KADİR HAS UNIVERSITY
CE 343 Object Oriented Programming Languages
2018-2019 Fall
HW 3 – Inheritance and Polymorphism
Due Date: Monday 10/12/2018 23:59

Submit your **compile-able** and **executable project folder** as an archive in **.zip format** via BlackBoard before the due date.
Maximum 2 students can work together. The source files (.java) should contain the name of group members.
Any type of **shared** work with different groups will be considered **cheating**. Thus, do **not** share your work.

Task#1 Stack

To store integers, design a class named **MyStack** using inheritance, extending **ArrayList**.
The **MyStack** class encapsulates the stack storage and provides the operations for manipulating the stack.
Design the **MyStackBottom** class using inheritance, extending **MyStack.**
In a **MyStackBottom**, we push an integer into the **bottom** (shifting elements to the top by one), and during pop, we remove the integer at the **bottom** (shifting elements to the bottom by one).
You are expected to complete the missing parts of the given source file **StackTest.java**.
Read **carefully** the comments in the source file **StackTest.java**.

Task#2 Figure Hierarchy

Implement the Figure hierarchy shown in figure below. Each *TwoDimensionalFigure* should contain method *getArea* to calculate the area of the two-dimensional figure. Each *ThreeDimensionalFigure* should have methods *getArea* and *getVolume* to calculate the surface area and volume, respectively, of the three-dimensional figure. Create a program that uses an array of *Figure* references to objects of each concrete class in the hierarchy. The program should print a text description of the object to which each array element refers. Also, in the loop that processes all the figures in the array, determine whether each figure is a *TwoDimensionalFigure* or a *ThreeDimensionalFigure*. If a figure is a *TwoDimensionalFigure*, display its area. If a figure is a *ThreeDimensionalFigure*, display its area and volume.
Analyse and understand **FigureTest.java**.
In the source files (.java), complete ONLY the indicated parts (// COMPLETE…..), do NOT make any other changes.