Bonus Lab Assignment

Operating System

Monsoon Semester 2019

Bonus Marks: 5

IoT applications are getting popularity in industry. Sensors are an important part of IoT ecosystem. Mostly, sensors sense environment periodically and send the data to a backend system for processing. Backend system may be residing on cloud. Sensors are resource constrained devices with limited memory, CPU power and battery. In this assignment you need to design and develop tiny operating system for resource constrained sensor device. The operating system should be able to provide following functionalities:

1. Should be able to schedule tasks (process or thread) periodically
2. Should be able to assign priorities to tasks (process or thread)
3. Should be able to manage the small amount of main memory available efficiently

The sensor works as follows :- A task (called senseData) gets scheduled at fixed interval, collects the data from environment, puts it in a buffer and sleeps. The other task (called dataSender) then wakes up and reads the buffer to send the data to backend (cloud) for so long till the buffers are not empty. You need to design the system in such a manner that senseData task should always get scheduled and also get memory without missing the deadline.