

Name: \_\_\_\_\_

Student Number: \_\_\_\_\_

## CSE 2021 - Fall 2009 - Quiz 1

### Short Answer

1. (12 points) Translate the following C code in MIPS-32 assembly language:

```
while (save[i] == k)
    i +=1;
```

Assume that the base address of `save` is stored in `$s6`, `i` and `k` are stored in registers `$s3` and `$s5` respectively.

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2. (6 points) Translate the following into machine code:

(a) `lw $t0, -4($sp)`

(b) `.asciiz "MIPS"`

(c) `7.325` (single precision)

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**Answer Section****SHORT ANSWER**

1. ANS:

```
Loop: sll    $t1, $s3, 2    # $t1 gets 4 * i
      add    $t1, $t1, $s6  # $t1 gets address of save[i]

      lw     $t0, 0($t1)    # $t0 gets save[i]
      bne   $t0, $s5, Exit  # goto to Exit if save[i]!=k
      addi  $s3, $s3, 1    # increment i
      j     Loop
Exit:  ...
```

PTS: 12

2. ANS:

(a) 100011 11101 00100 1111 1111 1111 1100

(b) 0x5350494d 0101 0011 0101 0000 0100 1001 0100 1101

(c) 1.11011 x 2<sup>2</sup> 0 10000001 1101 1000 0000 0000 0000 000

PTS: 6