CODING CHALLENGE

NAME: ANISH TOPIC : PET PALS

Create and implement the mentioned class and the structure in your application. Pet Class: Attributes:

- Name (string): The name of the pet.
- Age (int): The age of the pet.
- Breed (string): The breed of the pet Methods:
- Constructor to initialize Name, Age, and Breed.
- Getters and setters for attributes.
- ToString() method to provide a string representation of the pet.

```
class Pet:
    def __init__(self, name, age, breed):
        if not isinstance(age, int) or age < 0:
            raise InvalidAgeError("Age must be a non-negative integer")
        self.name = name
        self.age = age
        self.breed = breed

def get_name(self):
        return self.name

def set_name(self, name):
        self.name = name

def get_age(self):
        return self.age</pre>
```

```
def set_age(self, age):
    if not isinstance(age, int) or age < 0:
        raise InvalidAgeError("Age must be a non-negative integer")
    self.age = age

def get_breed(self):
    return self.breed

def set_breed(self, breed):
    self.breed = breed

def update_by_name(self, new_age=None, new_breed=None):
    if new_age is not None:
        if not isinstance(new_age, int) or new_age < 0:
            raise InvalidAgeError("Age must be a non-negative integer")
        self.age = new_age
    if new_breed is not None:
        self.breed = new_breed

def __str__(self):
    return f"(self.name), (self.age) years old, (self.breed)"</pre>
```

```
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Register for an adoption event
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8. Adopt a pet
9. Exit
Enter your choice (1-9): 1
Enter pet type (dog/cat): dog
Enter pet name: tiger
Enter pet age: 4
Enter pet breed: labrador
--Database is Connected--
pet added to the shelter.
```

Dog Class (Inherits from Pet): Additional Attributes: • DogBreed (string): The specific breed of the dog.

Additional Methods:

- Constructor to initialize DogBreed.
- Getters and setters for DogBreed.

Cat Class (Inherits from Pet):

Additional Attributes:

CatColor (string): The color of the cat.

Additional Methods:

Constructor to initialize

CatColor.

Getters and setters for CatColor.

```
from entity.pet import Pet

class Dog(Pet):
    def __init__(self, name, age, breed):
        super().__init__(name, age, breed)
        self.dog_breed = breed

def get_dog_breed(self):
    return self.dog_breed

def set_dog_breed(self, dog_breed):
    self.dog_breed = dog_breed

def __str__(self):
    return f"(self.name), (self.age) years old, belongs to (self.breed),
{self.dog_breed}."
```

```
from entity.pet import Pet

class Cat(Pet):
    def __init__(self, name, age, breed, cat_color):
        super().__init__(name, age, breed)
        self.cat_color = cat_color

def set_cat_color(self, cat_color):
        self.cat_color = cat_color

def get_cat_color(self):
    return self.cat_color
```

```
def __str__(self):
    return f"{self.name}, {self.age} years old, belongs to {self.breed}, is of
{self.cat_color} in color"
```

PetShelter Class: Attributes:

availablePets

(List of Pet): A list to store available pets for adoption.

Methods:

- AddPet(Pet pet): Adds a pet to the list of available pets.
- RemovePet(Pet pet): Removes a pet from the list of available pets.
- ListAvailablePets(): Lists all available pets in the shelter

```
from exception.duplicateobjeerror import DuplicateObjError
from entity.pet import Pet
      self.available pets = []
  def add pet(self, pet):
      if not isinstance(pet, Pet):
      for existing pet in self.available pets:
              existing_pet.get_name() == pet.get_name()
              and existing pet.get age() == pet.get age()
              and existing pet.get breed() == pet.get breed()
      self.available pets.append(pet)
  def remove pet(self, pet):
          self.available pets.remove(pet)
```

```
# print("pet removed from the shelter.")

def list_available_pets(self):
    if not self.available_pets:
        print("No pets available in the shelter.")

else:
    print("Available Pets:")
    for pet in self.available_pets:
        print(pet)
```

```
Enter pet ID: 15

--Database is Connected--
Enter participant ID: 10

--Database is Connected--
--Database is Connected--
Adoption data inserted successfully.
Emma Brown adopted tommy successfully
--Database is Connected--
Pet is successfully removed from the shelter!
```

Donation Class (Abstract): Attributes:

- DonorName (string): The name of the donor.
- Amount (decimal): The donation amount.

