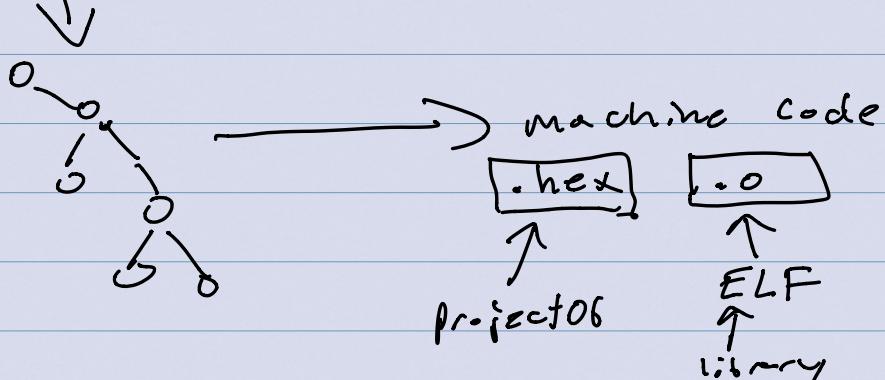
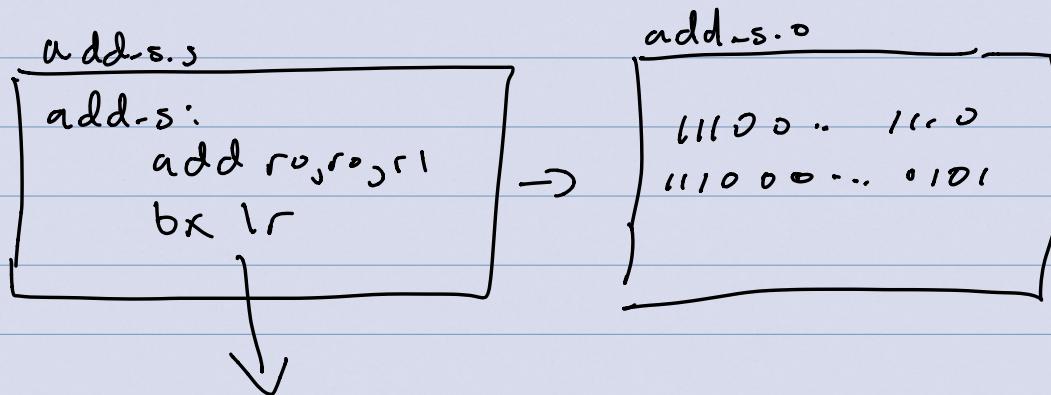


Project03 Grading, Markup points 1 week to get upto 50% back.

