

## CPSC 457, Assignment 4

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### Q1 Written

#### First-Fit

176						183					
	P10	P1	P3		P11		P12		P13	P2	
100	30	----- 500 -----			30	200	30	300	30	---- 600 -----	

- There is no room for P4

#### Best-Fit

83				88				88				174			
	P10	P2		P11	P3		P12	P1		P13	P4				
100	30	---- 500 -----			30	----- 200 -----		30	----- 300 -----		30	----- 600 -----			

#### Worst-Fit

83										276	
	P10	P2		P11		P12		P13	P1	P3	
100	30	----- 500 -----			30	200	30	300	30	----- 600 -----	

- There is no room for P4

#### Next-Fit

288										71	
	P10	P1		P11		P12		P13	P2	P3	
100	30	----- 500 -----			30	200	30	300	30	----- 600 -----	

- There is no room for P4

### Q2 Written

Address	Page Number	Offset
2375	2	327
19366	18	934
30000	29	304
256	0	256
16385	16	1

### Q3 Written

3.

a). num of entries =  $\frac{2^{32}}{2^{12}} = \boxed{2^{20} \text{ entries}}$

b). num of entries =  $\frac{\text{table size}}{\text{page size}} = \frac{2^{29}}{2^{12}} = \boxed{2^{17}}$

### Q4 Written

4.

a). 400ns - 200ns for table reference and  
200ns to get value in memory.

b). 
$$\begin{aligned} \text{FAF} &= (1 - 0.75)(10\text{ns} + 400\text{ns}) + (0.75)(10\text{ns} + 200\text{ns}) \\ &= (0.25)(410) + (0.75)(210) \\ &= 260\text{ns} \end{aligned}$$

Q5

LRU:

LRU

1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6

use 1

1

use 2

1
2

use 3

1
2
3

use 4

4
2
3

use 2

<del>1</del>
<del>2</del>
<del>3</del>

use 1

4
2
1

use 5

5
2
1

use 6

5
6
1

use 2

5
6
2

use 7

7
6
2

use 2

<del>1</del>
<del>2</del>
<del>3</del>

use 3

1
3
2

use 7

7
3
2

use 6

7
3
6

use 3

<del>1</del>
<del>2</del>
<del>3</del>

use 2

2
3
6

use 7

2
3
1

use 2

<del>1</del>
<del>2</del>
<del>3</del>

use 3

<del>1</del>
<del>2</del>
<del>3</del>

use 6

2
3
6

page faults

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Optimal:

Optimal

1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 2, 1, 2, 3, 6

use 1	use 2	use 3	use 4	use 2
1	1	1	1	
	2	2	2	
		3	4	

use 1	use 5	use 6	use 2	use 7
	1	1		
	2	2		
	5	6		

use 2	use 3	use 7	use 6	use 3
	3	3		
	2	2		
	6	6		

use 2	use 1	use 2	use 3	use 6
3	3			3
2	2			2
6	1			6

page faults

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