## What is deadline? How can we ensure to be on deadline(tools,examples) –( Moshiur Rahman Prince)

Deadlines in a real time system represent the time at which specific tasks have to be completed. Each task in a real time system will have its own deadline. It is the time by which a system must produce an output.

Deadline

HARD

SOFT

Figure1.1: Types of Deadline

Diagram

Description automatically generated

Figure1.2: Deadline in Hard real-time system and soft real-time system

Hard: Penalty due to missing deadline is a higher order of magnitude than the reward in meeting the deadline missing.

Soft: Penalty due to missing deadline is a lesser magnitude than reward in meeting the deadline missing.

**Examples**:

1.1Engine control system, pacemakers, Avionic systems  
  
A car engine control system is a hard real time system because a delayed signal may cause engine failure or an accident.  
  
Such strong guarantees are required of systems for which not reacting in a certain interval of time would cause great loss in some manner especially damaging the surroundings physically or threatening human lives.  
  
1.2 Airlines database, Mobile phone, Live audio-video systems.  
  
The flight plans must be kept reasonably current but can operate to a latency of seconds.  
  
Soft deadline system violation of constraints results in degraded quality, but the system can continue to operate.

Reactive procedures are built from reactive statements and indicate the way to execute them. Reactive procedure instants are identified with their calls.

To implement the reactive-procedure notion, consider the following C function that prints ‘hello, world’ at each call:

hello(){  
printf( " hello, world\n " );  
}  
suppose one wants to print ‘hello, world’ during the first call and ‘I repeat:  
hello, world’ during the second call. One writes in RC  
  
rproc Hello(){  
printf( " hello, world\n " );  
}