Project04 ARM Assembler armasm

Instruction set formats  $\leftrightarrow$  machine code  
armasm

as/gas



Linux commands

file

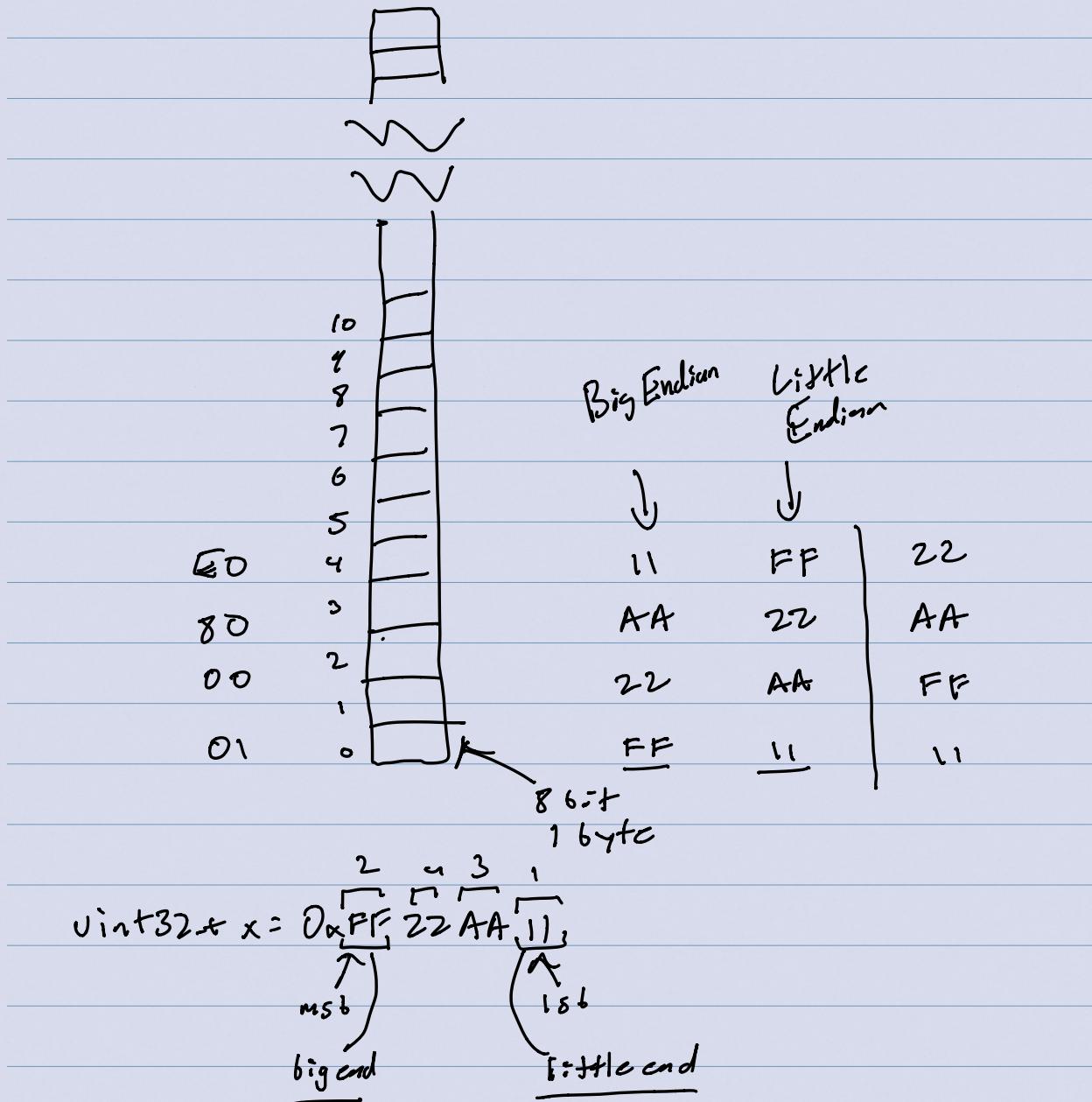
↓ objdump      objdump -D

ARM v7 Reference

gdb

Memory byte addressable

memory is an array of bytes



byte order

network byte order

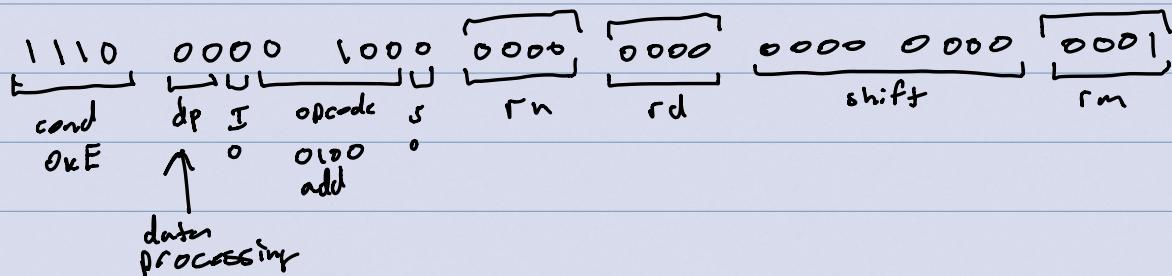
## ARM Instructions

Data Processing      (add, sub, cmp)  $\xrightarrow{\text{mul}}$   
 Memory                (ldr, str)  $\xrightarrow{\text{mul}}$   
 Control - Branch     (b, beq, bl, bx)  $\xrightarrow{\text{bx}}$

---

0xE0800001

add  $\frac{r_0}{rd}, \frac{r_0}{rn}, \frac{r_1}{rm}$



sub r2, r3, #5      data processing

opcode rd rn imm I

dp S

cond dp I opcode rn rd rt 8-bit imm

1110 0010 0100 0011 0010 0000 0000 0101

E 2 4 3 2 0 0 5

Max 2-s:

cmp r0,r1

byc max2-end

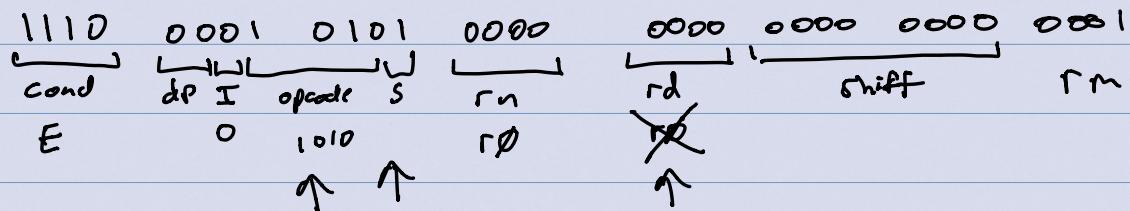
mov r0,r1

Max 2-end:

6 x 1 -

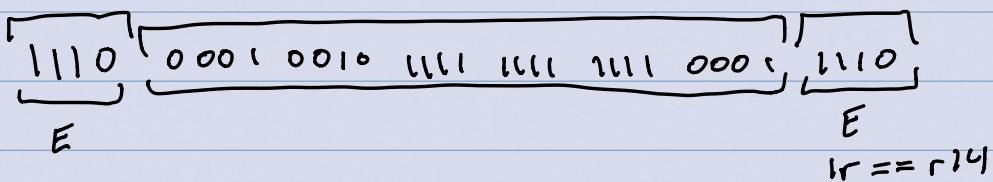
cmp  $r_0, r_1$   $\rightarrow CPSR$

E 150 0001



~~b + 1r~~ → roots,

E12FFF1E



bge max2-and



