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Assignment 3: Virtual Zoo

Problem Statement:

Write a C++ program that is a game, about virtual zoo. the game should use classes and inheritance. In the game a user creates a zoo, that has exhibits with different animals. The possible animals are tigers, polar bears and penguins. The game deals with the logistics of the zoo.

Understanding the problem:

The user starts with an empty zoo (no exhibits). the user will get an initial amount of $100,000 to purchase animals for the zoo. They may only buy two of each animal at a time. The animals bought are adults, babies can only be born in the zoo (random event). Each animal has traits and information that is unique to it:

Tigers:
cost-$10,000
Babies-1 (can have one baby at a time)
Average food cost- 5 times the average food cost of an animal
Payoff- 10% of their cost, if bonus add to payoff (gets added to bank total at the end of each day), babies times 2

Polar Bears:
cost-$5,000
Babies-2 (can have one baby at a time)
Average food cost-3 times the average food cost of an animal
Payoff- 5% of their cost (gets added to bank total at the end of each day), babies' times 2

Penguins:
cost-$1,000
Babies-3 (can have one baby at a time)
Average food cost-our base cost (or our average cost)
Payoff- 5% of their cost (gets added to bank total at the end of each day), babies times 2

Tigers, Polar Bears, and Penguins are all animals, so the will contain an animal object that has:

Animal:
Cost:
Age: age of animal, Baby<=3 years (cannot have babies),else if >=3 years animal is an adult (can have babies now)
Babies: how may it can give birth to at once
Average food cost: cost to feed animal

Each day the cost for feeding is subtracted from the bank. And the animal gets older.
A random event occurs:
1)A sickness occurs- A random animal is killed, now the cost to run the zoo decreases.

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2)Boom in zoo attendance- Random bonus for tigers $250-$500
3) A baby is born- the user gets to choose the animal being born. If the zoo has that animal and the animal is an adult, it can give birth. Babies age start at 0.
4) nothing happens

At the end of the day the payoffs of each animal is calculated (don't forget the tiger bonus) and added to the bank total. The user then gets to purchase additional animals (only max 2 per animal). The game repeats till user want to quit.

Class zoo

Tiger* // dynamic class array
Penguin* // dynamic class array
Polar Bear* //dynamic class array
Bank //hold the amount of money the zoo has, positive integer value
Budget // the amount of money it cost to run the zoo each day, positive integer value

Class Animal

Age// the age of the animal. If less than 3yrs baby,
Babies //the number of babies the animal can have (tigers-1, Polar Bear-2, penguins-3)
Average food Cost// cost to take care of the animal each day
Payoff //the profit made by each animal each day

Class Tiger

Animal //
Cost // cost to buy this animal
Bonus //random bonus
Number of tigers // how many of this animal in the zoo

Class penguin

Animal //
Cost // cost to buy this animal
Number of tigers // how many of this animal in the zoo

Class polar bear

Animal //
Cost // cost to buy this animal
Number of tigers // how many of this animal in the zoo

