p4AQuestions Results for VARDAAN KAPOOR (He/him)

ⓘ Correct answers are hidden.

Score for this attempt: **20** out of 20
Submitted Mar 26 at 3:19pm
This attempt took 5 minutes.

Question 1

1 / 1 pts

cache1D:

What is the total hit ratio for the D-cache with a block size of 4 bytes? Provide your answer as a percentage, e.g. 50.5%, but just input a number without the % character.

84.87

Question 2

1 / 1 pts

cache1D:

What is the total hit ratio for the D-cache with a block size of 32 bytes? Provide your answer as a percentage, e.g. 50.5%, but just input a number without the % character.

97.08

Question 3

1 / 1 pts

cache1D:

What is the total hit ratio for the D-cache with a block size of 64 bytes? Provide your answer as a percentage, e.g. 50.5%, but just input a number without the % character.

97.5

Question 4

2 / 2 pts

cache1D:

Answer this question without running pin again. Assume that the 100,000 element integer array that you allocated starts at address 0x50000000 in memory, the size of an integer is 4 bytes and the D-cache is initially empty. As you read the integers in the array one-by-one, starting at index 0, how many D-cache misses will you see for reading the first 40 integers when the cache block size is:

a) 4 bytes: 40

b) 32 bytes: 5

c) 64 bytes: 3

Answer each part by entering an integer between 0 and 40.

Answer 1:

40

Answer 2:

5

Answer 3:

3

Question 5

3 / 3 pts

cache1D:

Answer the following for this program:

Which block size is the best? [Select]

Why? [Select]

Answer 1:

64

Answer 2:

Spatial locality

Question 6

1 / 1 pts

cache2Drows:

What is the total hit ratio for the D-cache with a block size of 64 bytes? Provide your answer as a percentage, e.g. 50.5%, but just input a number without the % character.

98.42

Question 7

1 / 1 pts

cache2Dcols:

What is the total hit ratio for the D-cache with a block size of 64 bytes? Provide your answer as a percentage, e.g. 50.5%, but just input a number without the % character.

86.72

Question 8

2 / 2 pts

Comparing cache2Drows with cache2Dcols:

Answer this question without running pin again. Assume that the 2-D integer array you allocated starts at address 0x40000000 in memory, the size of an integer is 4 bytes, D-cache block size is 64 bytes and the D-cache is initially empty. As you read the integers in the 2-D array one-by-one, starting with element array[0,0], how many D-cache misses will you see for reading the first 10 integers in case of:

a) cache2Drows: 1

b) cache2Dcols: 10

Answer each part by entering an integer between 0 and 10.

Answer 1:

1

Answer 2:

10

Question 9

3 / 3 pts

Comparing cache2Drows with cache2Dcols:

Compare the performance (hit ratio) of the D-cache for the 2 programs.

Which one is better? cache2Drows

Why? Spatial locality

Answer 1:

cache2Drows

Answer 2:

Spatial locality

Question 10

1 / 1 pts

cache2Dclash:

What is the total hit ratio for the D-cache with a capacity of 1, an associativity of 1, and a block size of 32 bytes? Provide your answer as a percentage, e.g. 50.5%, but just input a number without the % character.

85.36

Question 11

1 / 1 pts

cache2Dclash:

What is the total hit ratio for the D-cache with a capacity of 1, an associativity of 2, and a block size of 32 bytes? Provide your answer as a percentage, e.g. 50.5%, but just input a number without the % character.

86.47

Question 12

3 / 3 pts

Understanding Cache Associativity:

Compare the performance (hit ratio) of the D-cache for the 2 levels of associativity.

Which associativity level results in better performance? 2

Why does that associativity level perform better? It doesn't replace cache lines as frequently.

Answer 1:

2

Answer 2:

It doesn't replace cache lines as frequently.

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