

CMPEN331 – Quiz 3 (February 17, 2022)

Section:

Major:

Name:

Email:

- In one word each, name the most common producer and consumer of the following items:
Choose from: linker – loader – compiler – assembler – programmer. **(3 points)**

item	This is the output of:	This is the input to:
bne \$t0, \$s0, done		
Char*s = "hello world"		
firefox		

item	This is the output of:	This is the input to:
bne \$t0, \$s0, done	compiler	assembler
Char*s = "hello world"	programmer	compiler
firefox	linker	loader

- In MIPS assembly, continue the assembly language version shown below of the following C code segment: (you can use only one line to fill each blank spot) **(7 points)**

```
for (i = 0; i < 98; i++) {
    C[i] = A[i + 1] + A[i] * B[i + 2]
}
```

Arrays A, B and C start at memory location A000hex, B000hex and C000hex respectively.

```
li $s0, 0xA000          # Load immediate Address of A
li $s1, 0xB000          # Load immediate Address of B
li $s2, 0xC000          # Load immediate Address of C
li $t0, 0                # Starting index of i
li $t5, 98              # Loop bound
```

loop:

```
..... # Load A[i]
..... # Load B[i+2]
..... # A[i] * B[i+2]
..... # Load A[i+1]
..... # A[i+1] + A[i]*B[i+2]
..... # C[i] = A[i+1] + A[i]*B[i+2]
..... # Go to the address of A[i+1]
```

.....	# Go to the address of B[i+1]
.....	# Go to the address of C[i+1]
.....	# Increment index variable
.....	# Compare with Loop Bound, one line

loop:

lw \$t1, 0(\$s0)	# Load A[i]
lw \$t2, 8(\$s1)	# Load B[i+2]
mul \$t3, \$t1, \$t2	# A[i] * B[i+2]
lw \$t1, 4(\$s0)	# Load A[i+1]
add \$t2, \$t1, \$t3	# A[i+1] + A[i]*B[i+2]
sw \$t2, 0(\$s2)	# C[i] = A[i+1] + A[i]*B[i+2]
addi \$s0, 4	# Go to A[i+1]
addi \$s1, 4	# Go to B[i+1]
addi \$s2, 4	# Go to C[i+1]
addi \$t0, 1	# Increment index variable
bne \$t0, \$t5, loop	# Compare with Loop Bound, one line