Methods: • Constructor to initialize DonorName and Amount.

• Abstract method RecordDonation() to record the donation (to be implemented in derived classes).

CashDonation Class (Derived from Donation): Additional Attributes: • DonationDate (DateTime): The date of the cash donation.

Additional Methods: • Constructor to initialize DonationDate.

• Implementation of RecordDonation() to record a cash donation.

ItemDonation Class (Derived from Donation): Additional Attributes: • ItemType (string): The type of item donated (e.g., food, toys).

Additional Methods: • Constructor to initialize ItemType. • Implementation of RecordDonation() to record an item donation.

```
from abc import ABC, abstractmethod

class Donation(ABC):
    def __init__(self, donor_name, amount):
        self.donor_name = donor_name
        self.amount = amount
```

```
@abstractmethod
def record_donation(self):
    pass
```

```
from entity.donation import Donation

class ItemDonation(Donation):
    def __init__(self, donor_name, amount, item_type):
        super().__init__(donor_name, amount)
        self.item_type = item_type

def record_donation(self):
    print(f"Item_donation of {self.item_type} recorded.")
```

```
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7. View adoption data

8. Adopt a pet

9. Exit
Enter your choice (1-9): 3
Enter donor name: nadhin
Enter donation amount: 102

--Database is Connected--

Cash donation recorded successfully.
```

IAdoptable Interface/Abstract Class: Methods: • Adopt(): An abstract method to handle the adoption process. AdoptionEvent Class: Attributes: • Participants (List of IAdoptable): A list of participants (shelters and adopters) in the adoption event. Methods: • HostEvent(): Hosts the adoption event. • RegisterParticipant(IAdoptable participant): Registers a participant for the event.

```
from abc import ABC, abstractmethod

class IAdoptable(ABC):
   @abstractmethod
   def adopt(self):
     pass
```

```
from dao.interface.iadoptable import IAdoptable
from exception.invalidnameerror import InvalidNameError
from exception.adoptionerror import AdoptionException
from exception.filehandlingerror import FileHandlingException
import mysql.connector as sql
from util.dbconnutil import DBConnection
from dao.petshelter import PetShelterDAO
class AdoptionEventDAO(DBConnection, IAdoptable):
       self.pet_shelter_dao = PetShelterDAO()
           self.open connection()
   def create_participants(self):
           self.open_connection()
           create participants query = '''
```

```
self.stmt.execute(create participants query)
def create adoption(self):
       self.open_connection()
       create adoption query = '''
       participant name = input("Enter participant name: ")
        if not isinstance(participant_name, str):
        for char in participant name:
            if not char.isalpha() and not char.isspace():
        self.open connection()
        self.stmt.execute(insert query, (participant name,))
       print(f"Participant '{participant_name}' added successfully.")
```

```
event details = input("Enter event details: ")
        self.open connection()
        self.stmt.execute(insert query, (event details,))
        print("Event hosted successfully.")
def view adoption(self):
        self.open connection()
        view_adoption_query = "SELECT * FROM Adopt;"
        self.stmt.execute(view adoption query)
        result = self.stmt.fetchall()
                print(row)
def insert adoption(self, petname, petage, petbreed, name):
        self.open connection()
        insert_adoption_query = "INSERT INTO Adopt (petname, petage, petbreed,
        self.stmt.execute(insert adoption query, (petname, petage, petbreed, name))
```

```
def adopt(self):
       self.pet shelter dao.list available pets()
       pet_id = int(input("Enter pet ID: "))
       self.open connection()
       self.stmt.execute(select query, (pet id,))
       petage = record[2]
       petbreed = record[3]
       participant id = int(input("Enter participant ID: "))
       self.open_connection()
       self.stmt.execute(select query, (participant id,))
        records = self.stmt.fetchall()
       name = records[0][1]
       self.close connection()
       self.insert adoption(petname, petage, petbreed, name)
       print(f'{name} adopted {petname} successfully')
       print(e)
       print(f"Error during adoption: {e}")
```

```
def get_participants(self):
    try:
        self.open_connection()
        select_query = "SELECT * FROM Participants"
        self.stmt.execute(select_query)
        records = self.stmt.fetchall()
        for record in records:
            print(record)
        self.close_connection()
    except Exception as e:
        print(f"Error getting participants: {e}")
```

```
Adoption table data:
('Buddy', 3, 'Golden Retriever', 'John Doe')
('Cleo', 2, 'Siamese', 'Jane Smith')
('Max', 5, 'Labrador Retriever', 'Michael Johnson')
('Whiskers', 1, 'Persian', 'Emily Davis')
('Rocky', 4, 'Poodle', 'David Wilson')
('Simba', 2, 'Tabby', 'Sophia Thompson')
('Lucy', 6, 'Beagle', 'Daniel Anderson')
('Smokey', 3, 'Russian Blue', 'Olivia Martinez')
('Daisy', 1, 'Chihuahua', 'William Taylor')
('Marley', 4, 'Boxer', 'Emma Brown')
('Lucy', 6, 'Beagle', 'Jane Smith')
('rocky', 2, 'labrador', 'anish')
('adfn', 3, 'sdf', 'anish')
('df', 4, 'sdf', 'anish')
('tommy', 2, 'labrador', 'Emma Brown')
```

