Computer Organization Homework 2

Parker Gabel

February 19, 2019

1 Problem 1

1.1

```
la     $t3, cbq
lw     $t3, 0($t3)
sub    $t1, $s1, $s0
la     $s5, bnsf
lw     $s5, 0($s5)
sub    $t2, $s5, $s2
slt    $t0, $t2, $t1
bne    $t0, $zero, ELSE
sw     $t3, 0($t2)
ELSE:
```

1.2

```
la    $t0, erie
sw    $t0, 0($t0)
la    $t1, epsw
sw    $t1, 0($t1)

slt   $t7, $s0, $t0
bne   $t7, $zero, ELSE
slt   $t7, $t0, $t1
bne   $t7, $zero, ELSE
sw    $s0, 0($t1)
ELSE:
```

2 Problem 2

2.1 All even bits

```
addi $t0, $zero, 0xAA
sll  $t0, $t0, 2
and  $t0, $so, $t0
sw   $t0, 0($t0)
```

3 Problem 3

3.1 (d)

W = A(notB)C + AB(notC) + ABC X = (notA)(notB)(notC) + (notA)BC + A(notB)C + AB(notC) Y = (notA)(notB)C + (notA)B(notC) + ABC Z = (notA)(notB)(notC) + (notA)BC + A(notB)(notC) + AB(notC)

A—0
B—0 And–Z_0
C—0
A—0
B— And–Z_1
C— Or–Z A—
B—0 And–Z_2
C—0
A—
B— And–Z_3
C—0

4 Problem 4

4.1

```
   la    $s0, pow
   lw    $s0, 0($s0)

   addi  $t0, $zero, 1
   addi  $t1, $zero, 0
LOOP:
   slt   $t2, $s0, $t1
   bne   $t2, $zero, LOOP_END
   sll   $t0, $t0, 1
   addi  $t1, $t1, 1
   j     LOOP
LOOP_END:
```

5 Problem 5

5.1 bNegate = 0 and aluOp = 01

5.1.1 And = 0, 1, 0, 0

5.1.2 Or = 1, 0, 1, 1

5.1.3 Add = 1, 0, 1, 1

5.1.4 Out = 0, 1, 0, 0