Rocky Lo

HW 7

4 April 2017

Problem 1

5.2.1)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Word Address | Binary Address | Tag | Index | Hit/Miss |
| 3 | 0000 0011 | 0 | 3 | M |
| 180 | 1011 0100 | 11 | 4 | M |
| 43 | 0010 1011 | 2 | 11 | M |
| 2 | 0000 0010 | 0 | 2 | M |
| 191 | 1011 1111 | 11 | 15 | M |
| 88 | 0101 1000 | 5 | 8 | M |
| 190 | 1011 1110 | 11 | 14 | M |
| 14 | 0000 1110 | 0 | 14 | M |
| 181 | 1011 0101 | 11 | 5 | M |
| 44 | 0010 1100 | 2 | 12 | M |
| 186 | 1011 1010 | 11 | 10 | M |
| 253 | 1111 1101 | 15 | 13 | M |

5.2.2)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Word Address | Binary Address | Tag | Index | Hit/Miss |
| 3 | 0000 0011 | 0 | 1 | M |
| 180 | 1011 0100 | 11 | 2 | M |
| 43 | 0010 1011 | 2 | 5 | M |
| 2 | 0000 0010 | 0 | 1 | H |
| 191 | 1011 1111 | 11 | 7 | M |
| 88 | 0101 1000 | 5 | 4 | M |
| 190 | 1011 1110 | 11 | 7 | H |
| 14 | 0000 1110 | 0 | 7 | M |
| 181 | 1011 0101 | 11 | 2 | H |
| 44 | 0010 1100 | 2 | 6 | M |
| 186 | 1011 1010 | 11 | 5 | M |
| 253 | 1111 1101 | 15 | 6 | M |

5.3.1) 8

5.5.2) 32

Problem 2

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Address Bits | Cache Size | Block Size | Associativity | Tag Bits | Index Bits | Offset Bits | Bits per Row |
| 16 | 4KB | 4B | 1 | 4 | 10 | 2 | 38 |
| 16 | 16KB | 8B | 2 | 3 | 10 | 3 | 138 |
| 16 | 32KB | 8B | 4 | 3 | 10 | 3 | 274 |
| 16 | 32KB | 48B | 2 | 6 | 8 | 2 | 74 |
| 32 | 8KB | 8B | 1024 | 29 | 0 | 3 | 97280 |
| 32 | 32KB | 16B | 2 | 18 | 10 | 4 | 296 |
| 32 | 64KB | 16B | 1 | 16 | 12 | 4 | 146 |
| 32 | 512KB | 128B | 4 | 15 | 10 | 7 | 4164 |
| 64 | 512KB | 256B | 2 | 46 | 10 | 8 | 4192 |
| 64 | 275B | 256B | 1 | 26 | 30 | 8 | 2076 |
| 64 | 2MB | 128B | 1 | 43 | 14 | 7 | 1069 |
| 64 | 2MB | 128B | 1 | 59 | 14 | 7 | 2048 |
| 64 | 4MB | 128B | 2 | 61 | 16 | 7 | 4084 |