CIS 525 Software Development of Parallel and Distributed Systems

Petri nets –several principles

I. The Principle of Duality for Petri Nets:

PN elements	Petri net name terms	Entities of the real world
P-elements	State elements, places	interpreted as passive elements: conditions, places, resources, waiting pools, channels, etc.
T-elements	Transition elements, transitions	interpreted as active elements: events, transitions, actions, executions of statements, transmission of messages, etc

II. The Principle of Locality for Petri Nets

The behavior of transition exclusively depends on its locality, which is defined as the totality of its input and output objects (pre- and post-conditions, input and output places,….) together with the element itself.

III. The Principle of Concurrency for Petri Nets

Transitions having disjoint locality occur independently (concurrently).

IV. The Principle of Graphical Representation for Petri Nets

P-elements are represented by rounded graphical symbols (cycles, ellipses, …).

T-elements are represented by edged graphical symbols (rectangles, bars, …).

Arcs connect each T-element with its locality, which is a set of P-elements.

Additionally, there may be inscriptions such as names, tokens, expressions, guards.

V. The Principle of Algebraic Representation for Petri Nets

For each graphical representation there is an algebraic representation containing equivalent representation. It contains the set of places, transitions, and arcs, and additional information such as inscriptions.