University of Dhaka
Dept. of Computer Science and Engineering

CSE-2112: Object Oriented Programming Lab (2-1 Sem., Spring, 2022)
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Lab 5: Inheritance, method overriding with inheritance, referencing a subclass object with superclass variable, abstract class, interface.
Date : February 24, 2022
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Solve the following problem and submit the source files **in a zipped folder**.
Submission time ends at 12.30 PM. No late submission is allowed and no penalty system exists.

You need to build a class hierarchy involving the following shapes:

Shape	Parameters
Circle	Radius
Ellipse	Horizontal radius and vertical radius
Rectangle	Length and width
Square	Length
Triangle	Lengths of three sides and height
Line	Length

Common to each of the above shapes are: Name (String) and color (String). Two other properties that may or may not be applicable to each of the shapes: area and perimeter.

Build a class hierarchy for the above classes. The conditions are as follows:

1. Use at least one abstract class which must have at least one abstract method and one normal method.
2. There must be at least three levels in your class hierarchy.
3. There must be mechanisms to get the name, color, area and perimeter (if applicable) for each shape.
4. Each class must have a constructor. In addition, you must use the keyword “super” where applicable.

You should try to use maximum code reuse as well as maximum ease of coding.

Write a separate demo class that shows the followings:

a. Invoking subclass object’s overridden method with abstract superclass variable.
b. Invoking subclass object’s overridden method with concrete superclass variable.