

Part A

Part a Execution doesn't start until all dependencies are met

Instruction	Issue	Start Execute	Write to CDB
L.D F2, 0(R1)	1	2	3
MUL.D F4, F2, F0	2	4	19
L.D F6, 0(R2)	3	4	5
ADD.D F6, F4, F6	4	20	24
S.D F6, 0(R2)	5	25	26
DADDUI R1, R1, #8	6	7	8
DADDUI R2, R2, #8	7	9	10
DSGTUI R3, R1, #800	8	11	12
BEQZ R3, foo	9	13	13
L.D F2, 0(R1)	10	11	12
MUL.D F4, F2, F0	11	20	35
L.D F6, 0(R2)	12	13	14
ADD.D F6, F4, F6	13	36	40
S.D F6, 0(R2)	14	41	42
DADDUI R1, R1, #8	15	16	17
DADDUI R2, R2, #8	16	18	19
DSGTUI R3, R1, #800	17	20	21
BEQZ R3, foo	18	22	22
L.D F2, 0(R1)	19	20	21
MUL.D F4, F2, F0	20	36	51
L.D F6, 0(R2)	21	22	23
ADD.D F6, F4, F6	22	52	56
S.D F6, 0(R2)	23	57	58
DADDUI R1, R1, #8	24	25	26
DADDUI R2, R2, #8	25	27	28
DSGTUI R3, R1, #800	26	29	30
BEQZ R3, foo	27	31	31

Part B

Part b

Latencies from Figure 3.63

Instruction	Issue	Start Execute	Write to CDB
L.D F2, 0(R1)	1	2	3
MUL.D F4, F2, F0	1	4	10
L.D F6, 0(R2)	2	3	4
ADD.D F6, F4, F6	2	11	14
S.D F6, 0(R2)	3	15	16
DADDUI R1, R1, #8	3	4	5
DADDUI R2, R2, #8	4	6	7
DSGTUI R3, R1, #800	4	8	9
BEQZ R3, foo	5	10	10
stalls for 6 cycles			
L.D F2, 0(R1)	11	12	13
MUL.D F4, F2, F0	11	14	20
L.D F6, 0(R2)	12	13	14
ADD.D F6, F4, F6	12	21	24
S.D F6, 0(R2)	13	25	26
DADDUI R1, R1, #8	13	14	15
DADDUI R2, R2, #8	14	16	17
DSGTUI R3, R1, #800	14	18	19
BEQZ R3, foo	15	20	20
stalls for 6 cycles			
L.D F2, 0(R1)	21	22	23
MUL.D F4, F2, F0	21	24	30
L.D F6, 0(R2)	22	23	24
ADD.D F6, F4, F6	22	31	32
S.D F6, 0(R2)	23	35	36
DADDUI R1, R1, #8	23	24	25
DADDUI R2, R2, #8	24	26	27
DSGTUI R3, R1, #800	24	28	29
BEQZ R3, foo	25	30	30

Part C

Instruction	Issue	Start Execute	Write to CDB	Commit
L.D F2, 0(R1)		1	2	3
MUL.D F4, F2, F0		1	4	10
L.D F6, 0(R2)		2	3	4
ADD.D F6, F4, F6		2	11	14
S.D F6, 0(R2)		3	15	16
DADDUI R1, R1, #8		3	4	5
DADDUI R2, R2, #8		4	6	7
DSGTUI R3, R1, #800		4	8	9
BEQZ R3, foo		5	6	6
L.D F2, 0(R1)		6	7	8
MUL.D F4, F2, F0		6	9	15
L.D F6, 0(R2)		7	8	9
ADD.D F6, F4, F6		7	10	13
S.D F6, 0(R2)		8	14	15
DADDUI R1, R1, #8		8	9	10
DADDUI R2, R2, #8		9	11	12
DSGTUI R3, R1, #800		9	13	14
BEQZ R3, foo		10	11	11
L.D F2, 0(R1)		11	12	13
MUL.D F4, F2, F0		11	14	20
L.D F6, 0(R2)		12	13	14
ADD.D F6, F4, F6		12	15	18
S.D F6, 0(R2)		13	19	20
DADDUI R1, R1, #8		13	14	15
DADDUI R2, R2, #8		14	16	17
DSGTUI R3, R1, #800		14	18	19
BEQZ R3, foo		15	16	17