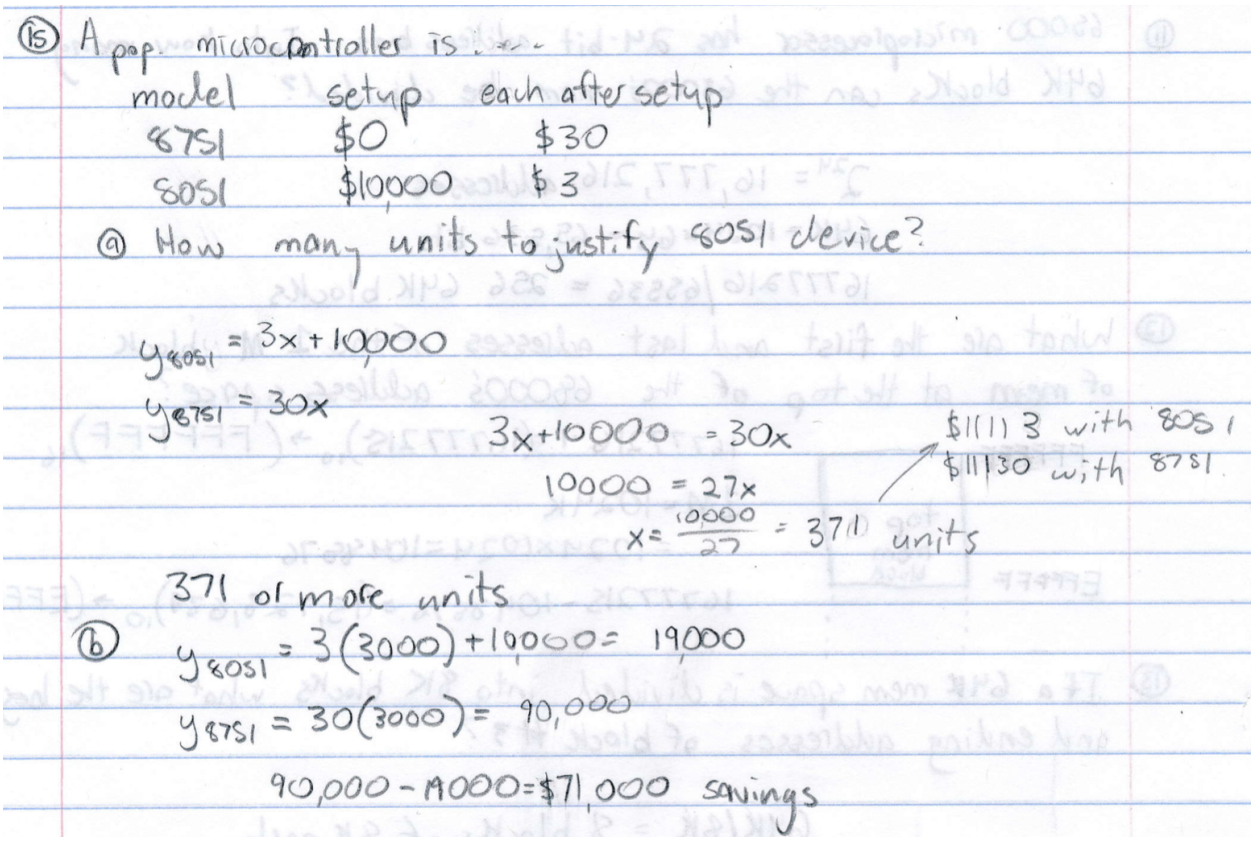
12) first: EFFFFF, last: FFFFFF, both base 16



13) beginning: 6000, ending: 7FFF, both base 16



14) 22 bits wide



15) a) 371 units would justify the 8051 device
b) you would save $71,000