UECS2354 Software Testing
Lab Exercise – Checkpoint

1. `DiscountClass.java` in `src/main/java` contains a method `setDiscount` which changes the instance variable `discountOffer` to the following values in accordance to the range of values in its parameter `purchase`.

Discount offered	Amount purchased
3.5	0 – 1000
4.2	1001 – 4000
5.6	4001 - 9000

   Write a parameterized test for `setDiscount`, include tests for invalid arguments as well.

2. `Salesman.java` contains a method `setRating` which changes the instance variable `rating` to the following values in accordance to the range of values in its parameter `sales`.

Sales number	Rating
0 - 5000	Poor
5001 - 10000	Average
10001 and above	Good

   Write a parameterized test for `setRating`, include tests for invalid arguments as well.

3. `StringOperation.java` contains a method `compareStringArrays` which accepts 3 parameters: `numToCompare`, and two String arrays `strArray1` and `strArray2`. This method is required to do the following:

   - It will iterate through the first `numToCompare` String objects in both arrays. For every String element in `strArray1` array; if there also exists an element with the same content anywhere in `strArray2`, then the element in `strArray1` will be added to an array of String objects to be returned.
   - If there are multiple String objects in `strArray2` that have the same content as a single String object in `strArray1`, then only that single String object from `strArray1` will be contained in the array of String objects to be returned.

   For example, if `strArray1` contains these Strings `{"cat", "mouse", "dog", "monkey", "bird"}`, and `stryArray2` contains these Strings `{"elephant", "dog", "snake", "cat", "horse"}`, the comparing the first 5 String objects from both these arrays return: `{"cat", "dog"}`

   a. Write additional code in `compareStringArrays` to throw `IllegalArgumentException` when invalid arguments are passed.

   b. Write parameterized tests for `compareStringArrays`, include tests for invalid arguments as well.

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4. `CheckStudentClass.java` contains a method `checkForHighestMarks` which accepts 3 parameters: `minMark`, `numStudents` and `studArray`. This method is required to do the following:

   - It will iterate through the first `numStudents` objects in the `studArray` array and will return an array of zero, one or more `Student` objects whose `mark` instance variables are the highest among all the `Student` objects in the array. If there is one `Student` object whose `mark` is the highest among all the objects in the array, than the returned array will contain this single object. If there is two or more `Student` objects which share the highest `mark` value, then the returned array will contain all these objects.
   - Only the `Student` objects in the array whose `mark` instance variable is higher than `minMark` will be taken into consideration for the determination of the highest mark just described.

   a. Write additional code in `checkForHighestMarks` to throw `IllegalArgumentException` when invalid arguments are passed.

   b. Write parameterized tests for `checkForHighestMarks`, include tests for invalid arguments as well.

NOTE:
This is a checkpoint exercise to prepare yourself for practical test. This exercise covers the basic concepts and techniques that you must know and master.
You should be able to complete this exercise within 1 hour to 1.5 hours.