ICS 212 – C/C++
Project #2
Putting it together

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This program will combine the material you have already created in homeworks 8~11; specifically the classes definitions developed in homeworks #8 and #10. Your assignment is to produce a running program that does the following:

1) Produce a dynamic, user interactive program that manipulates the class you produced in homework #10 (which would include class definitions from its parent in #8).
2) The program should allow users to create, delete, modify and otherwise interact with the classes (instantiated objects) mentioned through the member method functions.
3) The program should allow for at least 5 instantiations of the class, stored in an array (other dynamic data structures can be utilized – see extra credit portion). The user should be able to manipulate each instantiation separately.
4) The methods you produced in homework #9 and other capabilities developed in #11 should also be included. Your program should be able to utilize your set, get, utility, and overloaded methods.
5) Homework #12 has been rolled into this program – you need to produce at least 2 exceptions (with appropriate handlers) – standard error checking would be a good place to put these

After doing your homework, you should be around 70-75% completed with this project – do not re-create or re-do work already accomplished – use the effort already accomplished from your homework; the only real new portion for this project would be the user interface and "connecting it" to your classes. My suggestion is to think about a logical flow for the program to interact with single objects first, then focus on manipulating the data structure.

Extra credit (do not do these until you are done with the basic requirements):

1. Adjust your program to use dynamic data structures to store your data (meaning you can now store > 5 objects). This one will require significant adjustments to your interface portion.
2. Increase the capabilities of your program to allow for sorting of the objects – you can choose the sort criteria and allow the user the option to activate it.

Deliverables:

1. Source code from a complete running program
2. 3 sample runs of your program

This assignment is due on the last day of class.

Sample runs:

1. Adding an animal

```
Welcome, what would you like to do?
1. Add an animal to the aquarium
2. Remove an animal from the aquarium
3. Modify an animal
4. Display an animal's profile
5. Exit
Enter choice: 1
Your choice was 1
Enter animal type (Aquarium Animal or Fish): Aquarium Animal
Enter species: Otter
Enter habitat: Coastal Water
Enter country of origin: Northern Region
Enter diet: Carnivore
Enter name: Marty
Enter age: 9
Enter DOB (MMDDYY): 042215
Enter weight (kg): 25
Enter height (cm): 33
Enter endangered status (1 for yes, 0 for no): 0
Enter temperature preference (Fahrenheit): 50
Enter lifespan (years): 15
Enter nocturnal status (1 for yes, 0 for no): 0
Enter color pattern: brown
Enter animal ID: 0002
Animal added!

Welcome, what would you like to do?
1. Add an animal to the aquarium
2. Remove an animal from the aquarium
3. Modify an animal
4. Display an animal's profile
5. Exit
Enter choice: 1
Your choice was 1
Enter animal type (Aquarium Animal or Fish): Aquarium Animal
Enter species: Octopus
Enter habitat: Coastal Waters
Enter country of origin: None
Enter diet: Carnivores
Enter name: Hank
Enter age: 3
Enter DOB (MMDDYY): 021621
Enter weight (kg): 5
Enter height (cm): 30
Enter endangered status (1 for yes, 0 for no): 0
Enter temperature preference (Fahrenheit): 60
Enter lifespan (years): 5
Enter nocturnal status (1 for yes, 0 for no): 1
Enter color pattern: red orange
Enter animal ID: 0003
Animal added!
```

2. Removing

```
Welcome, what would you like to do?
1. Add an animal to the aquarium
2. Remove an animal from the aquarium
3. Modify an animal
4. Display an animal's profile
5. Exit
Enter choice: 2
Your choice was 2
List of all animals in the aquarium:
1. Clownfish- Nemo
2. Otter- Greg
3. Octopus- Hank
Enter index of animal to remove: 1
Animal was removed.

Welcome, what would you like to do?
1. Add an animal to the aquarium
2. Remove an animal from the aquarium
3. Modify an animal
4. Display an animal's profile
5. Exit
Enter choice: 4
Your choice was 4
List of all animals in the aquarium:
1. Otter- Greg
2. Octopus- Hank
Enter the index of the animal whose profile you want to view:
```

3. Modify

```
Welcome, what would you like to do?
1. Add an animal to the aquarium
2. Remove an animal from the aquarium
3. Modify an animal
4. Display an animal's profile
5. Exit
Enter choice: 3
Your choice was 3
List of all animals in the aquarium:
1. Clownfish- Nemo
2. Otter- Marty
3. Octopus- Hank
Enter index of animal you want to modify: 2
current property of animal:
Species: Otter
Habitat: Coastal Water
Country of Origin: Northern Region
Diet: Carnivore
Name: Marty
Age: 9
DOB: 42215
Weight: 25 kg
Height: 33 cm
Endangered: No
Temperature Preference: 50 degrees Fahrenheit
Lifespan: 15 years
Nocturnal: No
Color Pattern: brown
Animal ID: 0002
What properties would you like to modify?
1. Species
2. Name
3. Habitat
4. Diet
Enter Choice: 2
Enter new name: Greg
```

4. Display Animal Profile

```
Welcome, what would you like to do?
1. Add an animal to the aquarium
2. Remove an animal from the aquarium
3. Modify an animal
4. Display an animal's profile
5. Exit
Enter choice: 4
Your choice was 4
List of all animals in the aquarium:
1. Clownfish- Nemo
2. Otter- Greg
3. Octopus- Hank
Enter the index of the animal whose profile you want to view: 2
Displaying animal profile for:  Greg (Otter):
Species: Otter
Habitat: Coastal Water
Country of Origin: Northern Region
Diet: Carnivore
Name: Greg
Age: 9
DOB: 42215
Weight: 25 kg
Height: 33 cm
Endangered: No
Temperature Preference: 50 degrees Fahrenheit
Lifespan: 15 years
Nocturnal: No
Color Pattern: brown
Animal ID: 0002
```