United International University (UIU)
Dept of CSE
CSE 313: Computer Architecture
Summer 2020, Section B
Assignment 1

Full Marks: 5 x 2 = 10

Translate the following C instructions to Machine Language binary code. Write the corresponding MIPS codes first and then translate the MIPS code to Machine Language.

Code Snippet 1:

```
a[0] = b << 2;
d = a[0] + c[2];
```

Solution:

`a[0] = b << 2;`	`sll $t0, $s1, 2` `sw $t0, 0($s0)`

`d = a[0] + c[2];`	`lw $t1, 0($s0)`
	`lw $t2, 8($s2)`
	`add $s3, $t1, $t2`

			Const/Address		
Opcode	rs	rt	rd	shmt	funct
0	0	17	8	2	0
43	16	8	0		
35	16	9	0		
35	17	10	8		
0	9	10	19	0	32

Code Snippet 2:

```
c = b<<3;
a = a - 3;
d[3] = b[3] + a;
```

Assume variable a in $s0, b in $s1, c in $s2 and d in $s3 registers

Solution:

`c = b<<3;`	`sll $s2, $s1, 3`
`a = a - 3;`	`addi $s0, $s0, -3`

`d[3] = b[3] + a;`	`lw $t0, 12($s1)`
	`add $t0, $t0, $s0`
	`sw $t0, 12($s3)`

			Const/Address		
Opcode	rs	rt	rd	shmt	funct
0	0	18	17	3	0
8	16	16	-3		
35	17	8	12		
0	8	16	8	0	32
43	19	8	12		