**Assignments on Collections**

1. Create a method that searches for a particular String in a List. If found, the element should be replaced with a string having only half of the characters in the actual string

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| Method Name | modifyElement |
| Method Description | Search for an element in the arraylist and modifies it. |
| Argument | List<String> arrayList , String element |
| Return Type | List |
| |  |  | | --- | --- | | Logic | Accept an arraylist and search for an element in the list and replace with a string having only first half of the characters in the actual string.  For Example if a search was done for APPLE and if APPLE is found in the list, replace it with APP.  Return the modified list  Hint:  Iterate through list and find the index where the String is present.  Take the first half of the String and set it at that index in the arraylist. (Use set method) | | Accept an arraylist and search for an element in the list and replace with a string having only first half of the characters in the actual string.  For Example if a search was done for APPLE and if APPLE is found in the list, replace it with APP.  Return the modified list  Hint:  Iterate through list and find the index where the String is present.  Take the first half of the String and set it at that index in the arraylist. (Use set method) |

1. Create a method which accepts two Arraylist containing characters. Merge both arrays lists, sort the elements in the resulting list and return the resulting array.

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| Method Name | mergeData |
| Method Description | Merge two arraylist , sort it and return the result as an integer array. |
| Argument | List, List |
| Return Type | char[] |
| Logic | Merge both arrays lists, sort the elements in the resulting list and return it as a char array. |

1. In a certain television game show, a couple is considered as a perfect couple if both the husband’s and wife’s name contains the same set of characters. Each couple is provided with an ID. Write a method which can accept a HashMap with ID as key and the husband’s and wife’s name separated with “-” as value. The method should generate the list of perfect couples based on the above mentioned criteria and return their IDs as List object.

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| Method Name | checkPerfectCouple |
| Method Description | Select the set of perfect couples |
| Argument | Map |
| Return Type | List |
| Logic | Accept the Map  Iterate through it  Separate the husband’s and wife’s names  If they contain the same characters, add the ID to the List object.  Ex: Assuming VIMAL-MALIV is the value, this is a perfect couple since both these names contains same characters (in different order). |

1. Create a method which accepts an integer array and removes all the duplicates in the array. Return the resulting array in descending order

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| Method Name | modifyArray |
| Method Description | Remove duplicates |
| Argument | int [] |
| Return Type | int [] |
| Logic | Remove the duplicate elements in the array and sort it in descending order  Hint:  1. Use Collection API (TreeSet) to remove duplicates and sort the result in ascending order  2. Create a new array, iterate through elements in TreeSet and add it in the reverse order |

1. Create a method which accepts an integer array, reverse the numbers in the array and returns the resulting array in sorted order

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| Method Name | getSorted |
| Method Description | Return the resulting array after reversing the numbers and sorting it |
| Argument | int [] |
| Return Type | int |
| Logic | Accept and integer array, reverse the numbers in the array, sort it and return the resulting array. Hint :  1. Convert the numbers to String to reverse it  2. Use Collection APIs to sort it  **Ex:** {12,23,96,45}  **Step 1:** Reverse numbers {21,32,69,54}  **Step2:** Sort it {21,32,54,69}  **Hint**: Use String to reverse number  To sort it, Convert array to ArrayList and use Collections.sort |

6. Create a method, getStatesAsMap() that receives String array and returns HashMap where the key for the hashmap is first three letters of array element in uppercase and the value of hashmap is the element itself

Input:{"Goa","kerala","gujarat"} [string array]

Output:{{GOA,goa},{KER,kerala},{GUJ,Gujarat}}

7.Create a method getKeys() which receives Hashmap and a String and the method returns array of strings.

Ex. if following hashmap is passed to the method, hashmap<String,String>{"ram:hari","cisco:barfi","honeywell:cs","cts:hari"}; and also the following String is passed to the method, "hari" then method returns {"ram","cts"};

Logic: Store the key values of the hashmap in the output string[] corresponding to the given input.

8. Write a method, getEmployeeNames() which receives string array contain email id's of the employees working in different organizations. The method has to return hashmap where keys are

organization name and values are no. of employees in each organization.

Hint: domain name contains organization name.

Ex.

String emails[]= {"smith@sapient.com", "clarke@ibm.com" , "jones@ibm.com"};

return HashMap

sapient 1

ibm 2

9. Write a method wordCount() which receives an array list which contains duplicate string objects. The method has to return Hashmap where string object is the key and number of occurrences is the value.