Program Design & Testing Document for Program 3+
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Problem Statement

This problem/assignment is asking me to construct a C++ program that:

- Allows the user to play Zoo Tycoon
- Uses classes to implement that game as follows:
    - Using a parent class that has the elements:
        - Age
        - Cost
        - Babies
        - Food Cost
        - Revenue
    - Using a class for each animal that has specific traits and values for the above elements, as it inherits from that parent.
- The user must start with 100,000, be able to purchase animals.
- The user can buy up to two adults of one species. Each turn can only see the user buy one species. Adults start at 3 years.
- It costs a random amount to feed each animal per day.
- The user must be the victim of a special event (described in guide)
- Zoo goes bankrupt when the user runs out of cash
- Classes must be for sea otter, sloth, monkey (inherit from animal) and zoo class.
- Within Zoo, dynamically allocated array of all species of one kind makes up an exhibit.
- No memory leaks
- Use Makefile for compilation.

I assume:

- NOTHING! I will check every input, so nothing is assumed.

This I will achieve by:

- A program that uses classes to provide the user a fine game of Zoo Tycoon
- Deallocating memory when done if it was dynamically allocated.

Understanding the Problem

As described in the requirements, the problem asks me to create a program that can play a nice game of Zoo Tycoon using classes and inheritance. The game will be neatly organize, and follow the typical rules of the game listed in README.md, on GH.

Pseudo Code (Simplified)

Parent Class: animal:

- Age
- Cost
- Babies
- Food cost Multiplier
- Revenue

Functions:

- Increase Age
- Get Age
- Get Cost
- Babies
- Get Food Cost
- Get Revenue

Class: Zoo

- Current capital
- Sloth exhibit
- Monkey exhibit
- Sea Otter exhibit

Functions:

- Run_Game
- Check_For_Broke
- Resize Exhibit
- Print Data
- Buy Animals
- Play_Turn
- Incur Costs
- Have Babies
- Generate Profit
- Special Event
- Feed Animals

Class Sloth : Animal

- Babies at a time = 3
- Food cost multiplier = 1
- Cost = 2000
- Revenue = .05*cost = 250

Class Sea otter: Animal

Babies at a time = 2
Food cost multiplier = 2
Cost = 5000
Revenue = .05*cost = 250

Class Monkey: Animal
Babies at a time = 1
Food cost multiplier = 4
Cost = 15000
Revenue = .1*cost = 1500

Main
Zoo mz;
mz.Run_Game

Zoo::Run_Game
While !Broke:
Play_Turn
Incur Costs
Have Babies
Generate Profit
Special Event
Feed Animals

Zoo::Play Turn
Print Data
Buy Animals

Data Verification.

Checking only occurs on user input of a number from the list of options on a menu {1: buy; 2: Skip turn; 3: Quit} and buy menu {1: Sloth; 2: S.O; 3: Monkey}. Input listed as {menu1, menu2}. * indicates failure before second input.

Ask for value from other player	**What Should Happen**	**Does This Happen**
{“”,*}	Error - please enter again	
{1,””}	Error - please enter again	
{12, *}	Out of range. Enter again	

{1,1}	Sloth Purchase	
{2,*}	Turn Skipped	
{3,*}	Quit	
{1,15}	Out of Range	
{1,””}	Error - please enter again	
{“r”,*}	Error - please enter again	
{1,”ersadsfjasdf”}	Error - please enter again	