**CS 1150 Design Notebook Example**

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**Design Notebook**

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**Assignment #12**

**Due Dec 10**

**Step 1: Problem Statement**

Write code to create the following class hierarchy in your program.

Animal

Bear Elephant Monkey Sloth

|  |  |
| --- | --- |
| **Superclass**   * Animal | **Subclasses of Animal**   * Bear * Elephant * Monkey * Sloth |

Use the provided file **Animals.txt** to test your code.

**Step 2: Understandings**

**What I Do Know**

* I know how to access the private fields in the superclass within the subclasses using the getter methods.

**What I Don’t Know – What I’m struggling with – Questions I have**

* I struggled with displaying the information within the subclasses when using the if/else conditions in main.

**Step 3: Pseudocode for Main**

* **Note:** Import these packages: **java.io.File**, **java.io.IOException**, and **java.util.Scanner**
* **Within main**:
  + Setup the file reference variable to refer to the text file
  + Open the file for reading by creating a scanner for the file
  + Read the first line with the number **7** from the Animal.txt file
  + Create an array to store the Animal objects
  + Loop through each animal's information and store Animal objects
    - Read the animal type
    - Read the animal’s name
    - Read what the animal eats
    - Read the animal weight
    - Read the animal's sleep amount
    - Read the animal's location
    - Use if/else if conditions to determine the animal type and store the objects
  + Close the Scanner
* **Outside the class where main resides**
  + Create a superclass called **Animal**
    - Create a private field with these instance variables along with their data type: **String name**, **String food**, **int weight**, **int sleep**, and **String location**
    - Create a constructor called **public Animal** that takes in all 5 private field variables
      * Initializing all private data fields to incoming values
    - Do a getter for each instance variable
    - Create a public void method that displays **“Animal is eating”**
    - Create a public void method that displays **“Animal is sleeping”**
    - Create a public void method that displays **“Animal is swimming”**
  + When creating each subclasses below:
    - 1) Display method action (e.g., "Bear is swimming")
    - 2) For eat and sleep methods, include the food & sleep hours for the animal (e.g. “Bear is eating Bamboo”)
    - Include a **toString** method for displaying the information of each animal
  + Create a subclass of Animal called **Bear**
    - Create a public constructor called **Bear** that takes in all 5 private field variables
    - Use an eat, sleep, and swim method
  + Create a subclass of Animal called **Elephant**
    - Create a public constructor called **Elephant** that takes in all 5 private field variables
    - Use only a sleep method
  + Create a subclass of Animal called **Monkey**
    - Create a public constructor called **Monkey** that takes in all 5 private field variables
    - Use an eat and swim method
  + Create a subclass of Animal called **Sloth**
    - Create a public constructor called **Sloth** that takes in all 5 private field variables
    - Use no eat, sleep, or swim method

**Step 4: Lessons Learned**

* I got a better understanding of the hierarchical aspects of the superclass and the subclasses and how to access them. Especially when using the **instanceof** operator within the if/else if conditions.