CS 310 'Algorithms' **Homework 3**

Due date: Monday, October 14, 2019 at **11:00 AM** in class.

Name: _____ Roll No: _____

Suppose a set of 'n' balls are placed on a straight line. The spacing between these balls can be arbitrary; some might be placed close together while others might be at a farther distance. You have a number of sticks, each of unit length (e.g., 1 meter long) that you want to place along the line such that all the balls are covered by the sticks. The goal is to use the **fewest** number of sticks to cover all the balls. For example, 4 sticks are used in the following example to cover the 10 balls. Assume that a stick can cover 'x' adjacent balls without any spaces. Also assume that one space is equal to the diameter of the ball and there can be zero or more spaces between the balls.

Design a greedy optimal algorithm for this problem and also prove its correctness.