# Question 6

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# Adaptation

- Need to know error rates and cause of error
  - Systems may be designed for different environments than those that occurr in practice.

- Parameterization
  - OS can change scrub rate for ECC protected memory
  - Frequency/voltage can be varied
  - How to use reconfiguration?
  - Reconfiguration essential at nanoscale.

# Adaptation

- Adaption methods needed for many system parameters.
  - Application demand
  - Environment
  - New power/temperature conditions
  - Fault conditions
  - Wireless bandwidth
  - Aging

- Cure should not be worse than the disease

# Adaptation Session 2

- Reconfigurable logic as TMR, DMR, NMR

  - Applications, OS, etc choose, dynamic???

  - Can compilers help?

- DVFS based on upset rate

- If we had such a capability, would customers accept?

  - Gravitate to either high performance or high reliability

# Adaptation Session 2 cont

- How to determine upset rate?

  - On-board geiger counter, kick up to higher layers

  - Higher layer error counts (application checkpoints) sent down to lower layers

- Struggling for innovation