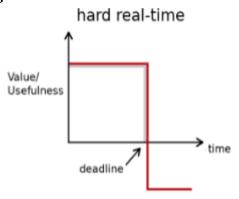
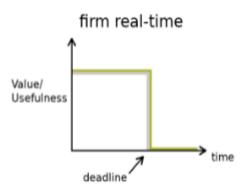
## **REAL-TIME CLASSIFICATIONS**

## Hard Real-time Tasks



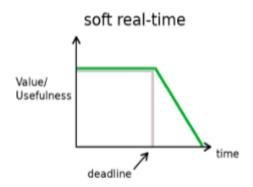
- A hard real-time system is one in which failure to meet even a single deadline may lead to complete or catastrophic system failure.
- o In a hard real-time system, a missed deadline creates not only a complete loss of value but also a negative value, i.e., harm.
- o The task deadlines are in the order of micro or milliseconds.
- o Many hard real-time systems are safety critical
- o Examples:
  - Industrial Control Applications
  - On-board computers
  - Robots

## • Firm Real-time Tasks



- o Firm real-time tasks are such type of real-time tasks which are associated with time bound and the task need to produce the result within the deadline.
- o In a firm real-time system, a few missed deadlines will not lead to total failure, but missing more than a few may lead to complete or catastrophic system failure.
- O Although firm real-time task is different from hard real-time task as in hard real-time once deadline is crossed and task is not completed, system fails but in case of firm real-time task even after the passing of deadline, system does not fail.
- o Example:
  - Video conferencing
  - Satellite based tracking

## • Soft Real-time Tasks



- O Soft real-time tasks are such type of real-time tasks which are also associated with time bound but here timing constraints are not expressed as absolute values.
- o In a soft real-time system, performance is degraded but not destroyed by failure to meet response-time constraints.
- o In soft real-time tasks, even after the deadline result is not considered incorrect and system failure does not occur.
- o Example:
  - Web browsing
  - Railway Ticket Reservation