Nate Ashby
A0138389
Homework 2

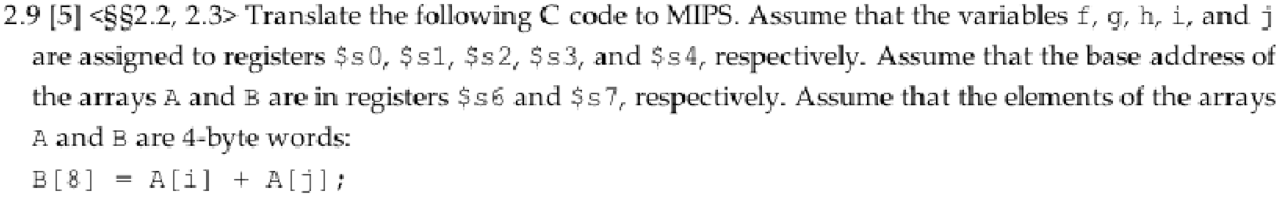
1.Translate the following 32 bit binary number to decimal (show how you would do that and yes you can use a calculator)

0000 0000 0000 0000 0000 0000 1010 1010

2+8+32+128 = 170

Negate the number and write it in twos compliment

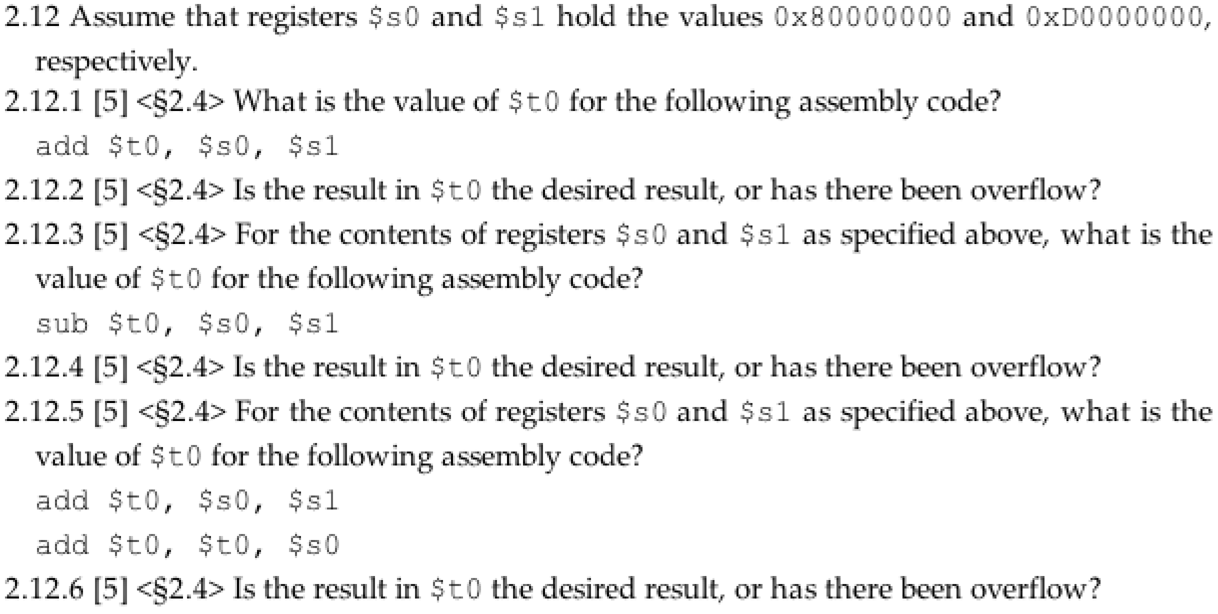
1111 1111 1111 1111 1111 1111 0101 0110



2.9 [5] <§§2.2, 2.3> Translate the following C code to MIPS. Assume that the variables f, g, h, i, and j are assigned to registers $s0, $s1, $s2, $s3, and $s4, respectively. Assume that the base address of the arrays A and B are in registers $s6 and $s7, respectively. Assume that the elements of the arrays A and B are 4-byte words:

```
B[8] = A[i] + A[j];
```

```
lw $t0, $s3($s6) #A[i]
lw $t1, $s4($s6) #A[j]
add $t2, $t0, $t1
sw $t2, 32($s7)
```



2.12 Assume that registers $s0 and $s1 hold the values 0x80000000 and 0xD0000000, respectively.

2.12.1 [5] <§2.4> What is the value of $t0 for the following assembly code?

```
add $t0, $s0, $s1
```

2.12.2 [5] <§2.4> Is the result in $t0 the desired result, or has there been overflow?

