finds the position of a target value within a [sorted array](https://en.wikipedia.org/wiki/Sorted_array);

Binary search runs in at worst [logarithmic time](https://en.wikipedia.org/wiki/Time_complexity#Logarithmic_time), making *O*(log *n*) comparisons;

Binary search takes constant (*O*(1)) space, meaning that the space taken by the algorithm is the same for any number of elements in the array;