

# Online Algorithms and Problems



# Online Algorithms

## ❖ Online vs. Offline algorithms

- ◆ Offline algorithms receive all their inputs at one time.
- ◆ Online algorithms receive and process their inputs in partial amounts

## ❖ e.g. Sorting

- ◆ Quick Sort is an offline sorting algorithm while Insertion Sort is an online sorting algorithm
  - ◆ Why?
  - ◆ Arrival models:
    - ◆ Fully discrete
    - ◆ Bursts
      - ◆ Does this change the (amortized) time complexity?



# Online Problems

- ❖ Question: Are there scenarios when you want sorting to be online?
- ❖ Question: Are there scenarios when graph problems are online?
- ❖ Question: Can you cite some online problems in the context of an operating system?