1. Test the following principles of an abstract class:

* If any class has any of its method abstract then you must declare entire class abstract.

Shape is not abstract and does not override abstract method draw() in shape

* Abstract class cannot be instantiated.

error: Shape is abstract; cannot be instantiated

* When we extend an abstract class, we must either override all the abstract methods in sub class or declare subclass as abstract.

error: Line is not abstract and does not override abstract method draw()

* Abstract class cannot be private.

ShapeMain.java:1: error: modifier private not allowed here

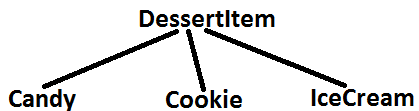
* Abstract class cannot be final.

ShapeMain.java:1: error: illegal combination of modifiers: abstract and final

abstract final class Shape

* You can declare a class abstract without having any abstract method.

1. Write the classes Line, Rectangle, Cube etc. & make the Shape as their base class. Add an abstract draw() method in the class Shape & draw all shapes.
2. Write an abstract class ‘Persistence’ along with two sub classes ‘FilePersistence’ & ‘DatabasePersistence’. The base class with have an abstract method persist() which will be overridden by its sub classes. Write a client who gets the Persistence object at runtime & invokes persist() method on it without knowing whether data is being saved in File or in Database. Note that persist() method simply prints a message that ‘data persisted into file’ or ‘data persisted into database’.
3. Develop an application for Dessert shop. The application should allow owner to add items like Candy, Cookie or IceCream in the shop storage. Also customers should be able to place an order.



DessertItem is an abstract class having an abstract method getCost(). Every dessert item has tax associated. Candy item is sold in dollar currency, Cookie in Euro currency & IceCream in Rupees currency. The sub classes are supposed to override these methods. When we run the application, it should ask us our role i.e. owner or customer. If role is owner, we should be able to add dessert items in our storage. If role is customer, then we should be able to place an order. The currency conversion rates are:

1 dollar = 60 rupees.

1 euro = 70 rupees.