Congratulations! You passed!

Grade received 100%
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Go to next item

1. If two tasks are executing in parallel, which of the following statements is true? **1 / 1 point**

- ○ They are using exactly the same hardware at the same time.
- ◉ They are using different hardware, but running at the same time.
- ○ Their executions are alternating in time.
- ○ One task executes immediately after the other finishes.

Correct
Correct!

2. What does the von Neumann bottleneck state about computer architectures? **1 / 1 point**

- ○ Power consumption is a limiting factor for performance.
- ○ Temperature is a performance bottleneck.
- ○ Clock frequency cannot be improved without considering temperature.
- ◉ Memory access time is a performance bottleneck.

Correct
Correct!

3. What does Moore's law directly observe? **1 / 1 point**

- ○ Power consumption doubles every 18 months.
- ◉ Transistor density doubles every 2 years.
- ○ Processor power doubles every 2 years.
- ○ Transistor switching delay is cut in half every year.

✓ **Correct**
Correct!

4. How is dynamic power consumption related to voltage swing? **1 / 1 point**

- ◉ Dynamic power is proportional to the square of the voltage swing.
- ○ Dynamic power is proportional to the cube of the voltage swing.
- ○ Dynamic power is proportional to the square root of the voltage swing.
- ○ Dynamic power is proportional to the capacitance.

✓ **Correct**
Correct!

5. Why can't Dennard Scaling continue forever? **1 / 1 point**

I. The speed of light limits the potential performance improvements.

II. Voltage must remain above threshold voltage.

III. Some noise margin must be maintained.

- ○ *I* only.
- ○ *I* and *II*, NOT III.
- ◉ *II* and *III*, NOT *I*.
- ○ *I*, *II*, and *III*.

✓ **Correct**

Correct!

6. What factor limits clock rates in future designs? **1 / 1 point**

I. The speed of light.

II. Excessive power consumption.

III. Excessive temperature.

- ○ *I* only.
- ○ *I* and *II*, NOT *III*.
- ○ *II* and *III*, NOT *I*.
- ◉ *I*, *II*, and *III*.

Correct
Correct!

7. One benefit of concurrent execution on a single processor is that it can hide latency. What does this mean? **1 / 1 point**

- ○ When tasks execute in parallel, only the delay of the slowest task matters.
- ◉ One task can execute while another task is waiting on something.
- ○ The concurrent execution time of two tasks is less than the sum of their sequential execution times.
- ○ Total latency is reduced because two tasks can execute at the same time.

Correct
Correct!