JAVA Assignment 6

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1) Write an application to show the behavior of a Duck.
2) Create classes as mentioned
in https://www.oreilly.com/api/v2/epubs/0596007124/files/figs/web/022fig01.png.jpg
3) Also create a new Behaviour :
    a) <<interface>> SwimBehavior
    b) Three different classes Swim, Float, and Drown which implement SwimBehavior containing swim() method.

4) Print which duck will fly, float or swim.
5) Create a class diagram for entire program (including swim interface).

CODE:

```
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//Main.java

public class Main {
    public static void main(String[] args) {
        System.out.println("**********************");
        RedHeadDuck redHeadDuck = new RedHeadDuck();
        redHeadDuck.display();
        redHeadDuck.performFly();
        redHeadDuck.performQuack();
        redHeadDuck.performSwim();
        System.out.println("**********************");
        RubberDuck rubberDuck = new RubberDuck();
        rubberDuck.display();
        rubberDuck.performFly();
        rubberDuck.performQuack();
        rubberDuck.performSwim();
        System.out.println("**********************");
        MallardDuck mallardDuck = new MallardDuck();
        mallardDuck.display();
        mallardDuck.performFly();
        mallardDuck.performQuack();
        mallardDuck.performSwim();

    }
}
```

```java
//DecoyDuck.java

public class DecoyDuck extends Duck {

    public DecoyDuck() {
        flyBehaviour = new FlyNoWay();
        quackBehaviour = new Squeak();
        swimBehaviour = new SwimNoWay();
    }

    @Override
    public void display() {
        System.out.println("Decoy mf");
    }

}
```

```java
//Duck.java

abstract public class Duck {

    FlyBehaviour flyBehaviour;
    QuackBehaviour quackBehaviour;
    SwimBehaviour swimBehaviour;

    public void setFlyBehaviour(FlyBehaviour fb){

        flyBehaviour = fb;

    }
    public void setQuackBehaviour(QuackBehaviour qb){

        quackBehaviour = qb;
    }
    abstract void display();

    public void performFly(){

        flyBehaviour.fly();
    }
    public void performQuack(){

        quackBehaviour.quack();
    }

    public void performSwim(){
        swimBehaviour.swim();
    }
}
```

```java
//Float.java

public class Float implements SwimBehaviour{
    public void swim(){
        System.out.println("Floating mf");
    }

}
```

```java
//FlyBehaviour.java

public interface FlyBehaviour {
    public void fly();
}
```

```java
//FlyNoWay.java

public class FlyNoWay implements FlyBehaviour{
    @Override
    public void fly(){
        System.out.println("Can't fly mf");
    }
}
```

```java
//FlyWithWings.java

public class FlyWithWings implements FlyBehaviour{
    @Override
    public void fly(){
        System.out.println("Flying with wings mf");
    }
}
```

```java
//MallardDuck.java

public class MallardDuck extends Duck {

    public MallardDuck(){

        flyBehaviour = new FlyWithWings();
        quackBehaviour = new Quack();
        swimBehaviour = new Swim();
    }
    @Override
    void display(){
        System.out.println("MallardDuck mf");
    }

}
```

```java
//NoSwim.java

public class NoSwim implements SwimBehaviour{
    public void swim(){
        System.out.println("Can't swim mf");
    }
}
```

```java
//Quack.java

public class Quack implements QuackBehaviour {
    @Override
    public void quack(){
        System.out.println("Quack mf");
    }
}
```

```java
//QuackBehaviour.java

public interface QuackBehaviour{
    public void quack();
}
```

```java
//RedHeadDuck.java

public class RedHeadDuck extends Duck {

    public RedHeadDuck(){

        flyBehaviour = new FlyWithWings();
        quackBehaviour = new Quack();
        swimBehaviour = new Swim();
    }
    @Override
    void display(){
        System.out.println("RedHeadDuck");
    }

}
```

```java
//RubberDuck.java

public class RubberDuck extends Duck {
    public RubberDuck(){
        flyBehaviour = new FlyNoWay();
        quackBehaviour = new Squeak();
        swimBehaviour = new Float();
    }

    @Override
    void display(){
        System.out.println("RubberDuck");
    }

}
```

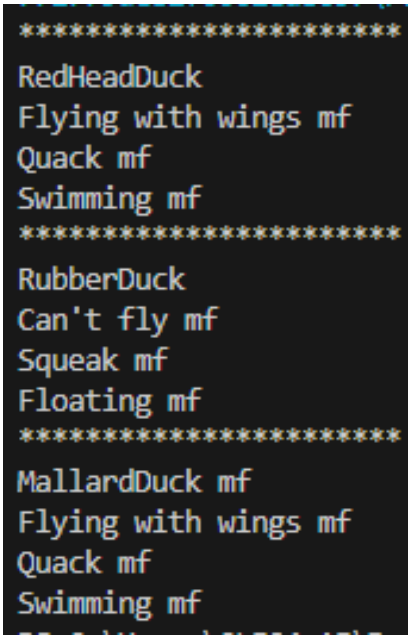
```java
//Squeak.java

public class Squeak implements QuackBehaviour{
    @Override
    public void quack(){
        System.out.println("Squeak mf");
    }
}
```

```java
//SwimBehaviour.java

public class Swim implements SwimBehaviour{
    public void swim(){
        System.out.println("Swimming mf");
    }
}
```

