Array

|  |  |  |  |
| --- | --- | --- | --- |
| Operation | Is it possible?  Yes / no | How is it done?  Function name / code example | Time complexity  O(…) |
| Insert element at beginning |  |  |  |
| Insert element at position i |  |  |  |
| Append element to end |  |  |  |
| Remove first element |  |  |  |
| Remove ith element |  |  |  |
| Remove last element |  |  |  |
| Does it contain given element? |  |  |  |
| Find index of given element |  |  |  |
| Get number of elements |  |  |  |
| Copy the entire collection |  |  |  |
| Reverse the order of the collection |  |  |  |
| Sort the collection |  |  |  |
| Randomly shuffle the collection |  |  |  |

# Example use case

List

|  |  |  |  |
| --- | --- | --- | --- |
| Operation | Is it possible?  Yes / no | How is it done?  Function name / code example | Time complexity  O(…) |
| Insert element at beginning |  |  |  |
| Insert element at position i |  |  |  |
| Append element to end |  |  |  |
| Remove first element |  |  |  |
| Remove ith element |  |  |  |
| Remove last element |  |  |  |
| Does it contain given element? |  |  |  |
| Find index of given element |  |  |  |
| Get number of elements |  |  |  |
| Copy the entire collection |  |  |  |
| Reverse the order of the collection |  |  |  |
| Sort the collection |  |  |  |
| Randomly shuffle the collection |  |  |  |

# Example use case

LinkedList

|  |  |  |  |
| --- | --- | --- | --- |
| Operation | Is it possible?  Yes / no | How is it done?  Function name / code example | Time complexity  O(…) |
| Insert element at beginning |  |  |  |
| Insert element at position i |  |  |  |
| Append element to end |  |  |  |
| Remove first element |  |  |  |
| Remove ith element |  |  |  |
| Remove last element |  |  |  |
| Does it contain given element? |  |  |  |
| Find index of given element |  |  |  |
| Get number of elements |  |  |  |
| Copy the entire collection |  |  |  |
| Reverse the order of the collection |  |  |  |
| Sort the collection |  |  |  |
| Randomly shuffle the collection |  |  |  |

# Example use case

Dictionary

|  |  |  |  |
| --- | --- | --- | --- |
| Operation | Is it possible?  Yes / no | How is it done?  Function name / code example | Time complexity  O(…) |
| Insert element at beginning |  |  |  |
| Insert element at position i |  |  |  |
| Append element to end |  |  |  |
| Remove first element |  |  |  |
| Remove ith element |  |  |  |
| Remove last element |  |  |  |
| Does it contain given element? |  |  |  |
| Find index of given element |  |  |  |
| Get number of elements |  |  |  |
| Copy the entire collection |  |  |  |
| Reverse the order of the collection |  |  |  |
| Sort the collection |  |  |  |
| Randomly shuffle the collection |  |  |  |

# Example use case

HashSet

|  |  |  |  |
| --- | --- | --- | --- |
| Operation | Is it possible?  Yes / no | How is it done?  Function name / code example | Time complexity  O(…) |
| Insert element at beginning |  |  |  |
| Insert element at position i |  |  |  |
| Append element to end |  |  |  |
| Remove first element |  |  |  |
| Remove ith element |  |  |  |
| Remove last element |  |  |  |
| Does it contain given element? |  |  |  |
| Find index of given element |  |  |  |
| Get number of elements |  |  |  |
| Copy the entire collection |  |  |  |
| Reverse the order of the collection |  |  |  |
| Sort the collection |  |  |  |
| Randomly shuffle the collection |  |  |  |

# Example use case

SortedDictionary

|  |  |  |  |
| --- | --- | --- | --- |
| Operation | Is it possible?  Yes / no | How is it done?  Function name / code example | Time complexity  O(…) |
| Insert element at beginning |  |  |  |
| Insert element at position i |  |  |  |
| Append element to end |  |  |  |
| Remove first element |  |  |  |
| Remove ith element |  |  |  |
| Remove last element |  |  |  |
| Does it contain given element? |  |  |  |
| Find index of given element |  |  |  |
| Get number of elements |  |  |  |
| Copy the entire collection |  |  |  |
| Reverse the order of the collection |  |  |  |
| Sort the collection |  |  |  |
| Randomly shuffle the collection |  |  |  |

# Example use case

SortedList

|  |  |  |  |
| --- | --- | --- | --- |
| Operation | Is it possible?  Yes / no | How is it done?  Function name / code example | Time complexity  O(…) |
| Insert element at beginning |  |  |  |
| Insert element at position i |  |  |  |
| Append element to end |  |  |  |
| Remove first element |  |  |  |
| Remove ith element |  |  |  |
| Remove last element |  |  |  |
| Does it contain given element? |  |  |  |
| Find index of given element |  |  |  |
| Get number of elements |  |  |  |
| Copy the entire collection |  |  |  |
| Reverse the order of the collection |  |  |  |
| Sort the collection |  |  |  |
| Randomly shuffle the collection |  |  |  |

# Example use case

SortedSet

|  |  |  |  |
| --- | --- | --- | --- |
| Operation | Is it possible?  Yes / no | How is it done?  Function name / code example | Time complexity  O(…) |
| Insert element at beginning |  |  |  |
| Insert element at position i |  |  |  |
| Append element to end |  |  |  |
| Remove first element |  |  |  |
| Remove ith element |  |  |  |
| Remove last element |  |  |  |
| Does it contain given element? |  |  |  |
| Find index of given element |  |  |  |
| Get number of elements |  |  |  |
| Copy the entire collection |  |  |  |
| Reverse the order of the collection |  |  |  |
| Sort the collection |  |  |  |
| Randomly shuffle the collection |  |  |  |

# Example use case

Stack

|  |  |  |  |
| --- | --- | --- | --- |
| Operation | Is it possible?  Yes / no | How is it done?  Function name / code example | Time complexity  O(…) |
| Insert element at beginning |  |  |  |
| Insert element at position i |  |  |  |
| Append element to end |  |  |  |
| Remove first element |  |  |  |
| Remove ith element |  |  |  |
| Remove last element |  |  |  |
| Does it contain given element? |  |  |  |
| Find index of given element |  |  |  |
| Get number of elements |  |  |  |
| Copy the entire collection |  |  |  |
| Reverse the order of the collection |  |  |  |
| Sort the collection |  |  |  |
| Randomly shuffle the collection |  |  |  |

# Example use case

Queue

|  |  |  |  |
| --- | --- | --- | --- |
| Operation | Is it possible?  Yes / no | How is it done?  Function name / code example | Time complexity  O(…) |
| Insert element at beginning |  |  |  |
| Insert element at position i |  |  |  |
| Append element to end |  |  |  |
| Remove first element |  |  |  |
| Remove ith element |  |  |  |
| Remove last element |  |  |  |
| Does it contain given element? |  |  |  |
| Find index of given element |  |  |  |
| Get number of elements |  |  |  |
| Copy the entire collection |  |  |  |
| Reverse the order of the collection |  |  |  |
| Sort the collection |  |  |  |
| Randomly shuffle the collection |  |  |  |

# Example use case