

**North South University**  
**Department of Electrical and Computer Engineering**  
**CSE 215L: Programming Language II Lab**

**Lab – 11: Abstract Class & Interface**

**Objective:**

- To understand abstract class
- To understand interface

**Task:**

1. Implement the following classes:

<table><tr><td><b><i>Shape</i></b></td></tr><tr><td>- name: String</td></tr><tr><td>+ Shape(name: String) /* accessor-mutator */ + area(): double + <i>perimeter(): double</i></td></tr></table>	<b><i>Shape</i></b>	- name: String	+ Shape(name: String) /* accessor-mutator */ + area(): double + <i>perimeter(): double</i>	<table><tr><td><b>Rectangle extends Shape</b></td></tr><tr><td>- length: double - width: double</td></tr><tr><td>+ Rectangle(name: String, length: double, width: double) /* accessor-mutator */ + area(): double + perimeter(): double</td></tr></table>	<b>Rectangle extends Shape</b>	- length: double - width: double	+ Rectangle(name: String, length: double, width: double) /* accessor-mutator */ + area(): double + perimeter(): double
<b><i>Shape</i></b>							
- name: String							
+ Shape(name: String) /* accessor-mutator */ + area(): double + <i>perimeter(): double</i>							
<b>Rectangle extends Shape</b>							
- length: double - width: double							
+ Rectangle(name: String, length: double, width: double) /* accessor-mutator */ + area(): double + perimeter(): double							

2. Implement the following classes and invoke discountedPrice() for object of each class.

<div><div><div>&lt;&lt;interface&gt;&gt;</div><div>Discountable</div></div><div>discountedPrice(price: double): double</div></div>	
<div><div><div>PercentageDiscount</div><div><div>- percentage: double</div><div>+ PercentageDiscount(percentage: double) double + getPercentage(): double + setPercentage(percentage: double): void + discountedPrice(price: double): double</div></div></div></div>	<div><div><div>ThresholdDiscount</div><div><div>- threshold: double - discount: double</div><div>+ ThresholdDiscount(threshold: double, discount: double) + getThreshold(): double + getDiscount(): double + setThreshold(threshold: double): void + setDiscount(discount: double): void + discountedPrice(price: double): double</div></div></div></div>