Lecture 23 - 4/9/2024

Last week we learned about inheritance and how to extend other classes and the relationship between super and subclasses. Today we are going to talk about interfaces, which have inheritance like properties but those will be discussed later.

Interfaces are blueprints of classes in Java they contain method declarations and potentially static variables but nothing else, another way to think about Interfaces is that they are **fully abstract classes** In order to write interfaces in Java you would do it as follows:

```
public interface MyInterface {
     //method declarations
     public void myMethod();
}
```

In Lecture we specifically saw the Comparable Interface, which is defined as follows:

```
public interface Comparable<T>{
     public int compareTo(Comparable<T> other);
}
```

This is another example of a parameterized structure. ArrayLists were the first example that we saw, all that means is we must declare the type when we use it. For the Card class if we wished to implement the Comparable interface we would do so as follows:

```
public class Card implements Comparable<Card>{
     public int compareTo(Card other){
          //whatever you implement
     }
     //other Card class methods
}
```

When it comes to the compareTo() method convention is when you have a method call a.compareTo(b); If a is to come before b then a negative quantity is returned, if they are equal 0 and otherwise a positive quantity. To link this back to inheritance we can make the declared type of objects, the interface they implement so for the card example above:

```
Comparable c = new Card('h', 12);
```

However like with inheritance we are only able to call any method from Comparable at compile time otherwise we will receive an error meaning the only valid method call would be:

```
c.compareTo(someOtherCardObject);
```

If you are unfamiliar with Polymorphism please refer to last week's lecture review! There was more stuff done on codio in Lecture 23 examples but in terms of content this is where I will end it for today. Good luck on your midterm next class!