Computer Science and Engineering Department, SVNIT, Surat B.tech.-III, Semester-V
Operating system

Lab Assignment 8

1. The synchronization problem called sleeping barber is described as follows:
   A barber shop has a single barber, a single barber's chair in a small room, and a large waiting room with n seats. The barber and the barber's chair are visible from the waiting room. After servicing one customer, the barber checks whether any customers are waiting in the waiting room. If so, he admits one of them and starts serving him; otherwise, he goes to sleep in the barber's chair. A customer enters the waiting room only if there is at least one vacant seat and either waits for the barber to call him if the barber is busy, or wakes the barber if he is asleep. Identify the synchronization requirements between the barber and customer processes.

   a. Code the barber and customer processes such that deadlocks do not arise.
   b. Consider the Sleeping-Barber Problem with the modification that there are k barbers and k barber chairs in the barber room, instead of just one. Write a program to coordinate the barbers and the customers.