End Sem - Questions

1. **LCS of two strings**

2. **Hilberz Barbershop Problem -**
   Our barbershop has three chairs, three barbers, and a waiting area that can accommodate four customers on a sofa and that has standing room for additional customers. Fire codes limit the total number of customers in the shop to 20. A customer will not enter the shop if it is filled to capacity with other customers.
   Once inside, the customer takes a seat on the sofa or stands if the sofa is filled. When a barber is free, the customer that has been on the sofa the longest is served and, if there are any standing customers, the one that has been in the shop the longest takes a seat on the sofa. When a customer's haircut is finished, any barber can accept payment, but because there is only one cash register, payment is accepted for one customer at a time. The barbers divide their time among cutting hair, accepting payment, and sleeping in their chair waiting for a customer.
   In other words, the following synchronization constraints apply:
   • Customers invoke the following functions in order: enterShop, sitOnSofa, sitInBarberChair, pay, exitShop.
   • Barbers invoke cutHair and acceptPayment.
   • Customers cannot invoke enterShop if the shop is at capacity.
   • If the sofa is full, an arriving customer cannot invoke sitOnSofa until one of the customers on the sofa invokes sitInBarberChair.
   • If all three barber chairs are busy, an arriving customer cannot invoke sitInBarberChair until one of the customers in a chair invokes pay.
   • The customer has to pay before the barber can acceptPayment.
   • The barber must acceptPayment before the customer can exitShop.