

1a)

1. add \$t2, \$t1, \$t4 #No data dependency
2. lw \$t3, 4(\$t2) #4(\$t2) dependent on result from above (a)
3. sub \$t8, \$t2, \$t5 #t2 dependent on result from 1 (b)
4. sub \$t9, \$t3, \$t8 #t3 dependent on 2, \$t8 dependent on 3 (c) (d)
5. lw \$t7, 8(\$t8) #8(\$t8) dependent on 3 (e)
6. add \$t4, \$t3, \$t7 #t3 dependent on 2, \$t7 dependent on 5 (f)

1b) a b c d e

1c) f

2a) READ: \$t1, \$t5

WRITE: \$t4

2b) Comparing: (\$t9, \$t3) (\$t9, \$t6) (\$t4, \$t3) (\$t4, \$t6)

2c) Comparing: (\$t6, \$t1) (\$t6, \$t5)

3)

		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
a	Miss												11				
b	Miss					20							11				
c	Miss					20							43				
d	Hit					20							43				
e	Miss					20							11				
f	Miss					20							43				
g	Miss					36							43				
h	Miss			50		36							43				

4)

		0(00)	1(01)	2(10)	3(11)
A	MISS				12 13 14 15
B	MISS	16 17 18 19			12 13 14 15
C	MISS	16 17 18 19	36 37 38 39		12 13 14 15
D	HIT	16 17 18 19	36 37 38 39		12 13 14 15
E	HIT	16 17 18 19	36 37 38 39		12 13 14 15
F	MISS	16 17 18 19	36 37 38 39		28 29 30 31
G	MISS	16 17 18 19	20 21 22 23		28 29 30 31
H	HIT	16 17 18 19	20 21 22 23		28 29 30 31