**Animal’s Shop Documentaion**

The main Content of this document is :

* Introduction
* The main goal of the program
* How the program works
* Who can use this program

* INTRODUCTION

The Animal Management System is a C++ program that simulates interactions between customers, animals, and an owner. It provides functionalities such as buying and selling animals, managing customer information, and tracking financial transactions.

This program has many classes which is :

* Animal class
* Dog class
* Cat class
* Bird class
* Customer class
* Owner class
* The Main Goal of this Project is:

The main goal of this project appears to be the development of a simulated system for managing animals in a business context. The system involves classes for animals (Dog, Cat, Bird), customers, and an owner. The key aspects of the project include:

1. **Animal Management:**
   * Representation**:** The project aims to represent different types of animals (Dogs, Cats, Birds) with specific attributes like age, name, gender, type, size, and color. Each animal is an instance of its respective class.
   * Availability: The system tracks the availability of animals, indicating whether they can be purchased.

**2.Customer Interaction:**

* + Buying Animals**:** Customers can interact with the system to buy animals. The **Customer** class includes methods like **buyAnimal** where a customer can specify the type and ID of the animal they want to purchase.
  + Selling Animals**:** Customers can also sell animals back to the system, triggering updates in both the customer's wallet and the availability of animals.

**3.Financial Transactions:**

* + Customer Wallet**:** The **Customer** class maintains a wallet for each customer, and buying/selling animals affects this wallet amount.
  + Owner's Bank Account**:** The **Owner** class has a bank account, affected by transactions. The owner gains money from animal sales and spends money to purchase animals.

**4.Owner Oversight:**

* + Financial Management**:** The **Owner** class oversees the financial aspects of the business. This includes tracking the owner's bank account balance and managing gains from animal sales.
  + Transaction Logging**:** The owner can track the number of animals sold and bought.

In summary, the main goal is to create a modular and extensible system for managing animals, tracking financial transactions, and simulating a business environment where customers interact with the system to buy and

sell animals, and an owner oversees the financial aspects of the business.

* How does this program work?

Firstly, we have class Animal which contain virtual functions such as (set animal info ,get animal info) this functions have been made to use it in the inherited classes which is Dog class, Cat class , Bird class

All of these classes can use all virtual functions in Animal class .

* Set animal info: help the user to set many information about animals by using this attributes -> animal name, animal Id , animal counter , animal price , animal gender and animal age.
* Get animal info : get all these attributes back to the user

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There are three classes which is inherited from class Animal 1)Dog Class

2)Cat class

3) Bird class

First,Class Dog has access on all functions in class Animal and also have additional attributes which is dog type , dog size and dog color

It also has setter and getter for each attribute which support encapsulation principle in OOP.

Functions which have been used in class Dog:

* Set type : which help user to set dog type
* Set size: which help user to set dog size
* Set color : which help user to set dog color
* It also have an access in set animal info function which help user to set dog name ,id , age , gender and price
* Get dog info : which get back all these attributes to the user
* Get dogcounter : it count number of dogs by using static intger called “static int Dogcnt”

Secondly , class cat has access on all functions in class Animal and also have additional attributes which is cat type , cat hair size and cat color

It also has setter and getter for each attribute which support encapsulation principle in OOP.

Functions which have been used in class Dog:

* Set type : which help user to set cat type
* Set hair size: which help user to set cat size
* Set color : which help user to set cat color
* It also have an access in set animal info function which help user to set cat name ,id , age , gender and price
* Get cat info : which get back all these attributes to the user
* Get catcounter : it count number of cats by using static intger called “static int Catcnt”

Thirdly , class Bird has access on all functions in class Animal and also have additional attributes which is Bird type , wing size and plumageColor

It also has setter and getter for each attribute which support encapsulation principle in OOP.

Functions which have been used in class Dog:

* Set type : which help user to set Bird type
* Set wingSize: which help user to set Bird wing size
* Set plumageColor : which help user to set Bird plumage color
* It also have an access in set animal info function which help user to set cat name ,id , age , gender and price
* Get Bird info : which get back all these attributes to the user
* Get Birdcounter : it count number of Bird by using static intger called “static int Birdcnt”

Also we have another class called Customer class which inherite from class Animal, Dog, Cat and Bird ,it has access on all of them .

It has many private attributes which is Customer name, Customer id ,Customer age ,Customer gender , Customer WalletAmount , Customer address , Customer Email .

Functions which have been used in class Customer:

* Set Customer name : which help user to set his/her name
* Set Customer id : which help user to set his/her id
* Set Customer age : which help user to set his/her age
* Set Customer gender :which help user to set his/her gender
* Set Customer address : which help user to set his/her address
* Set Customer email :which help user to set his /her email
* Set customer WalletAmount : which help user to set money in his wallet
* Get function to all these attributes :which get back all this attrbutes back
* Get Customer info: get back all customer info
* Buy Animal: it makes the user choose which animal he / she want to buy (Dog or Cat or Bird) and after choice the user enters the ID of the animal and the price and this function make a for loop to determine if the animal with The ID the user has been entered is available or not and if it available check the price and compare it with the wallet amount and if it equal or less than wallet amount the price of the animal will be deduct from wallet amount and number of animal counter will be decreased and number of animal which user has been chosen decreased while if it more than wallet amount the function will return to the user a message which contain “process has been filed your money is not enough” and if the id the user has been entered isn’t available the function will return to the user a message which contain “oh!! sorry this id of dog is not exist”
* Sell animal: this function help user to sell animal to the shop he choose which animal he wants to sell and after selling the animal the counter of the type the user picked will be increased and animal counter will be increased and wallet amount will be increased by the price of the animal he want to sell and number of animal bought will be increased and return to the user a message which contain” selling process done successfully”
* Add money : this function add money the customer gained from the process of selling the animal to the wallet of the customer

This system also contain an owner class which is has all owner private data which Owner’s name, Owner’s age ,Owner’s gender , Owner’s BankAccount, Owner’s address , Owner’s Email

Functions on class owner :

* Set Owner’s name : which help owner to set his/her name
* Set Owner’s age : which help owner to set his/her age
* Set Owner’s gender :which help owner to set his/her gender
* Set Owner’s address : which help owner to set his/her address
* Set Owner’s email :which help owner to set his /her email
* Get owner info : it helps owner to see his own personal data
* Get owner bank account : it displays to the owner his /her bank balance and if the owner spent money it deduct this spent money from his bank balance
* Get gain : it display the revenue the owner achieved
* Animal sold : it return to the owner the number of animals have been sold
* Animal bought : it return the number of animals have been bought
* Add money : it add money to the bank account of the owner
* Get money : it makes owner to make withdraw from his bank account

In conclusion , The program is designed to model a simplified animal business, emphasizing object-oriented principles. It provides a structured way to manage animals, customers, and an owner, with a focus on encapsulation, inheritance, and polymorphism. The detailed documentation helps understand the purpose and functionality of each class and method in the system.

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Who can use this program?

This program is very simple to get used by customers , workers in the shop and by the owner it also facilitates the financial transactions between owner and customers

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