Practice Questions:

Exercise 1: Write a program that specifies whether a given number (x) falls in one of the following categories (give x a value from the code, don't read from user):

• 0 to 9

• 10 to 19

• 20 to 29

• None of the categories

For example, if x = 5, program should print "0 to 10", and if x = 44 it should print "None".
Hint: use if statements with Boolean expressions combined using && operator

Exercise 2: Write a class Book with three data members BookId, Pages and Price. It also contains the following member function:

• The get() method is used to input values

• The show() method is used to display values

• The set() method is used to set the values of data members using parameters

• The getPrice() method is used to return the value of price

Exercise 3: Create a class building that has the public member floors,area, and occupants and a method areaperperson()respectively that display the area per person for building. In the main() method create two instance of building called house and office and display the area per person by division of area/occupants.

Exercise 4:

Write a class Result that contains roll no, name and marks of three subjects. The marks are stored in an array of integers. The class also contains the following member functions.

- The input() method is used to input values
- The show() method is used to display values
- The total() returns the total marks a student
- The avg() method returns the average marks of a student

Exercise 5:

Create a class rectangle. The class has attributes length and width each of which defaults to 1. It has member function that calculates the perimeter and the area of the rectangle. It has set() and get() functions for both length and width. The set() function should verify that length and width are each floating point numbers larger than 0.0 and less than 20.0.

Exercise 6:

This program demonstrates a generalized super class **(parent)** that is SimpleGeometricObject and a Specialized subclass**(child)** CircleFromGeometricObject. All geometric objects such as a circle or a rectangle may have the property of colour but only circles have radius. The sub class has therefore a data member radius but also accesses the data member colour of the superclass.

Furthermore the setColor() and getColor() methods of the superclass are also accessed by the subclass.

```
public class TestCircleRectangle {
    public static void main(String[] args) {
     CircleFromSimpleGeometricObject circle= new CircleFromSimpleGeometricObject(2.5, "Red");
        System.out.println(circle.getcolor());
    }

}
class SimpleGeometricObject {
    private String color = "white";
     public SimpleGeometricObject(){
    }
   /* Set color */
    public void setColor(String color) {
    this.color=color;
}
    /* Return Color */
public String getcolor() {
return color;
}
}
class CircleFromSimpleGeometricObject extends SimpleGeometricObject{
   private double radius;
    public CircleFromSimpleGeometricObject(double radius,
String color) {
this.radius = radius;
setColor(color);
}
}
```

Create a new class RectangleFromSimpleGeometricObject in example 1 and extend it with SimpleGeometricObject class. Create an object for this class in the TestCircleRectangle class with a constructor receiving one parameter of color. Add a method setWidthHeight() which accepts two double parameters width and height.

Add another method getWidthHeight which returns width and height. Also call the setColor() method of the superclass from the constructor and call the getColor() method in TestCircleRectangle class for RectangleFromSimpleGeometricObject class.