SYSTEM SIMULATION AND MODELLING

LECTURE 4

Section B
TOPIC COVERED :Advance Algorithm, List Processing, Using

Dynamic Allocation & Linked List Simulation Software: History of Simulation Software

List Processing

- The management of a list:
  - The major list processing operations performed on a FEL are:
    * Removal of the imminent event.
    * Addition of a new event to the list.
    * Occasionally removal of some event (cancellation of an event).
  - Efficiency of search within the list depends on the logical organization of the list and how the search is conducted.
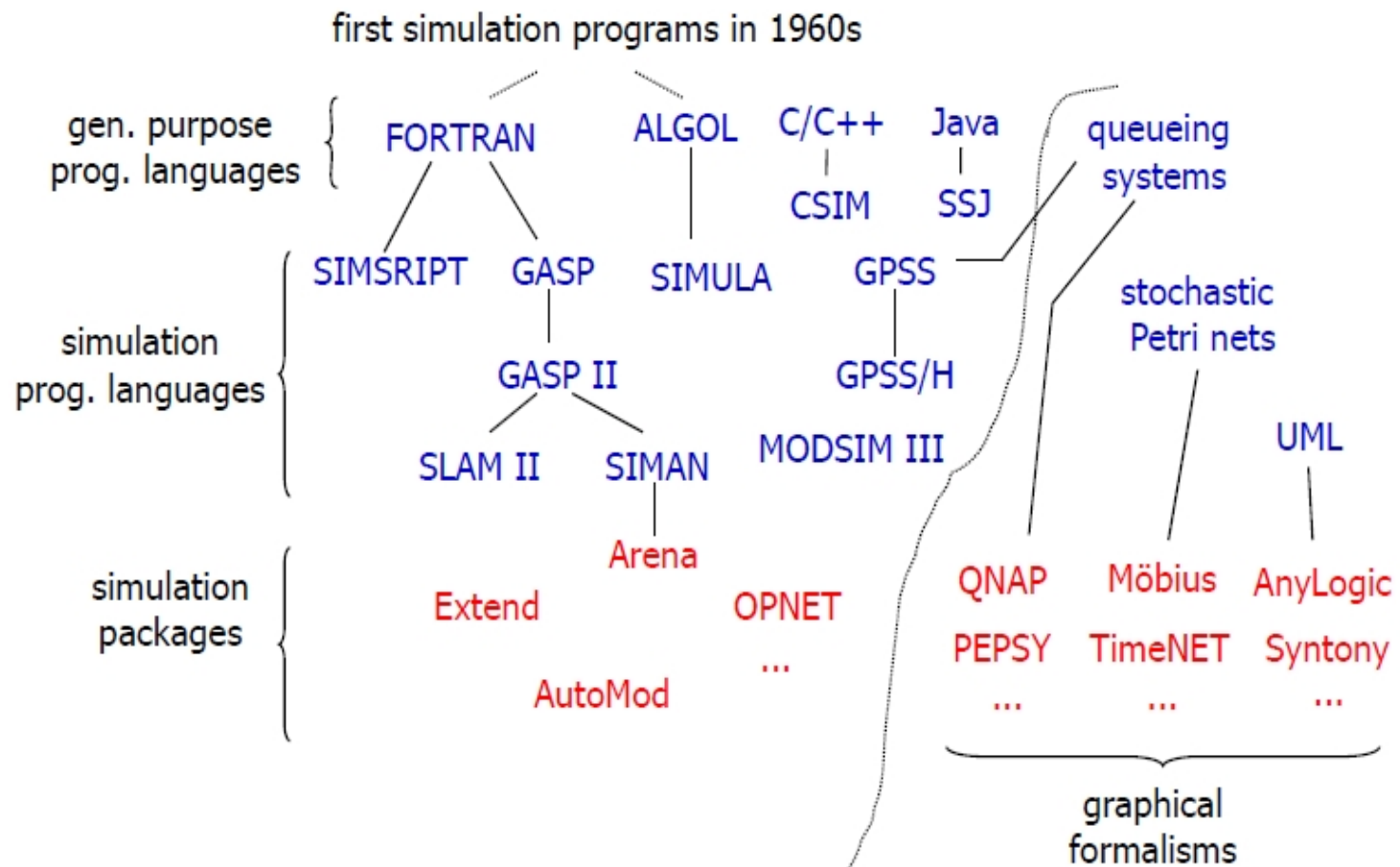
- When an event with event time t^* is generated, its correct position on the FEL can be found via:

  - A top-down search, or

  - A bottom-up search.

Simulation Software

☐ Contents
- ○ Ideal Scenario
- ○ History of Simulation Software
- ○ Modeling Paradigms
- ○ General-Purpose Programming Languages
- ○ Simulation Programming Languages
- ○ Simulation Packages
- ○ Selection of Simulation Software
- ○ Trends in Simulation Software

General-Purpose Programming Languages

❑ Approach: coding of complete simulation model in general-purpose programming language

- ○ first simulation done this way in 1950s, 1960s (FORTRAN, ALGOL), still practice today (military applications + for high flexibility)
- ○ advantages
  - – programmers know programming language (not the case for the language of a simulation package)
  - – potential efficiency
  - – greater flexibility, universally applicable
  - – software costs low (but project costs may be higher)
- ○ disadvantages
  - – high implementation effort, error-prone
  - – simulation packages provide model parts and features which are typically needed in simulations
  - – no uniformity of model parts, restricted reuse
  - – hard to modify and maintain