# **Differences**

**ArrayList vs Vector**

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|  | ArrayList | Vector |
| 1 | Size increased by 50%. | Size increased by 100% (i.e. double). |
| 2 | Since JDK 1.2 | Since JDK 1.0 |
| 3 | Used less memory. | Uses more memory. |
| 4 | Not Thread Safe (i.e. not synchronized). | Thread Safe (i.e. synchronized). |
| 5 | Fast. | Slow. |

**Note**: ArrayList should be preferred over Vectors in non-thread environment.

**HashSet vs SortedSet**

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|  | HashSet | SortedSet |
| 1 | Class | Interface |
| 2 | No insertion order is preserved | Insertion order is preserved. |
| 3 | Data structure used behind HashSet is Hash table. | Does not use Hash table. |
| 4 | Search operation available for sorting. | No search operation. As it is already sorted |
| 5 | By default load factor=0.75 (i.e. a new Hashset is created when 75% is filled) | Does not work on any load factor measures. |
| 6 | Insertion/deletion/search in O(1) | Insertion/deletion/search depends upon the sorting algorithm implemented behind. |

Note: if we try to add duplicate values in sets, the compiler does not show any compile time/run time error rather it returns false in the .add(value) method.

Note: hashset is the best choice if our frequent operation is search operation.

**HashSet vs TreeSet**

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|  | HashSet | TreeSet |
| 1 | For operations like search, insert and delete. It takes constant time for these operations on average | TreeSet takes O(Log n) for search, insert and delete which is higher than HashSet. |
| 2 | No insertion order is preserved | TreeSet keeps sorted (ordered) data. |
| 3 | Data structure used behind HashSet is Hash table. | TreeSet is implemented using a Self Balancing Binary Search Tree (Red-Black Tree) |
| 4 | Search operation available for sorting. | it supports operations like higher() (Returns least higher element), floor(), ceiling(), etc |
| 5 | HashSet allows null object | TreeSet does not allows null object. As it has to compare the objects. |

**HashSet vs TreeSet**

|  |  |  |
| --- | --- | --- |
|  | HashSet | TreeSet |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |