**CSE 135: Fundamentals of Computer Programming**

**Lab 12: Inheritance**

**November 17, 2014**

Today’s lab will help you understand the concept of Inheritance. It will also make you understand the usage of keyword ‘final’. You will also get to know how to override a method in the subclass(s)

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1. As we know, that circle and rectangle are geometric shapes. So, in the terms of Object Oriented we can say that shape is a class which have circle and rectangle as subclasses. Your task is to design these classes. In this case:
   1. The super class Shape will have a method which will return the date of shape creation.
   2. Create classes for Circle and Rectangle inheriting super class Shape.
   3. Include a method in all the classes to calculate the area of concerned shape.
   4. Don’t forget to add toString() method to all classes. Be sure that toString() method will be overridden in the sub classes. The toString() method will only print the name of the Shape. For example, in Circle class, toString() method will print “Cirlce” and in Rectangle class, this method will print “Rectangle”.
   5. Just for your reminder, the PI value in the circle is a constant and can never be changed so it should be declared as final.
   6. There is a special type of rectangle which has equal width and height i.e., square. So square is a direct subclass of rectangle and not shape.

**Inside Your Tester Class:**

* 1. Write a static method that prints the larger area from the two shapes. As you can observe, this method doesn’t belong to any class, so it should be in your tester class and called by your main method.
  2. In your main method create two shapes, i.e., Circle and Rectangle. Print the shape name and its date of creation and their area. Now call the method which will find larger shape and print which shape has larger area.