Q1
3 Points

For the different RAID configurations listed bellow, what is the minimum number of 500GB disks needed to store 4TB of useful information?

Assume that 1TB = 1000GB.

Q1.1
1 Point

In RAID0 configuration ?

8

Q1.2
1 Point

In RAID 1 ?

16

Q1.3
1 Point

In RAID5 ?

9

Q2
2 Points

If the overheads of polling and interrupt handling are 100 and 1000 cycles respectively for a processor with clock frequency 100MHz, which is a better approach (in terms of CPU time wasted) for a mouse which is moved at most once every millisecond but on average moves only once every 100milliseconds (i.e. 10 times per second).

Q2.1
1 Point

What is the interrupt overhead per second in number of cycles ?

10000

Q2.2
1 Point

What is the polling overhead per second in number of cycles ?

10000000

Q3
4 Points

We want to compare 4-way superscalar processor with a 4-lane SIMD processor. Assume a program is given to be run on the "scalar" version of the processor (i.e., single issue). And we are trying to compare the execution of this program on the two machines with appropriately good compilation.

Q3.1
1 Point

What is the peak IPC of each ? (assume one instruction corresponds to the scalar execution).

Superscalar:

4

SIMD:

1

Q3.2
1 Point

Which of the two will have higher average IPC over many programs ?

- ○ They will have equal IPC for all programs
- ○ SIMD
- ◉ Superscalar

Q3.3
1 Point

Which of the two will be more efficient hardware-wise ?

- ○ They will be similar
- ○ Superscalar
- ◉ SIMD

Q3.4
1 Point

If I have the program parallelized over 4 scalar processors and compare it to 4-way superscalar execution, which would have more instruction stall cycles ? Assume one instruction stall cycle is ONE scalar instruction stalled for one cycle.

- ○ Superscalar
- ◉ 4 scalar processors
- ○ Same

Quiz 6

● GRADED

STUDENT
LIANG, NEVIN

TOTAL POINTS
6 / 9 pts

QUESTION 1

(no title) **3** / 3 pts

1.1 (no title) **1** / 1 pt

1.2 (no title) **1** / 1 pt

1.3 (no title) **1** / 1 pt

QUESTION 2

(no title) **1** / 2 pts

2.1 (no title) **1** / 1 pt

2.2 (no title) **0** / 1 pt

QUESTION 3

(no title) **2** / 4 pts

3.1 (no title) **0** / 1 pt

3.2 (no title) **1** / 1 pt

3.3 (no title) **1** / 1 pt

3.4 (no title) **0** / 1 pt