Lecture-06-CMSC351

BubbleSort (Basic):

- Bubble sort sorts a list of elements such as integers or real numbers.
- Pass through the list left to right swapping elements that are out of order.
- Pass through the list a total of n-1 times, since once the final n-1 entries are in order, all entries are.
- Time complexity of theta(n^2)
- BubbleSort uses O(1) auxiliary space, two indices and a swap variable.
- BubbleSort (Basic) is stable, meaning the order of identical entries is preserved.
- BubbleSort (Basic) is in-place, meaning the list is sorted by moving elements in the list, rather than creating a new list.
- After *k* iterations, at least the last *k* entries of the list are sorted, even though the start of the list might not be fully sorted.

BubbleSort (Variation):

- Can improve BubbleSort (Basic) by returning when a full iteration of n elements is made with no swaps, resulting in theta(n) best case (if the list is already sorted), theta(n^2) worse/average case.