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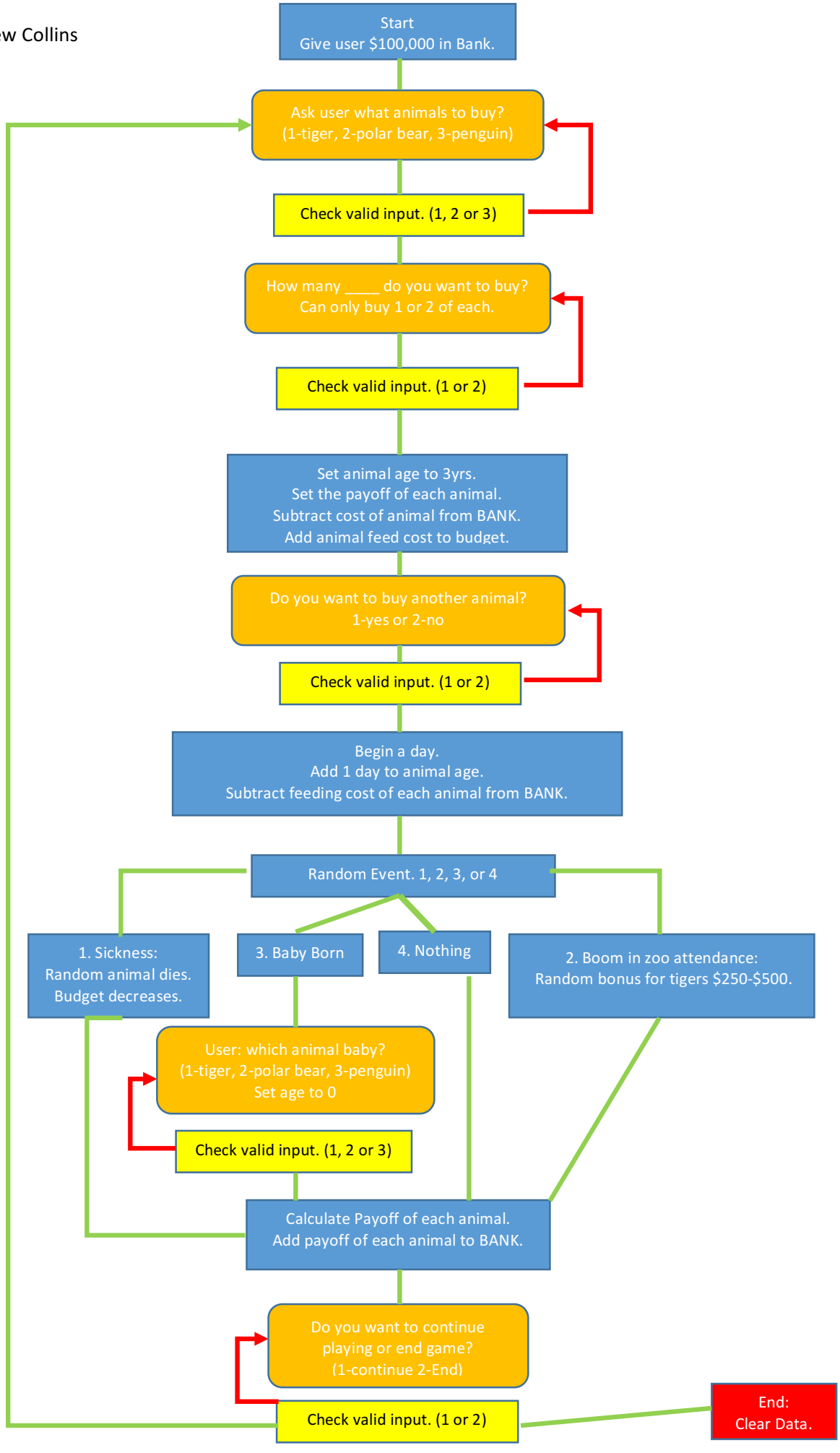

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Testing:

What animal to buy? (1-tiger, 2-Polar Bear, or 3-Penguin):

Input	Expected	Actual
1	Good	
2	Good	
3	Good	
4	Error: Invalid input	
ds	Error: Invalid input	
--	Error: Invalid input	

How may do you want to buy? (1 or 2)

Input	Expected	Actual
1	Good	
2	Good	
3	Error: Invalid input	
4	Error: Invalid input	
ds	Error: Invalid input	
--	Error: Invalid input	

Do you want to buy another animal? (1-yes or 2- NO)

Input	Expected	Actual
1	Good	
2	Good	
3	Error: Invalid input	
4	Error: Invalid input	
ds	Error: Invalid input	
--	Error: Invalid input	

Which animal Baby? (1-tiger, 2-Polar Bear, or 3-Penguin):

Input	Expected	Actual
1	Good	
2	Good	
3	Good	
4	Error: Invalid input	
ds	Error: Invalid input	
--	Error: Invalid input	

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Do you want to 1-continue playing or 2-end game?

Input	Expected	Actual
1	**Good**	
2	**Good**	
3	**Error: Invalid input**	
4	**Error: Invalid input**	
ds	**Error: Invalid input**	
--	**Error: Invalid input**	

If animal is bought set up age to be 3.

If animal is born add to animal exhibit.

If animal is born in zoo set up age to be 0.

If animal dies, delete animal and reset zoo budget.

Check each random event:

A random event occurs:
1)A sickness occurs- A random animal is killed, now the cost to run the zoo decreases.
2)Boom in zoo attendance- Random bonus for tigers $250-$500
3) A baby is born- the user gets to choose the animal being born. If the zoo has that animal and the animal is an adult, it can give birth. Babies age start at 0.
4) nothing happens

Check to see if Bank amount is increasing and decreasing each day.