CSC9006: Real-Time Systems

Lecture 4: Real-Time Scheduling (2)

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Coverage in this lecture

- Anytime algorithm
- Static scheduling
- Dynamic scheduling (for independent tasks)
  - Rate-monotonic (RM) scheduling
  - Earliest-deadline-first (EDF) scheduling and least-laxity (LL) scheduling
- Dynamic scheduling (for dependent tasks)
  - Priority ceiling protocol (PCP) and priority inheritance protocol (PIP)
  - An incident of real-time scheduling happened on Mars

Reference materials

- From the course website (https://wangc86.github.io/csc9006/)
  - Textbook [A], Chapter 10
  - Textbook [B], Sections 7.1-7.3; 7.6; 7.7
  - Reference [16] for the original account of the Mars Pathfinder incident:
    - https://www.cs.unc.edu/~anderson/teach/comp790/papers/mars_pathfinder_long_version.html
  - Reference [17] for the original paper for the RM scheduling:
    - Liu, C. L., & Layland, J. W. (1973). Scheduling algorithms for multiprogramming in a hard-real-time environment. Journal of the ACM (JACM), 20(1), 46-61.
  - Reference [18] for paper reading:
    - Keshav, S. (2007). How to read a paper. ACM SIGCOMM Computer Communication Review, 37(3), 83-84.