1. You are given a linked list, L and another list, P containing integers. The operation will first sort the elements in ascending order and then print the elements in L that are in positions specified by P. For instance, if P = 1,3,4,6 and L = 2, 4,6, 8, 10, 12, 14, 16, the elements in positions 1, 3, 4 and 6 in L are printed which are 2, 6, 8, 12. Write the procedure and analyse the time complexity.
2. Study the following pseudo code and answer the questions given below:

**Algotihm RS(A, x, n)**

{

**while** (true) **do**

{

if() then

}

}

1. What does this code snippet do?
2. What is the run time of this algorithm?
3. Modify the code such that a random number generated previously will never be generated again.
4. Input is a sequence of distinct keys, not necessarily in sorted order, and two integers and. For any in, we define the of in to be . Write an algorithm that will output all the keys of S whose ranks fall in the interval .

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| 1. Write two different algorithms, whose time complexity can be represented using (Big-Oh) and (Omega) respectively, for any problem of your choice. |