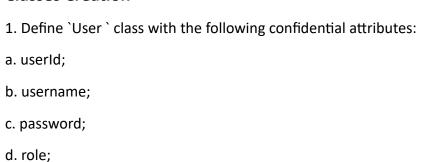
INSURANCE MANAGEMENT SYSTEM

1Create SQL Schema from the following classes class, use the class attributes for table column names.

- 1. Create the following model/entity classes within package entity with variables declared private, constructors (default and parametrized, getters, setters and toString ())
- 2. Implement the following for all model classes. Write default constructors and overload the constructor with parameters, getters and setters, method to print all the member variables and values.

Classes Creation



```
self.__username = username
self.__password = password
@property
@property
def username(self):
@username.setter
return self.__password
@password.setter
@property
@role.setter
     return f"User(ID: {self._userId}, Username: {self._username}, Role: {self._role})"
```

- 2. Define `Client `class with the following confidential attributes:
- a. clientId;
- b. clientName;
- c. contactInfo;
- d. policy;//Represents the policy associated with the client

```
class Client:
    def __init__(self):
    def __init__(self, clientId, clientName, contactInfo, policy):
        self.__clientId = clientId
        self. clientName = clientName
        self.__policy = policy
    @property
    def clientId(self):
        return self.__clientId
    @clientId.setter
    def clientId(self, clientId):
    @property
    def clientName(self):
        return self.__clientName
    def clientName(self, clientName):
        self.__clientName = clientName
    @property
    def contactInfo(self):
        return self.__contactInfo
    def contactInfo(self, contactInfo):
        self.__contactInfo = contactInfo
    @property
    def policy(self):
        return self.__policy
    @policy.setter
    def policy(self, policy):
        self.__policy = policy
    def __str__(self):
        return f"Client(ID: {self.__clientId}, Name: {self.__clientName})"
```

- 3. Define `Claim` class with the following confidential attributes:
- a. claimId;
- b. claimNumber;
- c. dateFiled;

- d. claimAmount;
- e. status;
- f. policy;//Represents the policy associated with the claim
- g. client; // Represents the client associated with the claim

```
nsurance > entity > 💠 claim.py > ધ Claim
      class Claim:
          def __init__(self):
              self.__claimNumber = claimNumber
              self.__claimAmount = claimAmount
self.__status = status
self.__policy = policy
          @property
          @property
          def claimNumber(self):
             return self.__claimNumber
               self.__claimNumber = claimNumber
          @property
          @dateFiled.setter
          @property
```

```
@claimAmount.setter
def claimAmount(self, claimAmount):
    self._claimAmount = claimAmount

@property
def status(self):
    return self._status

@status.setter
def status(self, status):
    self._status = status

@property
def policy(self):
    return self._policy

@policy.setter
def policy(self, policy):
    self._policy = policy

@property
def client(self):
    return self._client

@client.setter
def client(self, client):
    self._client = client

def _str_(self):
    return f"claim(ID: {self._claimId}, Number: {self._claimNumber}, Amount: {self._claimAmount})"
```

- 4.. Define `Payment `class with the following confidential attributes:
- a. paymentId;
- b. paymentDate;
- c. paymentAmount;
- d. client; // Represents the client associated with the payment

```
Insurance > entity > 💠 payment.py > ધ Payment
      class Payment:
         def __init__(self):
          def __init__(self, paymentId, paymentDate, paymentAmount, client):
              self.__paymentId = paymentId
              self.__paymentDate = paymentDate
              self.__paymentAmount = paymentAmount
          @property
          def paymentId(self):
              return self.__paymentId
          @paymentId.setter
          def paymentId(self, paymentId):
              self.__paymentId = paymentId
          @property
          def paymentDate(self):
              return self.__paymentDate
          @paymentDate.setter
          def paymentDate(self, paymentDate):
              self.__paymentDate = paymentDate
          @property
          def paymentAmount(self):
              return self.__paymentAmount
          def paymentAmount(self, paymentAmount):
              self.__paymentAmount = paymentAmount
          @property
          def __str__(self):
              return f"Payment(ID: {self.__paymentId}, Amount: {self.__paymentAmount})"
```

Policy:

```
The motivation of the policy o
```

Database Creation:

CREATE DATABASE IF NOT EXISTS insurance;

USE insurance;

