

Specification Assignment 2

Question 1

Design a class that perform following operations on Strings, without using Java APIs. Assume strings to be not null and case sensitive.

1. Compare two strings and return 1 if equals else 0. Take two string inputs, compare them and return values accordingly.
2. Return the reverse of any string.
3. Receive a string as parameter and replace lowercase characters with uppercase and vice-versa.
4. Return the largest word of a string. If two words are of same length then return last word.

Also write proper specification for each method created above.

Question 2

Design a class Marksheet, which reads in grades of n no of students. Assume n as a positive integer and grades will be between 0 and 100 both inclusive. It should support following methods

1. Return average of all grades.
2. Return maximum of all grades.
3. Return minimum of all grades.
4. Return percentage of students passed. (Assume grade ≥ 40 as Pass)

Also write proper specification for each method created above. Assume that these methods may throw ArithmeticException.

Note : Use the floating-point values upto 2 decimal places.

Question 3

Design a class Area to calculate areas for different shapes. It should support following methods

1. Method to return area of a Triangle. Method will receive width and height as double and return computed value as double.
2. Method to return area of a Rectangle. Method will receive width and height as double and return computed value as double.
3. Method to return area of a Square. Method will receive width as double and return computed value as double.
4. Method to return area of a Circle. Method will receive radius as double and return computed value as double.

Assuming that height, width and radius will be greater than zero write proper specification for each method created above. Also assume that these methods may throw `ArithmeticException`.