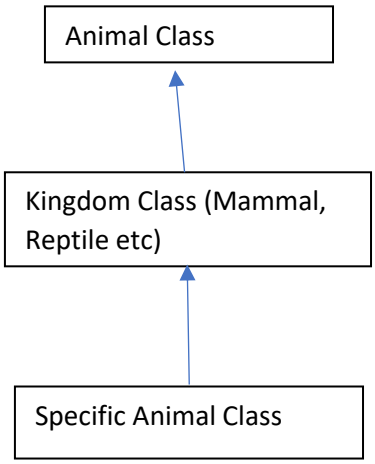
Java Coursework 2 – Object Oriented Improvements

As per the requirements of the coursework, in this document I will outline potential ways to streamline and improve my program using object oriented programming. In particular, I will focus on the use of polymorphism to limit the amount of copied methods and attributes. The main benefit of redesigning the program to make the most out of Java's object oriented design is this will reduce the size of the program and will use more recycled code.

My main idea to make use of object oriented paradigms is to include another level of classes into the system. For example, instead of having an generic Animal class followed by a specific class for each individual animal, I will include a class in the middle that divides the animals into mammals, reptiles, etc. By doing this, you could limit the amount of code you had to write in each class, and reuse more code. This would significantly shrink the size of the program. Theoretically once this was done, any animal would only need to have the very specific details about them stored in their specific class, instead of the system being used now where almost every attribute an animal has is stored in its class. Obviously this is not ideal, as animals like different types of fish share similar attributes, which could be abstracted to a higher class. A diagram of my proposed design change is below:



By using this design, the original Animal class has become abstract, as the user will only interact with the classes below it. The Animal class becomes the implementation, while the classes below it become the interface. The reason that the Animal class is abstract is because it will only have methods in it like "getName()" and "getKingdom()", methods that can only be fulfilled once the user has begun programming at the interface level with the other classes in the system.