Quiz 3

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1. Consider the following statements. Judge whether each of them is true or false. You dont need to explain the reason.

   - Compared with the exponential mechanism or the noisy-max mechanism, one of the advantages of the Sparse Vector technique is it can deal with the case where the queries are online.
   - In the parse Vector technique, besides the query values, we also need to add noise to threshold to make the algorithm satisfies DP.
   - To address the case where the query has large or unbounded sensitivity, in Lecture 10 we introduced two general approaches: PTR method and the smooth sensitivity. However, in general these two approaches are inefficient (that is, it may be NP-hard). But for some specific queries, these two approaches are efficient (that is there is some algorithm with polynomial time complexity).
   - For one-dimensional average estimation where each $x_i \in \{0, 1\}$, its estimation error in the ϵ-LDP model is always greater than it in the ϵ-DP model.
   - In the definition of shuffle DP, we only want to ensure the whole protocol to satisfy DP instead of LDP.