Insufficient Funds Exception: Suppose the Pet Adoption Platform allows users to make cash donations to shelters. Write a program that prompts the user to enter the donation amount. Implement exception handling to catch situations where the donation amount is less than a minimum allowed amount (e.g., \$10). If the donation amount is insufficient, catch the exception and display an error message. Otherwise, process the donation.

File Handling Exception: In the Pet Adoption Platform, there might be scenarios where the program needs to read data from a file (e.g., a list of pets in a shelter). Write a program that attempts to read data from a file. Implement exception handling to catch any file-related exceptions (e.g., FileNotFoundException) and display an error message if the file is not found or cannot be read.

```
class FileHandlingException(Exception):
    def __init__(self, message="No data Found in Adoption Table"):
        self.message = message
        super().__init__(self.message)
```

```
class InsufficientFundsException(Exception):
    def __init__(self, message="Insufficient funds for donation (amount should be at
least 100)"):
    self.message = message
    super().__init__(self.message)
```

```
class FileHandlingException(Exception):
    def __init__(self, message="No data Found in Adoption Table"):
        self.message = message
        super().__init__(self.message)
```

```
PetPals: The Pet Adoption Platform

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7. View adoption data

8. Adopt a pet

9. Exit
Enter your choice (1-9): 3
Enter donor name: nadhin
Enter donation amount: 99
Error recording cash donation: Insufficient funds for donation (amount should be at least 100)
```

Custom Exception for Adoption Errors: Design a custom exception class called AdoptionException that inherits from Exception. In the Pet Adoption Platform, use this custom exception to handle adoption-related errors, such as attempting to adopt a pet that is not available or adopting a pet with missing information. Create instances of AdoptionException with different error messages and catch them appropriately in your program.

```
class AdoptionException(Exception):
    def __init__(self, message="This pet is already adopted"):
        self.message = message
        super().__init__(self.message)
```

```
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8. Adopt a pet
9. Exit
Enter your choice (1-9): 8
--Database is Connected--
Available Pets:
Buddy, 3 years old, Golden Retriever
Cleo, 2 years old, Siamese
Max, 5 years old, Labrador Retriever
Whiskers, 1 years old, Persian
Rocky, 4 years old, Poodle
Simba, 2 years old, Tabby
Smokey, 3 years old, Russian Blue
Daisy, 1 years old, Chihuahua
Marley, 4 years old, Boxer
n, 2 years old, df
a, 2 years old, df
tom, 3 years old, lab
tiger, 4 years old, labrador
 --Database is Connected--
--Database is Connected
(1, 'John Doe')
(2, 'Jane Smith')
(3, 'Michael Johnson')
(4, 'Emily Davis')
(5, 'David Wilson')
(6, 'Sophia Thompson')
(7, 'Daniel Anderson')
(8, 'Olivia Martinez')
(9, 'William Taylor')
(10, 'Emma Brown')
(10, 'Emma Brown')
(11, 'anish')
(12, 'anish')
Enter pet ID: 19
 --Database is Connected--
Pet not found in the shelter.
```