2.12.3 [5] <§2.4> For the contents of registers $s0 and $s1 as specified above, what is the value of $t0 for the following assembly code?

```
sub $t0, $s0, $s1
```

2.12.4 [5] <§2.4> Is the result in $t0 the desired result, or has there been overflow?

2.12.5 [5] <§2.4> For the contents of registers $s0 and $s1 as specified above, what is the value of $t0 for the following assembly code?

```
add $t0, $s0, $s1
add $t0, $t0, $s0
```

2.12.6 [5] <§2.4> Is the result in $t0 the desired result, or has there been overflow?

2.12.1

Whatever was left there before

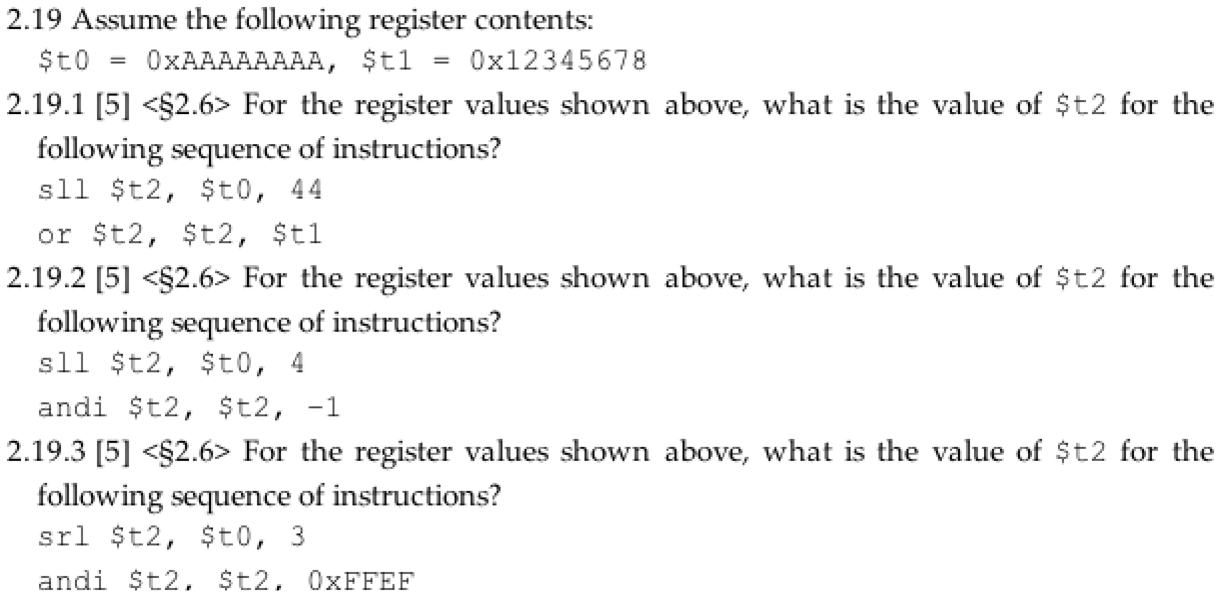
2.12.2
No, there has been an overflow.

2.12.3
0xB0000000

2.12.4
The result is negative, if $s0 or $s1 are unsigned values the result is undesired. If they are signed values, it is correct. No overflow has trapped.

2.12.5
Whatever was left there before

2.12.6
No, the first line threw an overflow.



2.19 Assume the following register contents:

```
$t0 = 0xAAAAAAAA, $t1 = 0x12345678
```

2.19.1 [5] <§2.6> For the register values shown above, what is the value of $t2 for the following sequence of instructions?

```
sll $t2, $t0, 44
or $t2, $t2, $t1
```

2.19.2 [5] <§2.6> For the register values shown above, what is the value of $t2 for the following sequence of instructions?

```
sll $t2, $t0, 4
andi $t2, $t2, -1
```

2.19.3 [5] <§2.6> For the register values shown above, what is the value of $t2 for the following sequence of instructions?

```
srl $t2, $t0, 3
andi $t2. $t2. 0xFFEF
```

2.19.1
The code will not assemble, therefore $t2 doesn't exist.

2.19.2
0xAAAAAAA0

2.19.3
0x00005545

book 2.23

Assume $t0 hold the value 0x00101000 what is the value of $t2 after the following instructions?

```
            slt     $t2,  $0,  $t0
            bne     $t2,  $0,  ELSE
            j       DONE
ELSE:       addi    $t2,   $t2,  2
DONE:
```

Answer:

0x00000003