Question Set answers

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Set 1

1. A parent-child relationship, Genus being the parent and Species being the child
2. No relationship between them.

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| --- |
| Species |
| * speciesName:String |
| * Species(s:String, g:String) * setSpeciesName(String s): void * getSpeciesName(): String * toString(): String * equals(s: Species): boolean |

* 1. We can reuse the code so we do not need to rewrite the same code every time we want to make a child class. The child class can also access the fields and methods from the parent class.
  2. The code will be more structured and easier to read.
  3. Each class has their own toString() method which is overridden so they have their own unique toString() method which won’t result in an error.
  4. The term is overriding.

Set 2

1. Encapsulation in Java is a mechanism of wrapping the data (variables) and code acting on the data (methods) together as a single unit. In encapsulation, the variables of a class will be hidden from other classes, and can be accessed only through the methods of their current class. Therefore, it is also known as data hiding.
   1. Protects unwanted access by clients
   2. Easier to maintain the code and makes the codes easier to understand
2. getName(), getCage(), getTOA(),
3. name, cageNumber, toa
4. File in repository
   1. Advantage: It will be more structured because in taxonomy, a specimen is considered a subspecies. The specimen object could also access the fields and methods of Species, it’s parent class.
   2. Disadvantage: Some methods and fields of the specimen would be dependent on the parent class, and it is also difficult to make customize the fields and methods.

Set 3

1. Adding an instance variable inside Specimen class called marking, adding another parameter for the marking inside the constructor of Specimen class, and adding a getter and setter method for the marking.
2. File in repository

listSpecies (Specimen[] animals) {

LinkedList<String> allSpecies = new LinkedList <String>

for (each animal in Specimen[]){

if (animal's species has not existed)

insert animal's species to allSpecies

return allSpecies

}

Set 4

1. We can perform a number of operations on abstract data types without needing to know how the operation works.
2. File in repository
3. File in repository
4. File in repository