Process Networks in Ptolemy II

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Process Networks\(^1\) - Description

- Network of sequential processes
- Processes communicate only through unbounded, unidirectional FIFO channels
- Processes cannot poll channels for presence of data
- Processes block when trying to read data from an empty channel until a token becomes available.

Properties and Applications

• Properties
  - Network is deterministic
  - High level of concurrency

• Applications
  - Embedded dataflow applications
  - Hardware architectures
  - Concurrent digital control processes with dynamic behavior

Extensions to PN in Ptolemy II

• Notion of global time
  - Models real-time behavior of a system

• Mutations
  - Deterministic mutations in timed PN
  - Non-deterministic mutations in untimed PN
  - Model applications with migrating code, agents, and arrivals and departures of customers and services.
Demonstration of PN in Ptolemy II

- Run-Length encoding and decoding of an image.
  - Demonstrates
    - A typical application of PN.
    - Infrastructure for PN in Ptolemy II
    - Graph visualization support in Ptolemy II