

- Online algorithm is one that can process its input piece by piece in serial fashion, i.e. in the order that the input is fed to the algorithm, without having the entire input available from the start.
Thus insertion sort is an online algorithm.
- Insertion sort is used when number of elements is small. It can also be used when input array is almost sorted, only few elements are misplaced in big array.

Binary Insertion Sort

We can use binary search to reduce number of comparisons in normal insertion sort.

Binary insertion sort uses Binary search to find the proper location to insert the selected item at each iteration.

- The algorithm, as a whole still has a running worst case running time of $O(n^2)$ because of series of swaps required for each insertion.