

Full Name: \_\_\_\_\_

AID: \_\_\_\_\_

## CS 351 Final Exam Worksheet

WP1 (/12) :
WP2 (/10) :
WP3 (/9) :
WP4 (/9) :
TOTAL (/40) :

**WP1.**

(a) #Reads:  + #Writes:  = #Accesses:

(b) #Misses:

(c)

A	0	1	2	3
0				
1				
2				
3				

(d) #Misses:

**WP2 (a).**

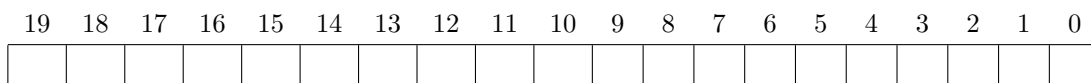
Virtual address fields:

**VPO** : The virtual page offset

**VPN** : The virtual page number

**TLBI** : The TLB index

**TLBT** : The TLB tag



Physical address fields:

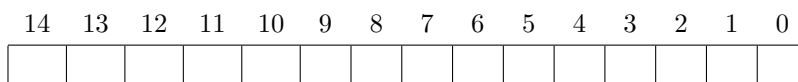
**PPO** : The physical page offset

**PPN** : The physical page number

**CO** : The cache block offset

**CI** : The cache set index

**CT** : The cache tag



**WP2 (b).**

Request: **0x3744D**

A. Virtual address

19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

B. Address translation

Parameter	Value
VPN	0x
TLB Index	0x
TLB Tag	0x
TLB Hit? (Y/N)	
Page Fault? (Y/N)	
PPN	0x

C. Physical address

14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

D. Physical memory reference

Parameter	Value
Cache offset	0x
Cache Index	0x
Cache Tag	0x
Cache Hit? (Y/N)	
Cache Byte returned	0x

**WP2 (c).**

Request: **0x007AA**

A. Virtual address

19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

B. Address translation

Parameter	Value
VPN	0x
TLB Index	0x
TLB Tag	0x
TLB Hit? (Y/N)	
Page Fault? (Y/N)	
PPN	0x

C. Physical address

14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

D. Physical memory reference

Parameter	Value
Cache offset	0x
Cache Index	0x
Cache Tag	0x
Cache Hit? (Y/N)	
Cache Byte returned	0x

**WP3.**

Start state:                      After                      After                      After  
    malloc(25):                      free(0x8000503C):                      realloc(0x80005004, 10):

Addr.	Data	Addr.	Data	Addr.	Data	Addr.	Data
0x80005068	0x00000020	0x80005068		0x80005068		0x80005068	
0x...5064	—	0x...5064		0x...5064		0x...5064	
0x...5060	—	0x...5060		0x...5060		0x...5060	
0x...505c	—	0x...505c		0x...505c		0x...505c	
0x...5058	—	0x...5058		0x...5058		0x...5058	
0x...5054	—	0x...5054		0x...5054		0x...5054	
0x...5050	—	0x...5050		0x...5050		0x...5050	
0x...504c	0x00000020	0x...504c		0x...504c		0x...504c	
0x...5048	0x00000015	0x...5048		0x...5048		0x...5048	
0x...5044	—	0x...5044		0x...5044		0x...5044	
0x...5040	—	0x...5040		0x...5040		0x...5040	
0x...503c	—	0x...503c		0x...503c		0x...503c	
0x...5038	0x00000015	0x...5038		0x...5038		0x...5038	
0x...5034	0x00000028	0x...5034		0x...5034		0x...5034	
0x...5030	—	0x...5030		0x...5030		0x...5030	
0x...502c	—	0x...502c		0x...502c		0x...502c	
0x...5028	—	0x...5028		0x...5028		0x...5028	
0x...5024	—	0x...5024		0x...5024		0x...5024	
0x...5020	—	0x...5020		0x...5020		0x...5020	
0x...501c	—	0x...501c		0x...501c		0x...501c	
0x...5018	—	0x...5018		0x...5018		0x...5018	
0x...5014	—	0x...5014		0x...5014		0x...5014	
0x...5010	0x00000028	0x...5010		0x...5010		0x...5010	
0x...500c	0x00000011	0x...500c		0x...500c		0x...500c	
0x...5008	—	0x...5008		0x...5008		0x...5008	
0x...5004	—	0x...5004		0x...5004		0x...5004	
0x80005000	0x00000011	0x80005000		0x80005000		0x80005000	

#### WP4.

```
void coalesce_both(void *bp) {
```

```
}
```