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**Question Set 1**

1. Genus and species have is-A relationship where genus is a superclass with species as it’s subclass
2. Species and specimen have has-A relationship where specimen use species class as a type parameter

|  |
| --- |
| Specimen |
| -name: String  -cageNumber: int  -toa: Species |
| +setName(String: a): void  +setCage(int: c): void  +setTOA(Species: s): void  +getName(): String  +getCage(): int  +getTOA(): Species  +toString: String |

1. Reusability, The programming team can use all the methods inside genus and species without rewriting them when creating new specimen.

Organized & readable, as there is less code to write, the scripts are shorter, more organized, and easier to read.

2. As toString is a method, any class can override toString and the code will not produce an error
3. Overriding

**Question set 2**

1. Encapsulation is a term for encapsulating data with method. Encapsulation is important to hide a sensitive data and prevent user from accessing the data directly.
2. Preventing user from directly accessing the data and allowing an access to a specific data of an object instead the full information of the object.
3. Accessor method:
   1. setName
   2. SetCage
   3. SetToa
   4. getName
   5. getCage
   6. getTOA
   7. toString
4. Instance variable:
   1. name
   2. cageNumber
   3. toa
5. 
6. Advantage: Easier to add new type of specimen because of inheritance

Disadvantage: More work to be done when changing the genus, as when the superclass is changed, all the subclasses will be affected

**Question Set 3**







**Question Set 4**

1. ADT is a model for objects that consist of values and operations

**BCD.**

