CompSci 340 Assignment 3

Q1.

4KiB = 2^12, 2^12/2^2=2^10, 16 = 2^4

1. 16\*2^12= 2^16 = 65,536 bytes
2. 2^10\*2^12 + 2^16 bytes = 4,259,840 bytes
3. 2^10\*2^10\*2^12 + 2^10\*2^12 + 2^16 bytes = 4,299,227,136 bytes
4. 2^10\*2^10\*2^10\*2^12 + 2^10\*2^12 + 2^16 = 4,402,345,738,240 bytes
5. bytes 1024^6 = 2^60,

2^10\*2^10\*2^10\*2^10\*2^10\*2^10 = 2^60 bytes => 2^60 => (5 levels).

1. 4050/4096 = 0, 4150/4096 > 1 and < 2, so 2 blocks were accessed.
2. 4259820 = 1039.9, 4259920/4096 = 1040.0,

Q2

Q3

FIFO

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 | 4 | 3 | 2 | 1 | 6 | 7 | 1 | 2 | 3 | 7 | 5 | 1 |
| 0 | 1 | = | = | = | 5 | = | = | = | = | = | = | = | 2 | = | = | = | = |
| 0 | = | 2 | = | = | = | = | = | = | 1 | = | = | = | = | 3 | = | = | = |
| 0 | = | = | 3 | = | = | = | = | = | = | 6 | = | = | = | = | = | 5 | = |
| 0 | = | = | = | 4 | = | = | = | = | = | = | 7 | = | = | = | = | = | 1 |

LRU

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 | 4 | 3 | 2 | 1 | 6 | 7 | 1 | 2 | 3 | 7 | 5 | 1 |
| 0 | 1 | = | = | = | 5 | = | = | = | 1 | = | = | = | = | = | = | 5 | = |
| 0 | = | 2 | = | = | = | = | = | = | = | = | = | = | = | = | = | = | 1 |
| 0 | = | = | 3 | = | = | = | = | = | = | = | 7 | = | = | = | = | = | = |
| 0 | = | = | = | 4 | = | = | = | = | = | 6 | = | = | = | 3 | = | = | = |

OPT

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 | 4 | 3 | 2 | 1 | 6 | 7 | 1 | 2 | 3 | 7 | 5 | 1 |
| 0 | 1 | = | = | = | 5 | = | = | = | = | 6 | 7 | = | = | = | = | 5 | = |
| 0 | = | 2 | = | = | = | = | = | = | = | = | = | = | = | = | = | = | = |
| 0 | = | = | 3 | = | = | = | = | = | = | = | = | = | = | = | = | = | = |
| 0 | = | = | = | 4 | = | = | = | = | 1 | = | = | = | = | = | = | = | = |

Q4