

Building a Zoo

This assignment is done in teams of 2, or alone. You are not allowed to share the details of your program with others. Here you will practice several skills:

1. Combining design patterns: Abstract Factory, Singleton and Clone.
2. Input redirection
3. Inheritance and abstract classes
4. Building a simple makefile
5. Creating a tarball

Program description:

This program will create a Zoo “Wild Things” with several animals. To know what/how many animals to create you will get data via input redirection. User will specify how many animals of each kind to create. For example, your input file may have the following. Please make sure not to hard code the numbers, as they may vary.

tiger 2

wolf 2

kangaroo 1

lemur 3

serpent 2

and to execute your program on the command line, you will type:

```
zoo < inputfile > outputfile
```

where *inputfile* will contain data about how many/which animals to create (shown above), and *outputfile* will be the file for your output to go to.

1. You should be able to create only one instance of the Zoo. You should be able to get the total count of animals living in the Zoo.
2. You will have 5 types of animals: tiger, wolf, lemur, kangaroo, and serpent. All of them will inherit from the abstract class Animal. Each animal will have defining characteristics appropriate to that animal and have a name. Each object will print a message: “I am a tiger , my name is Ronald, I roar, and I eat meat”, “I am a wolf, my name is Rex, I growl, and I eat chicken”, “I am a lemur, my name is Fluffy, I squeak, and I eat fruit”, “I am a kangaroo, my name is Jack, I click, and I eat carrots”, “ I am a serpent, my name is George, I hiss and I eat mice”. You should be able to get the count of each animal type as well.

3. Each class should have a cloning capability because you will want to clone some or all of the animals.
4. Be creative in your driver. You should output all created objects (all tigers, etc.) and their characteristics (as described above).

Your output will look similar to this:

Zoo "WildThings" is home to the following animals:

There are total 10 animals in the Zoo

There are 2 tigers, 2 wolves, 1 kangaroo, 3 lemurs and 2 serpents.

I am a tiger, my name is Ronald, I roar, and I eat meat

I am a tiger, my name is Stripy, I roar, and I eat meat

...

Details

Implementation details are intentionally omitted to give you a chance to come up with a unique solution.

What to submit:

tarball without subdirectories or object files.