

Adam Cunningham  
Homework 3

1 d)

fp		fp					
sp	oldstack		oldstack		oldstack		oldstack
			\$t0		\$t0		\$t0
			\$t5		\$t5		\$t5
		sp	\$t6		\$t6		\$t6
				fp		fp	
							Arg2 = a1
					ra		ra
				sp	fp		fp
							\$s0
							\$s1
							\$s2
						sp	\$s7

2(d)

```
addiu    $sp, $sp, -8
sw        $t0, 4($sp)
sw        $t1, 0($sp)
```

```
addi     $a0, $zero, 0x61
addi     $a1, $zero, 10
addi     $a2, $zero, 0x42
addi     $a3, $zero, -2
```

```
addi     $t3, $zero, 0xffff
sw        $t3, -4($sp)      #arg5 = 0xffff
```

```
lw        $t1, 0($sp)
lw        $t0, 4($sp)
addiu    $sp, $sp, 8
```

3(d)

```
addiu    $sp, $sp, -28
sw        $ra, 4($sp)
sw        $fp, 0($sp)
addiu    $fp, $sp, 24
```

#save the aX registers

```
sw        $a1, 12($sp)
```

#save relevant sX registers

```
addiu    $sp, $sp, -4
sw        $s1, 0($sp)
```

...body...

```
lw        $s1, 0($sp)
addiu    $sp, $sp, 4
```

```
lw        $fp, 0($sp)
lw        $ra, 4($sp)
addiu    $sp, $sp, 28
jr        $ra
```

4(b)

the number is positive so  $s = 0$

$3952_{\text{ten}} = 2048 + 1024 + 512 + 256 + 64 + 32 + 16$

$= 111101110000.0_{\text{bin}}$

$= 1.111011100000_{\text{bin}} \times 2^{11}$

mantissa: 1.111011100000....

fraction: 11101110...

single precision:

exponent = 11 with bias  $11 + 127_{\text{ten}} = 100\ 0101\ 0_{\text{bin}}$

s e f

0 100 0101 1 111 0111 0000 0000 0000 0000

double precision:

exponent = 11; with bias  $11 + 1023 = 1034_{\text{ten}} = 100\ 0000\ 1010$

s e f

0 100 0000 1010 111 0111 0000 ...