

## CIS 221 Programming Assignment 5a – Functions and GUI

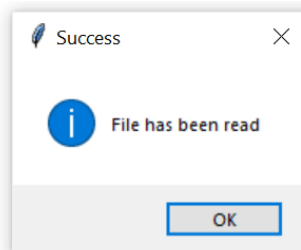
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Objectives:

- Create a modular program
- Execute functions as needed for program processing

For this assignment you will create functions that display the data in animals.txt in various sort orders and grouping.

1. Import tkinter \*, as well as messagebox and simpledialog
2. The program will have 4 global variables – 3 lists and an output string
3. The program will have 4 functions, as follows:
  - Read the file
  - Display all animals
  - Display all by phylum
  - Display individual by name
  - LinearSearch (this function will find a value in a list and return its index)
4. When the program starts, read the animals.txt file and display a message as shown:



5. When the user clicks OK, run the remainder of the program in this order:

a. Display all animals:

Name	Diet	Phylum
----	-----	----
Bear	Omnivore	Mammal
Bobcat	Carnivore	Mammal
Caiman	Carnivore	Reptile
Cheetah	Carnivore	Mammal
Crocodile	Carnivore	Reptile
Eagle	Carnivore	Bird
Elk	Herbivore	Mammal
Emu	Omnivore	Bird
Ermine	Carnivore	Mammal
Ibis	Carnivore	Bird
Iguana	Herbivore	Reptile
Lizard	Omnivore	Reptile
Llama	Herbivore	Mammal
Parrot	Herbivore	Bird
Raccoon	Omnivore	Mammal
Turtle	Omnivore	Reptile
Yak	Herbivore	Mammal

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b. Display all animals by phylum (code for this shown below screenshot):

--- Animals by Phylum ---

Mammals

-----  
Bear        Omnivore  
Bobcat     Carnivore  
Cheetah    Carnivore  
Elk        Herbivore  
Ermine     Carnivore  
Llama      Herbivore  
Racoon     Omnivore  
Yak        Herbivore

Reptiles

-----  
Caiman     Carnivore  
Crocodile Carnivore  
Iguana     Herbivore  
Lizard     Omnivore  
Turtle     Omnivore

Birds

-----  
Eagle       Carnivore  
Emu         Omnivore  
Ibis        Carnivore  
Parrot      Herbivore

This is the code for displaying animals by phylum. Put this code into a function and replace the list names that I have with the appropriate list names from your own program. Notice how the **output** string builds up as the function executes, then a **single print statement** prints the entire block of information.

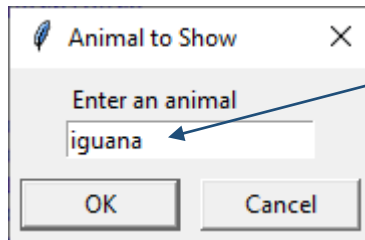
```
outMam = ""
outRep = ""
outBird = ""
output = "\n\n--- Animals by Phylum ---"

for i in range(len(names)):
    if phylum[i] == "Mammal":
        outMam += "\n" + format(names[i], "10s") + diet[i]
    elif phylum[i] == "Bird":
        outBird += "\n" + format(names[i], "10s") + diet[i]
    elif phylum[i] == "Reptile":
        outRep += "\n" + format(names[i], "10s") + diet[i]

output += "\n\nMammals\n-----"
output += outMam
output += "\n\nReptiles\n-----"
output += outRep
output += "\n\nBirds\n-----"
output += outBird

print(output)
```

- c. Display an individual animal from user input; first display a dialog box to request user input, then use the **appropriate list method to get the index value of that animal** from the name list. Using the same index value, retrieve the diet and phylum of the animal and display the information about that animal (this should work for **any** animal that is in the original list).



This should work even if the user types the name with lower case letters.

Iguana is a Reptile, Herbivore

This output appears on the screen.

The final output of the *entire program* will look similar to this:

Name	Diet	Phylum
Bear	Omnivore	Mammal
Bobcat	Carnivore	Mammal
Caiman	Carnivore	Reptile
Cheetah	Carnivore	Mammal
Crocodile	Carnivore	Reptile
Eagle	Carnivore	Bird
Elk	Herbivore	Mammal
Emu	Omnivore	Bird
Ermine	Carnivore	Mammal
Ibis	Carnivore	Bird
Iguana	Herbivore	Reptile
Lizard	Omnivore	Reptile
Llama	Herbivore	Mammal
Parrot	Herbivore	Bird
Raccoon	Omnivore	Mammal
Turtle	Omnivore	Reptile
Yak	Herbivore	Mammal

--- Animals by Phylum ---

Mammals

Bear	Omnivore
Bobcat	Carnivore
Cheetah	Carnivore
Elk	Herbivore
Ermine	Carnivore
Llama	Herbivore
Raccoon	Omnivore
Yak	Herbivore

Reptiles

Caiman	Carnivore
Crocodile	Carnivore
Iguana	Herbivore
Lizard	Omnivore
Turtle	Omnivore

Birds

Eagle	Carnivore
Emu	Omnivore
Ibis	Carnivore
Parrot	Herbivore

Iguana is a Reptile, Herbivore

>>>

### Deliverable:

Submit the .py file to the assignment in Canvas. You will **not** submit a .zip file and you **do not need to upload the animals.txt** file.

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