**Exercises: Polymorphism**

Problems for exercises and homework for the ["C# OOP" course @ SoftUni".](https://softuni.bg/trainings/3585/csharp-oop-february-2022)

You can check your solutions here: <https://judge.softuni.org/Contests/1504/Polymorphism-Exercise>

* **Wild Farm**

Your task is to create a **class** **hierarchy** like the one **described** **below**. The **Animal**, **Bird**, **Mammal**, **Feline,** and **Food** classes should be **abstract**. Override the method **ToString()**.

* **Food – int Quantity**
* **Vegetable**
* **Fruit**
* **Meat**
* **Seeds**
* **Animal – string Name, double Weight, int FoodEaten**
* **Bird – double WingSize**
* **Owl**
* **Hen**
* **Mammal – string LivingRegion**
* **Mouse**
* **Dog**
* **Feline – string Breed**
* **Cat**
* **Tiger**

All **animals** should also have the **ability** to ask for food by **producing** a **sound**.

* **Owl – "Hoot Hoot"**
* **Hen – "Cluck"**
* **Mouse – "Squeak"**
* **Dog – "Woof!"**
* **Cat – "Meow"**
* **Tiger – "ROAR!!!"**

Now use the **classes that** you have created to **instantiate** some **animals** and **feed** **them**.  
Input should be read from the console. Every **even** line (starting from 0) will **contain** **information** about an **animal** in the following format:

* **Felines - "{Type} {Name} {Weight} {LivingRegion} {Breed}"**
* **Birds - "{Type} {Name} {Weight} {WingSize}"**
* **Mice and Dogs - "{Type} {Name} {Weight} {LivingRegion}"**

On the **odd** lines, you will receive **information** about a piece of **food** that you should **give** to that **animal**. The line will consist of a **FoodType** and **quantity**, separated by whitespace.

Animals will only eat a certain type of food, as follows:

* **Hens** eat **everything**
* **Mice** eat **vegetables** and **fruits**
* **Cats** eat **vegetables** and **meat**
* **Tigers**, **Dogs,** and **Owls** eat **only** **meat**

If you try to give an animal a different type of food, it will not eat it and you should print:

* **"{AnimalType} does not eat {FoodType}!"**

The **weight** of an **animal** will **increase** with **every** **piece** of **food** it **eats**, as follows:

* **Hen - 0.35**
* **Owl - 0.25**
* **Mouse - 0.10**
* **Cat - 0.30**
* **Dog - 0.40**
* **Tiger - 1.00**

Override the **ToString()** method to print the information about an animal in the formats:

* **Birds -** **"{AnimalType} [{AnimalName}, {WingSize}, {AnimalWeight}, {FoodEaten}]"**
* **Felines - "{AnimalType} [{AnimalName}, {Breed}, {AnimalWeight}, {AnimalLivingRegion}, {FoodEaten}]"**
* **Mice and Dogs -** **"{AnimalType} [{AnimalName}, {AnimalWeight}, {AnimalLivingRegion}, {FoodEaten}]"**

After you have read the **information** about the **animal** and the **food**, the **animal** will **produce a** **sound** (**print** it on the **console**). Next, you should **try** to **feed** it. After receiving the "**End**" command, **print** information about **every** **animal** in **order** of **input**.

**Example**

|  |  |
| --- | --- |
| **Input** | **Output** |
| Cat Sammy 1.1 Home Persian  Vegetable 4  End | Meow  Cat [Sammy, Persian, 2.3, Home, 4] |
| Tiger Rex 167.7 Asia Bengal  Vegetable 1  Dog Tommy 500 Street  Vegetable 150  End | ROAR!!!  Tiger does not eat Vegetable!  Woof!  Dog does not eat Vegetable!  Tiger [Rex, Bengal, 167.7, Asia, 0]  Dog [Tommy, 500, Street, 0] |
| Mouse Jerry 0.5 Anywhere  Fruit 1000  Owl Tom 2.5 30  Meat 5  End | Squeak  Hoot Hoot  Mouse [Jerry, 100.5, Anywhere, 1000]  Owl [Tom, 30, 3.75, 5] |