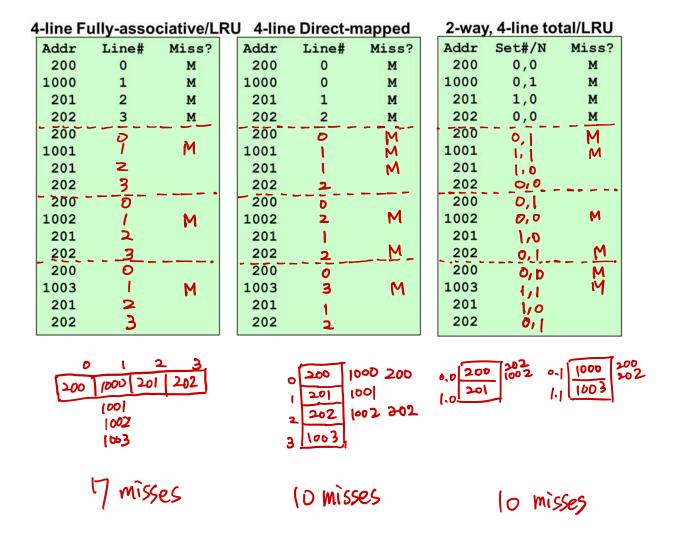| Student #:	Name:

Quiz #5-1 2018 (5 min.)

Note 1: **Return** the answer sheet (even the blank one) to show your attendance.

Assuming that a cache line contains a **single** word, complete the illustration of the cache memory traces below for the given sequence of **word** addresses. Note that all the cache memories have the **same** capacity (**4 cache lines total**) [5pt].

4-line Fully-associative/LRU

Addr	Line#	Miss?
200	0	M
1000	1	M
201	2	M
202	3	M
200	0	
1001	1	M
201	2	
202	3	
200	0	
1002	1	M
201	2	
202	3	
200	0	
1003	1	M
201	2	
202	3	

4-line Direct-mapped

Addr	Line#	Miss?
200	0	M
1000	0	M
201	1	M
202	2	M
200	0	M
1001	1	M
201	1	M
202	2	
200	0	
1002	2	M
201	1	
202	2	M
200	0	
1003	3	M
201	1	
202	2	

2-way, 4-line total/LRU

Addr	Set#/N	Miss?
200	0,0	M
1000	0,1	M
201	1,0	M
202	0,0	M
200	0,1	M
1001	1,1	M
201	1,0	
202	0,0	
200	0,1	
1002	0,0	M
201	1,0	
202	0,1	M
200	0,0	M
1003	1,1	M
201	1,0	
202	0,1	

Fully-associative diagram:

0	1	2	3
200	1000	201	202

1001
1002
1003

17 misses

Direct-mapped diagram:

0 | 200 | 1000 200
1 | 201 | 1001
2 | 202 | 1002 202
3 | 1003 |

10 misses

2-way diagram:

0,0 | 200 | 202 1002
1,0 | 201 |

0,1 | 1000 | 200 202
1,1 | 1003 |

10 misses

Quiz #5-2 2018 (5 min.)

Note 1: **Return** the answer sheet (even the blank one) to show your attendance.

Assuming that a cache line contains a **single** word, complete the illustration of the <u>cache memory traces</u> below for the given sequence of **word** addresses. Note that all the cache memories have the **same** capacity (**8 cache lines total**) [5pt].

8-line Fully-associative/LRU

Addr	Line#	Miss?
200	0	M
1000	1	M
201	2	M
202	3	M
200	0	
1001	4	M
201	2	
202	3	
200	0	
1002	5	M
201	2	
202	3	
200	0	
1003	6	M
201	2	
202	3	

8-line Direct-mapped

Addr	Line#	Miss?
200	0	M
1000	0	M
201	1	M
202	2	M
200	0	M
1001	1	M
201	1	M
202	2	
200	0	
1002	2	M
201	1	
202	2	M
200	0	
1003	3	M
201	1	
202	2	

2-way, 8-line total/LRU

Addr	Set#/N	Miss?
200	0,0	M
1000	0,1	M
201	1,0	M
202	2,0	M
200	0,0	
1001	1,1	M
201	1,0	
202	2,0	
200	0,0	
1002	2,1	M
201	1,0	
202	2,0	
200	0,0	
1003	3,0	M
201	1,0	
202	2,0	

Fully-associative:

0	1	2	3
200	1000	201	202

4	5	6	7
1001	1002	1003	

7 misses

Direct-mapped:

0	200	1000 200
1	201	1001
2	202	1002 202
3	1003	
4		
5		
6		
7		

10 misses

2-way:

0,0	200	0,1	1000
1,0	201	1,1	1001
2,0	202	2,1	1002
3,0		3,1	1003

7 misses