



CLASS NAME: OBJECT ORIENTED
PROGRAMMING

TEACHER: EDISON

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NRC: 14575

HOMEWORK #: 15

TOPIC: Abstraction_override_functions

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```
/**
 * Vertebrate is not abstract and does not override abstract method feed() in Animal
 *
 * (Alt-Enter shows hints)
 */
public class Vertebrate extends Animal {
    private String spine;
    private int numberOfBones;

    public Vertebrate(String spine, int numberOfBones, int id, String scientificName,
        Date bornDate, int cageId) {
        super(id, scientificName, bornDate, cageId);
        this.spine = spine;
        this.numberOfBones = numberOfBones;
    }

    @Override
    public String toString() {
        return "Vertebrate[" + super.toString() + "spine=" + spine + ", numberOfBones=" + numberOfBones + "]";
    }

    /**
     * @return the spine
     */
    public String getSpine() {
        return spine;
    }
}

import java.util.Date;

/**
 * Birds is not abstract and does not override abstract method feed() in Animal
 *
 * Create Test Class
 *
 * (Alt-Enter shows hints)
 */
public class Birds extends Vertebrate {
    private String speciesName;
    private boolean isMigratory;
    private String birdColor;

    public Birds(String speciesName, boolean isMigratory, String birdColor,
        String spine, int numberOfBones, int id, String scientificName, Date bornDate, int cageId) {
        super(spine, numberOfBones, id, scientificName, bornDate, cageId);
        this.speciesName = speciesName;
        this.isMigratory = isMigratory;
        this.birdColor = birdColor;
    }

    public void migrate() {
        System.out.println("Bird is migrating");
    }
}

/**
 * Fish is not abstract and does not override abstract method feed() in Animal
 *
 * (Alt-Enter shows hints)
 */
public class Fish extends Vertebrate {
    private String habitatType;
    private boolean isSaltwater;
    private String speciesName;
    private String fishColor;

    public Fish(String habitatType, boolean isSaltwater, String speciesName,
        String spine, int numberOfBones, int id, String scientificName, Date bornDate, int cageId) {
        super(spine, numberOfBones, id, scientificName, bornDate, cageId);
        this.habitatType = habitatType;
        this.isSaltwater = isSaltwater;
        this.speciesName = speciesName;
        this.fishColor = fishColor;
    }
}
```

```

6
7
8
9
10 public class Tuna extends Fish {
11     /** Implement all abstract methods */
12     /** Make class Tuna abstract */
13
14     public Tuna(boolean isFastSwimmer, double averageSize, String h
15         super(habitatType, isSaltwater, speciesName, fishColor, spir
16         this.isFastSwimmer = isFastSwimmer;
17         this.averageSize = averageSize;
18     }
19
20     @Override
21     public String toString() {
22         return "Tuna{" + super.toString() + "isFastSwimmer=" + isFa
23     }
24
25     /**
26     * Return the isFastSwimmer
27     */

```





