1B=8bits

1KB=1024Bytes=210B

1MB=1024KB=220B

1GB=1024MB=230B

1. Given Data:

Cache Size=512KB=29\*210=19bits

Tags=7bits

Block size=1KB=210B=10bits

MM Size=?

Total Line No.=?

|  |  |  |
| --- | --- | --- |
| Tags | Lines | Block Size/offset |

Total Line No.=Cache Size/Block Size=512KB/1KB=219/210=29=9 bits

|  |  |  |
| --- | --- | --- |
| 7 | 9 | 10 |

MM size= 226=26\*220=64MBytes

Tag directory size=No.of tag bits \* No. of Line in cache

=7\*29=3584bits

2) Physical address MM = 35GB=25\*230=35bits

Cache size=32KB=25\*210=15bits

Block size=1KB=210=10bits

Total Line No=? Tags=? Tag Directory Size=?

Total Line No=Cache Size/Block Size=215/210=25=5bits

|  |  |  |
| --- | --- | --- |
| 20 bits | 5bits | 10 bits |

35 bits

Tags=MM-(Total Line No.+ Block Size)=35-(5+10)=20bits

Tag Directory Size= No. of Tags in Bits \* Line in cache

=(20 \* 25)bits= 640bits

1. MM Size:4GB=22\*230=232=32bits

Cache Size: 1MB=220=20 bits

Block Size=4KB=22\*210=212=12 bits

Word Size=1Byte

Caculate

1.PA bits splits

2.Tag directory size

No. Of P.A. bits=MM Size=32 Bits

|  |  |  |
| --- | --- | --- |
| 12 bits | 8 bits | 12bits |

Total No. Of Line in Cache=CS/BS=1MB/4KB=220/212=28=8 bits

No. of tags in bits=MM size-(Total line No.+ Block size)

=32-(8+12)=12 bits

Tag Directory Size=No. of tags in bits \* Total Line in cache

(12 bits\*28)bits=3072bits