

CSCE 531 Spring 2010
QUIZ 1
Assigned Thursday, 10-01-14

1. Here is a quote from: Lee, Edward E. “What’s Ahead for Embedded Software?” *Computer*, vol.33, no.9 (September 2000), pp.18-26.

No universal concurrent framework has yet emerged ... To understand why, consider the *mystery* framework, a universally accepted model of sequential computation. A key part of its success is that it reduces time to a total order of discrete events, in which sequencing is sufficient for correctness. In distributed systems, maintaining such a total order is expensive, except for very small systems. Thus, in practice, events are partially ordered at best. This partial ordering makes it difficult to maintain a global notion of “system state,” which is an essential part of the *mystery* framework.

Choose *mystery* from the following list:

- (a) functional
- (b) Turing
- (c) von Neumann
- (d) Zuse
- (e) declarative

Answer: Von Neumann

2. Here is a quote from: Nicklaus Wirth, “Good Ideas, Through the Looking Glass,” *Computer*, January 2006, 28–39.

[T]he core idea is that functions inherently have no state. This implies that there are no variables and no assignments. Immutable function parameters—variables in the mathematical sense—take the place of variables. As a consequence, freshly computed values cannot be reassigned to the same variable, overwriting its old value. This explains why repetition must be expressed by recursion. A data structure can at best be extended, but no change can be made to its old part. This yields an extremely high degree of storage recycling—a garbage collector is the necessary ingredient.

Which of the three main programming language families is described in the above paragraph?

Answer: The functional one