

CT874

Assignment 8

H. Dip. Industry Stream

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Question 1

Code:

SUPERCLASS:

```
/*Tori Hume
 * ID: 11486248
 * Assignment 8
 * abstract Super class Animal
 */

import java.io.*;

//Create abstract super class
abstract public class Animal implements Serializable {

    //declare private variables
    private String name;

    //create constructor
    public Animal(){
        this.name="Unavailbale";
    }

    //create setter method
    public void setName(String name){
        this.name = name;
    }

    //create getter method
    public String getName(){
        return name;
    }

    //override toString method
    public String toString() {
        return "Animal Name= " + name;
    }

    //Create abstract method sound
    abstract public String sound();
}
```

SUBCLASS':

```
/*Tori Hume
 * ID: 11486248
 * Assignment 8
 * Dog sub class of Animal
 */

public class Dog extends Animal {

    //Create Constructor pulls constructor form super class
    public Dog() {
        super();
    }

    //create new sound method
    public String sound(){
        return "Woof.Woof...Woof Woof Woof!!";
    }

    //create new fetch method
    public String fetch(String item){
        return getName() + " is feaching a " +item+"!";
    }

    //override toString
    public String toString(){
        return "\nHello! This is " + getName() + ". " +getName()+" is a dog that can bark and
        feach items. \n"+ fetch("bone");
    }
}
```

```
/*Tori Hume
 * ID: 11486248
 * Assignment 8
 * Cat sub class of Animal
 */

public class Cat extends Animal {

    //Create Constructor pulls constructor form super class
    public Cat() {
        super();
    }

    //create new sound method
    public String sound(){
        return "meow..meow...meow meow.";
    }

    //Create a new climb method
    public String climb( String item){
        return getName()+" is climbing a " + item+ "!";
    }

    //override toString
    public String toString(){
        return "\nHello! This is " + getName() + ". " +getName()+" is a cat. They say meow
and can climb things. \n"+ climb("Tree");
    }
}
```

TESTER CLASS:

```
/*Tori Hume
 * ID: 11486248
 * Assignment 8
 *Pet tester class
 */

//import needed packages
import java.util.Scanner;
import java.io.*;

//create tester class
public class PetTester {

    //create main method
    public static void main(String[] args){

        //declare and create new instance of Scanner
        Scanner input = new Scanner(System.in);

        //get user to define the size of the array
        System.out.println("How many animals will you be entering?");
        int petArraySize=input.nextInt();
        //declare and create the petList array as an array of Animal instances
        Animal petList[]= new Animal[petArraySize];

        //buffer
        input.nextLine();

        //Use a for loop to fill the array
        for(int i=0; i<petArraySize; i++){

            //user chooses animal type
            System.out.println("What kind of animal would you like to enter?\n\tEnter 1
            for a Dog. \n\tEnter 2 for a Cat. ");
            int animalType= input.nextInt();
            input.nextLine();

            //while loop used when user enter an invalid option
            while (animalType!= 1 && animalType!=2)
            {
                System.out.println("Number entered invalid.\n\tEnter 1 for a Dog.
                \n\tEnter 2 for a Cat.");
                animalType = input.nextInt();
            }

            /*if dog is selected a new instance of dog is created.
            *The users enters the dogs name and this instance of the class dog is
            *assigned to
            * the ith index of the petList array.
            */

            if(animalType==1){
                Dog dog = new Dog();

                System.out.println("You have selected a Dog.");
```

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        //Assign Dog a name
        System.out.println("Please name the dog:");
        String dName=input.nextLine();
        dog.setName(dName);
        petList[i]=dog;

        /*else if cat is selected a new instance of cat is created.
        *The users enters the cats name and this instance of the cat class
        *is assigned to
        * the ith index of the petList array.
        */
    } else{

        Cat cat = new Cat();

        System.out.println("You have selected a Cat.");

        //Assign Cat a name
        System.out.println("Please name the Cat:");
        String cName=input.nextLine();
        cat.setName(cName);
        petList[i]=cat;
    }

}

//The array is Serialized to the file AnimalInfo.dat
try{
    //make a FileOutputStream

    FileOutputStream fileStream= new FileOutputStream("AnimalInfo.dat");

    //make an ObjectOutputStream
    ObjectOutputStream os = new ObjectOutputStream(fileStream);

    //write object

    os.writeObject(petList);

    //close the ObjectOutputStream
    os.close();

}catch (Exception e){
    e.printStackTrace();
}

//AnimalInfo.dat is deserialized
try{
    //Make a FileInputStream
    FileInputStream fileStream= new FileInputStream("AnimalInfo.dat");

    //Make an ObjectInputStream
    ObjectInputStream os = new ObjectInputStream(fileStream);

    //Read objects
    //Object one = os.readObject();

    //cast the objects
    petList = (Animal[]) os.readObject();

    /*the Object state and behaviors are tested through
    *this enhanced for loop that print the toString method and

```

```
        * the sound method for each index in the petList array to the screen.
        */
        for (Animal p: petList){
            System.out.print(p.toString()+"\n"+p.sound());
        }

        //Close the ObjectInputStream
        os.close();

    } catch (Exception e){
        e.printStackTrace();
    }

    //scanner is closed
    input.close();
}

}
```

Screen Shot:

```
<terminated> PetTester [Java Application] C:\Program Files\Java\jre1.8.0_101\bin\javaw.exe (9 Nov 2016, 17:33:28)
How many animals will you be entering?
5
What kind of animal would you like to enter?
    Enter 1 for a Dog.
    Enter 2 for a Cat.
1
You have selected a Dog.
Please name the dog:
Wolf
What kind of animal would you like to enter?
    Enter 1 for a Dog.
    Enter 2 for a Cat.
2
You have selected a Cat.
Please name the Cat:
Pixie
What kind of animal would you like to enter?
    Enter 1 for a Dog.
    Enter 2 for a Cat.
1
You have selected a Dog.
Please name the dog:
Max
What kind of animal would you like to enter?
    Enter 1 for a Dog.
    Enter 2 for a Cat.
1
You have selected a Dog.
Please name the dog:
Toby
What kind of animal would you like to enter?
    Enter 1 for a Dog.
    Enter 2 for a Cat.
2
You have selected a Cat.
Please name the Cat:
Cheetah

Hello! This is Wolf. Wolf is a dog that can bark and feach items.
Wolf is feaching a bone!
Woof.Woof...Woof Woof Woof!!
Hello! This is Pixie. Pixie is a cat. They say meow and can climb things.
Pixie is climbing a Tree!
meow..meow...meow meow.
Hello! This is Max. Max is a dog that can bark and feach items.
Max is feaching a bone!
Woof.Woof...Woof Woof Woof!!
Hello! This is Toby. Toby is a dog that can bark and feach items.
Toby is feaching a bone!
Woof.Woof...Woof Woof Woof!!
Hello! This is Cheetah. Cheetah is a cat. They say meow and can climb things.
Cheetah is climbing a Tree!
meow..meow...meow meow.
```