

CS 3853 Midterm Exam 1 Two Sample Problems Solutions (From Spring 2013)

1) (10 points, 1 point each)

Description	Value	Description	Value
IR _{6..10}	2	IR _{11..15}	1
top Registers output	9	bottom Registers output	7
Mux A output	9	Mux B output	3
ALU output	12	Mux D output	12
MEM/WB.IR Register input	1	bottom Registers input	12

2) (9 points, 1 point each)

instruction	cycle 20	cycle 21	cycle 22	cycle 23	cycle 24	cycle 25	cycle 26	cycle 27
DADD R1, R2, R3	IF	ID	EX	MEM	WB			
AND R4, R5, R6		IF	ID	EX	MEM	WB		
OR R7, R8, #7			IF	ID	EX	MEM	WB	
DADD R9, R1, #13				IF	ID	EX	MEM	WB

Description	cycle	value	Description	cycle	value	Description	cycle	value
IR _{6..10}	22	5	IR _{6..10}	23	8	IR _{6..10}	24	1
Mux B output	24	7	Mux D output	25	17	MEM/WB.IR Registers input	25	4
Mux B output	25	13	Mux D output	27	43	MEM/WB.IR Registers input	26	7