DE Modeling

In discrete-event modeling, components communicate via signals consisting of events placed on a time line. The DE director ensures that events are processed in chronological order. This model of computation is well-suited for modeling digital circuits, communication networks, business processes, etc.

This model illustrates a famous paradox in probability called the inspection paradox. Passengers arrive randomly at a bus stop, according to a Poisson process. Busses also arrive, and waiting time of the passengers is recorded. Two situations are compared: Busses arrive at regular intervals, and busses arrive according to a Poisson process. The expected waiting time is double for the second case as the first, even though the average arrival rate of busses is the same.

The discrete-event director uses a sophisticated priority queue to sort events by time, and executes a model by processing events in chronological order.

Author: Edward A. Lee