22C:040 Homework 1 - Solution

Question 1:
(a) - High level language (HLL) has type checking and structured control flow
- HLL is not machine specific
- HLL is usually shorter
- HLL is more readable and understandable

(b) - Assembly language is faster
- Less storage because no compiler is needed
- Best used in time-critical systems
- Can exploit specialized instructions
- HLL is sometimes not available on particular machine

Question 2:
```
lw $s1, 32($zero)
lw $s2, 36($zero)
lw $s3, 40($zero)
slt $t0, $s2, $s1
bne $t0, $zero, else
add $t1, $s1, $zero
j exit
else: add $t1, $s2, $zero
exit: ...... 
```

Question 3:
(a) 100011 10001 01011 00000 00000 100100
(b) 000000 10010 10101 01001 00000 100010
(c) 000100 10001 10010 00000 00000 001101 *
(d) 101011 10001 10010 00000 00000 010000

*Note: (256-200-4)/4=13=110116   (See page 155)

Question 4:
(a) addi $t0, $zero, 8
(b) add $t0, $s4, $zero
(c) add $t0, $s0, $s0
    add $t0, $t0, $t0,
    add $t0, $s0, $t0
(d) add $t1, $s1, $s2
    lw $t0, 0($t1)

Question 5:
(a) sub $s4, $t0, $zero
(b) addi $s0, $t1, 255