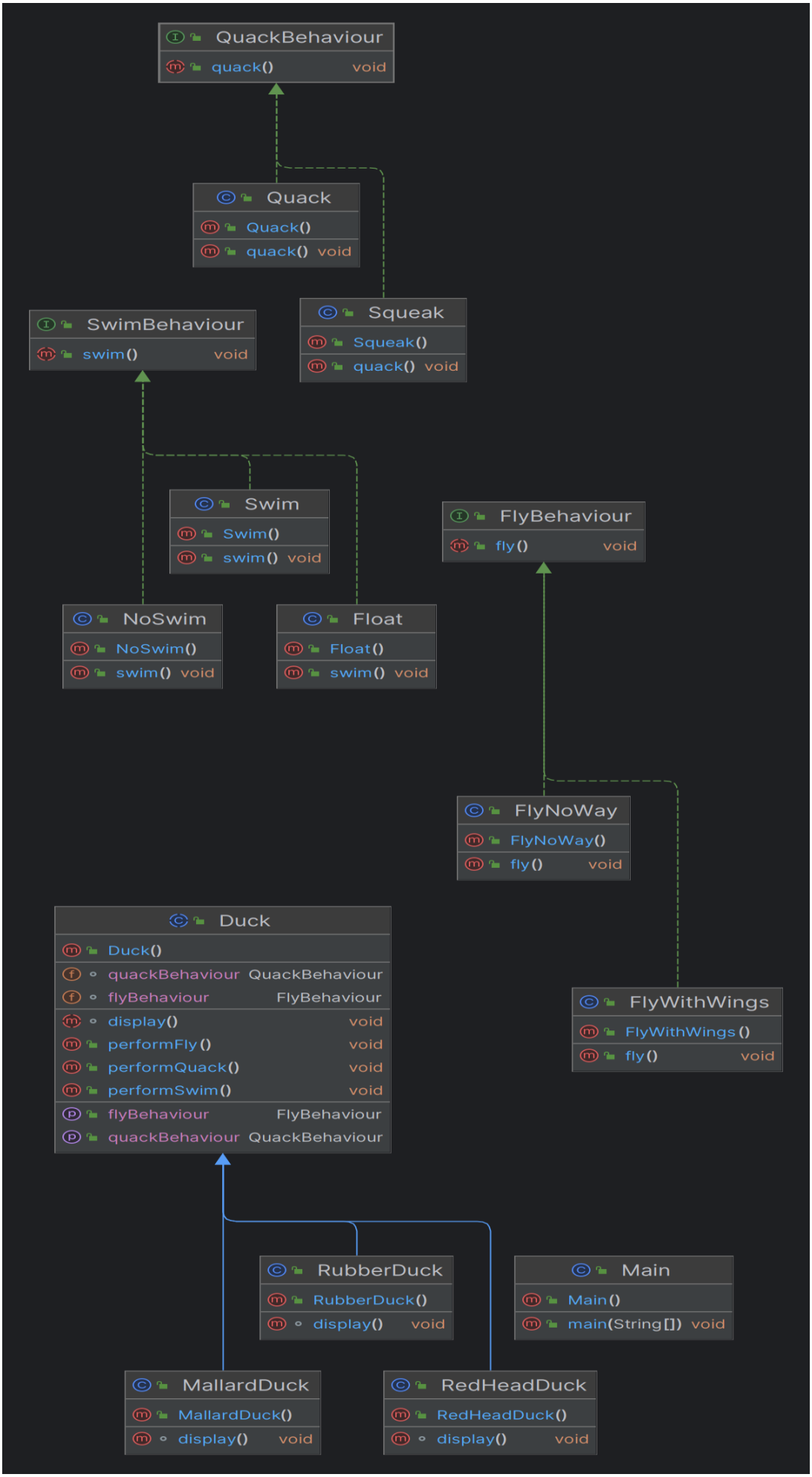
```java
//SwimBehaviour.java

public interface SwimBehaviour {
    public void swim();

}
```

```java
//SwimNoWay.java

public class SwimNoWay implements SwimBehaviour {
    public void swim() {
        System.out.println("Can't swim mf");
    }
}
```

OUTPUT:


****
RedHeadDuck
Flying with wings mf
Quack mf
Swimming mf
****
RubberDuck
Can't fly mf
Squeak mf
Floating mf
****
MallardDuck mf
Flying with wings mf
Quack mf
Swimming mf

Class Diagram



Github Repo:

https://github.com/samv28/PIJ