Database Connectivity Create and implement the following tasks in your application. • **Displaying Pet Listings:** o Develop a program that connects to the database and retrieves a list of available pets from the "pets" table. Display this list to the user. Ensure that the program handles database connectivity exceptions gracefully, including cases where the database is unreachable.

```
import mysql.connector
from util.propertyutil import PropertyUtil
class DBConnection:
  def open_connection(self):
          host, username, password, database = PropertyUtil.get_property_string()
              password=password,
              database=database
          self.stmt = self.conn.cursor()
```

```
Enter your choice (1-9): 2

--Database is Connected--
Available Pets:
Buddy, 3 years old, Golden Retriever
Cleo, 2 years old, Siamese
Max, 5 years old, Labrador Retriever
Whiskers, 1 years old, Persian
Rocky, 4 years old, Poodle
Simba, 2 years old, Tabby
Smokey, 3 years old, Russian Blue
Daisy, 1 years old, Chihuahua
```

Table: pet (not exist)

Donation Recording: o Create a program that records cash donations made by donors. Allow the user to input donor information and the donation amount and insert this data into the "donations" table in the database. Handle exceptions related to database operations, such as database errors or invalid inputs.

```
if not isinstance(donor name, str):
    if not char.isalpha() and not char.isspace():
elif amount < 100:</pre>
self.open connection()
self.open_connection()
self.stmt.execute(select query)
records = self.stmt.fetchall()
    self.result_list.append({
```

```
})
self.close_connection()
return self.result_list
except Exception as e:
    print(f"Error selecting from CashDonation table: {e}")
```

```
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7. View adoption data

8. Adopt a pet

9. Exit

Enter your choice (1-9): 3

Enter donor name: kaviyana

Enter donation amount: 2000

--Database is Connected--

Cash donation recorded successfully.
```

Adoption Event Management: Build a program that connects to the database and retrieves information about upcoming adoption events from the "adoption_events" table. Allow the user to register for an event by adding their details to the "participants" table. Ensure that the program handles database connectivity and insertion exceptions properly.

```
from dao.interface.iadoptable import IAdoptable
from exception.invalidnameerror import InvalidNameError
from exception.adoptionerror import AdoptionException
from exception.filehandlingerror import FileHandlingException
import mysql.connector as sql
from util.dbconnutil import DBConnection
from dao.petshelter import PetShelterDAO

class AdoptionEventDAO(DBConnection, IAdoptable):
    def __init__(self):
        self.pet_shelter_dao = PetShelterDAO()
```

```
self.open connection()
def create_participants(self):
       self.open connection()
       create_participants_query = '''
       self.stmt.execute(create participants query)
def create adoption(self):
       self.open_connection()
       create_adoption_query = '''
        self.stmt.execute(create_adoption_query)
```

```
participant name = input("Enter participant name: ")
        if not isinstance(participant name, str):
           if not char.isalpha() and not char.isspace():
       self.open_connection()
        self.stmt.execute(insert query, (participant name,))
       print(f"Participant '{participant name}' added successfully.")
       event details = input("Enter event details: ")
        self.open connection()
       print("Event hosted successfully.")
def view adoption(self):
       self.open_connection()
       view adoption query = "SELECT * FROM Adopt;"
       self.stmt.execute(view adoption query)
       result = self.stmt.fetchall()
```

```
print(row)
        print(e)
def insert adoption(self, petname, petage, petbreed, name):
        self.open connection()
        insert_adoption_query = "INSERT INTO Adopt (petname, petage, petbreed,
        self.stmt.execute(insert_adoption_query, (petname, petage, petbreed, name))
def adopt(self):
        self.pet shelter dao.list available pets()
        self.get participants()
        pet id = int(input("Enter pet ID: "))
        self.open connection()
        self.stmt.execute(select query, (pet id,))
        records = self.stmt.fetchall()
        record = records[0]
        participant id = int(input("Enter participant ID: "))
        self.open connection()
```

```
records = self.stmt.fetchall()
       self.insert adoption(petname, petage, petbreed, name)
       self.open connection()
       delete query = f"DELETE FROM Pets WHERE id = {pet id}"
def get participants(self):
       self.open connection()
       self.stmt.execute(select query)
       for record in records:
           print (record)
```

```
Enter pet ID: 11
--Database is Connected--
Enter participant ID: 11
--Database is Connected--
--Database is Connected--
Adoption data inserted successfully.
anish adopted n successfully
--Database is Connected--
Pet is successfully removed from the shelter!
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7. View adoption data
8. Adopt a pet
9. Exit
Enter your choice (1-9):
```