Computer Engineering Department, S V N I T, Surat.
B Tech-II (CO) 3rd semester
Course: Data Structure and Algorithm (CO-203)
Tutorial – 4
(Stack Queue and its application)

1. Choose the appropriate data structure and write algorithm for converting a decimal integer to binary with proper reason and at the end display the result.

2. In a CD pack, the CDs are placed one over the other through a central axis. Assume that there are 35 CDs in a pack.
    a. Name the Data Structure that resembles with the CD pack.
    b. Consider the CD pack as an array in C, how will you name the position of the last CD and what will be its value.
    c. Write an algorithm to insert and remove the CD from the pack and name the operations performed.

3. While waiting for a ticket at a railway station ticket counter, you are following the principle as that of a data structure,
    a. Name the data structure and the principle.
    b. Write an algorithm to add new element in this data structure.
    c. Name the situation when there is no space for adding the new element.

4. Set of 50 books is available which consists of Java books and C++ books. There is only one book pack open from both the ends, of size 50 which is empty. Books are to be arranged in a book pack in such a way that Java books & C++ books are segregated(Condition: At a time only one book can be selected)
    a. Name the Data Structure that resembles the book pack.
    b. Write an algorithm to segregate the books.

5. Is it possible to implement a queue using two stacks? Justify your answer.