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CS-162
Project 2: Design and Reflection

Project Plan:

The problem in project 2 is to have the derived animal classes inherit from the base animal class and to have them override the behavior in the base class with the values in the derived classes. I liked having the entire program wrapped in a do while so that I and and any user can continue playing or testing without having to call the executable again and I plan to incorporate that again. I also plan to incorporate feedback that I received that the constructor should receive input and then control flow should be passed elsewhere afterward. Once in the main game function I plan to wrap it in a do while as well that will continue if the user hasn't decided to end the game and if the user still has money in the bank. During each day a random function will allow other random functions to be called to return the varied events that we are supposed to create.

Pseudocode:

cout a greeting

entering 1 continues to zoo animal menu

entering 2 will exit the application

while loops to make sure that inputs are correct

main will create an instance of the zoo

Request the star number of Tigers

Request the star number of Penguins

Request the star number of Turtles

Dynamic array of animal pointers created for each animal type

Do while loop for running the game

Call aging function

Call feeding function

Call one random event function (filestream to included file for extra credit)

print round number of each animal and the bank balance

Before looping check if broke or they want to end the current game

Print message if broke

Call final menu function and return value to main to restart or quit

Test Table:

Testing Input	Expected Output	Actual Output
run program main	main prints first menu	main prints first menu
User enters 1 to enter game	prints animal menu	prints animal menu
User enters 2 to exit program	back to command line	back to command line
1 Tiger chosen	first day shows 1 tiger	first day shows 1 tiger
	10000 removed in displayed bank	10000removed in displayed bank
2 Tigers chosen	first day shows 2 tigers	first day shows 2 tigers
	20000 removed in displayed bank	20000 removed in displayed bank
1 Penguin chosen	first day shows 1 Penguin	first day shows 1 Penguin
	1000 removed in displayed bank	1000 removed in displayed bank
2 Penguins chosen	first day shows 2 Penguins	first day shows 2 Penguins
	2000 removed in displayed bank	2000 removed in displayed bank
1 Turtle chosen	first day shows 1 Turtle	first day shows 1 Turtle
	100 removed in displayed bank	100 removed in displayed bank
2 Turtles chosen	first day shows 2 Turtles	first day shows 2 Turtles
	200 removed in displayed bank	200 removed in displayed bank
Daily changes		
new day animal ages 1	new day animal ages 1	new day animal ages 1
1 tiger 1 penguin 1 turtle fed	50 10 and 5 deducted	50 10 and 5 deducted
2 tigers 2 penguins 2 turtles fed	100 20 and 10 deducted	100 20 and 10 deducted
Random function runs during day	message shown to user	message shown to user
nothing good or bad	nothing good or bad message	nothing good or bad message
tiger dies	tiger removed from list	tiger removed from list
penguin dies	penguin removed from list	penguin removed from list
turtle dies	turtle removed from list	turtle removed from list
attencance boom	amount of payout displayed	amount of payout displayed
Tiger gives birth	1 extra tiger listed	1 extra tiger listed
Penguin gives birth	5 extra penguins listed	5 extra penguins listed
turtle gives birth	10 extra turtles listed	10 extra turtles listed
random function text file	previous message	previous message
Tiger dies	Tiger dies in message.txt	Tiger dies in message.txt
Penguin dies	Penguin dies in message.txt	Penguin dies in message.txt
Turtle dies	Turtle dies in message.txt	Turtle dies in message.txt
attencance boom	payoff amount in message .txt	payoff amount in message.txt
Tiger gives birth	tiger birth in message.txt	tiger birth in message.txt
penguin gives birth	penguin birth in message.txt	penguin birth in message.txt
turtle gives birth	turtle birth in message.txt	turtle birth in message.txt
tiger penguin or turtle offered	chosen born at 3	chosen born at 3
	remove 10000 1000 or 100	remove 10000 1000 or 100
choose not to	move to end day menu	move to end day menu
end day menu	continue playing or quit displayed	continue playing or quit displayed
User enters 1	next day runs	next day runs
User enters 2	start another game or exit menu	start another game or exit menu
start game menu	play again or quit	play again or quit
User enters 1	start a new game	start a new game
User enters 2	exit to command line	exit to command line

Reflection:

This program had many more files than any of the programs that we have worked with yet and it felt like a huge leap in complexity. It felt like there were a lot of items that had to be kept in the air and moving together at the same time. I found it very useful to use function stubs to just make sure that control flow was moving correctly before it was diverted between multiple randomly called functions that then call other random behaviors. I am starting to happy with certain idioms now though and I am happy with how my input validation is working. I also thought that I would try to do all of the extra credit, but I had to move on just to keep my head above water. I chose to do the file streaming extra credit because I knew that I could implement that easily without risking breaking anything or without falling behind on on any of the other things that I have to complete. The feed type prompt was the next in line, that I was considering. I really do enjoy doing the extra programming tasks, but I need to keep my focus and not get tunnel vision and let my obligations suffer for it.