

CSM 151B Winter 2017 HW 6 Solutions

W/o unrolling:

1		Lw \$t0 0(\$s0)
2		
3	Addi \$s0, \$s0, 4	Lw \$t1 0(\$t0)
4	Bne \$s0 \$s2 Loop	
5	Add \$t1 \$s1 \$t1	
6		Sw \$t1 0(\$t0)

Total cycles = (number of cycles per iteration * number of loops) + cycles needed for last instruction
= (6 * 200) + 4 = 1204

W/ unrolling:

1		Lw \$t0 0(\$s0)
2		Lw \$t2 4(\$s0)
3		Lw \$t1 0(\$t0)
4	Addi \$s0, \$s0, 8	Lw \$t3 0(\$t2)
5	Add \$t1 \$s1 \$t1	
6	Bne \$s0 \$s2 Loop	Sw \$t1 0(\$t0)
7	Add \$t3 \$s1 \$t3	
8		Sw \$t3 0(\$t2)

Total cycles = (number of cycles per iteration * number of loops) + cycles needed for last instruction
= (8 * (200/2)) + 4 = 804