Quiz 1
Question 1

- Which of these sorts is stable: Insertion sort, Selection sort, Merge sort? (Choose the best answer)
  - A: Only Insertion sort
  - B: Only Selection sort
  - C: Selection sort and Merge sort
  - D: Insertion sort and Merge sort
  - E: Insertion sort, Selection sort, and Merge sort
Question 2

• If the number of comparisons done by an algorithm satisfies the following recurrence
  \[ T(N) = 1 \quad \text{if } N=1, \]
  \[ T(N) = T(N/2) + N \quad \text{if } N>1 \]
  then \( T(N) \) is in (choose the best answer)
  - A: \( O(\log N) \)
  - B: \( O(N) \)
  - C: \( O(N \log N) \)
  - D: \( O(N^2) \)
  - E: None of the above
Question 3

• In which of the following choices are the functions sorted by increasing growth rate (slowest-growing first, fastest –growing last)?
  – A: $\log N$, $N$, $N^2$, $N \log N$, $2^N$
  – B: $\log N$, $N$, $N \log N$, $N^2$, $2^N$
  – C: $\log N$, $N$, $N \log N$, $2^N$, $N^2$
  – D: $N$, $\log N$, $N \log N$, $2^N$, $N^2$
  – E: $N$, $\log N$, $N \log N$, $N^2$, $2^N$