Tables Creation:

```
CREATE TABLE policies (

policy_id INT AUTO_INCREMENT PRIMARY KEY,

policy_name VARCHAR(255) NOT NULL,

coverage VARCHAR(255) NOT NULL,

premium DECIMAL(10, 2) NOT NULL
);
```

```
mysql> CREATE TABLE policies (
          policy_id INT AUTO_INCREMENT PRIMARY KEY,
          policy name VARCHAR(255) NOT NULL,
          coverage VARCHAR(255) NOT NULL,
          premium DECIMAL(10, 2) NOT NULL
    -> );
Query OK, 0 rows affected (0.04 sec)
mysql> desc policies;
 Field
              Type
                             | Null | Key | Default | Extra
 policy_id
              | int
                                      PRI
                                                     auto_increment
                               NO
                                           NULL
 policy_name
               varchar(255)
                               NO
                                            NULL
 coverage
               varchar(255)
                             NO
                                            NULL
              | decimal(10,2) | NO
  premium
                                            NULL
 rows in set (0.00 sec)
CREATE TABLE User (
 userId INT auto increment PRIMARY KEY,
 username VARCHAR(255),
  password VARCHAR(255),
 role VARCHAR(50)
);
mysql> CREATE TABLE User (
           userId INT auto_increment PRIMARY KEY,
           username VARCHAR(255),
           password VARCHAR(255),
           role VARCHAR(50)
    -> );
Query OK, 0 rows affected (0.03 sec)
mysql> desc User;
                            | Null | Key | Default | Extra
  Field
            Type
  userId
             int
                             NO
                                     PRI
                                           NULL
                                                      auto increment
             varchar(255)
                             YES
  username
                                           NULL
  password
             varchar(255)
                             YES
                                           NULL
  role
            varchar(50)
                             YES
                                           NULL
 rows in set (0.02 sec)
```

```
clientId INT auto_increment PRIMARY KEY,
  clientName VARCHAR(255),
  contactInfo VARCHAR(255),
  policyld INT,
  FOREIGN KEY (policyId) REFERENCES policies(policy_id)
);
mysql> CREATE TABLE Client (
           clientId INT auto increment PRIMARY KEY,
           clientName VARCHAR(255),
           contactInfo VARCHAR(255),
           policyId INT,
           FOREIGN KEY (policyId) REFERENCES policies(policy_id)
    -> );
Query OK, 0 rows affected (0.07 sec)
mysql> desc client;
                                              Default
  Field
               Type
                               | Null | Key |
 clientId
                 int
                                 NO
                                        PRI
                                              NULL
                                                         auto_increment
  clientName
                 varchar(255)
                                 YES
                                               NULL
  contactInfo
                 varchar(255)
                                 YES
                                               NULL
  policyId
                 int
                                 YES
                                        MUL
                                               NULL
  rows in set (0.00 sec)
CREATE TABLE Claim (
  claimId INT auto increment PRIMARY KEY,
  claimNumber VARCHAR(50),
  dateFiled DATE,
  claimAmount DECIMAL(10, 2),
  status VARCHAR(50),
  policyld INT,
  clientId INT,
  FOREIGN KEY (policyId) REFERENCES Policies(policy_id),
  FOREIGN KEY (clientId) REFERENCES Client(clientId)
);
```

```
mysql> CREATE TABLE Claim (
          claimId INT auto_increment PRIMARY KEY,
          claimNumber VARCHAR(50),
          dateFiled DATE,
          claimAmount DECIMAL(10, 2),
          status VARCHAR(50),
          policyId INT,
          clientId INT,
          FOREIGN KEY (policyId) REFERENCES Policies(policy_id),
          FOREIGN KEY (clientId) REFERENCES Client(clientId)
   -> );
Query OK, 0 rows affected (0.10 sec)
mysql> desc claim;
 Field
                              | Null | Key | Default | Extra
              Type
 claimId
               int
                               NO
                                       PRI
                                             NULL
                                                       auto_increment
 claimNumber
               varchar(50)
                               YES
                                             NULL
 dateFiled
               date
                               YES
                                             NULL
 claimAmount
               decimal(10,2)
                               YES
                                             NULL
               varchar(50)
 status
                               YES
                                             NULL
 policyId
               int
                               YES
                                            NULL
                                      MUL
                               YES
 clientId
                                     MUL NULL
               int
 rows in set (0.00 sec)
```

CREATE TABLE Payment (

```
paymentId INT auto_increment PRIMARY KEY,
paymentDate DATE,
paymentAmount DECIMAL(10, 2),
clientId INT,
FOREIGN KEY (clientId) REFERENCES Client(clientId)
);
```

```
nysql> CREATE TABLE Payment (
          paymentId INT auto_increment PRIMARY KEY,
          paymentDate DATE,
          paymentAmount DECIMAL(10, 2),
          clientId INT,
          FOREIGN KEY (clientId) REFERENCES Client(clientId)
Query OK, 0 rows affected (0.11 sec)
mysql> desc Payment;
 Field
                Type
                                | Null | Key | Default |
 paymentId
                 int
                                 NO
                                         PRI
                                               NULL
                                                         auto_increment
                 date
                                 YES
 paymentDate
                                               NULL
                 decimal(10,2)
                                 YES
 paymentAmount
                                               NULL
 clientId
                 int
                                 YES
                                        MUL
                                              NULL
 rows in set (0.00 sec)
```

3. Define IPolicyService interface/abstract class with following methods to interact with database

Keep the interfaces and implementation classes in package dao

a. createPolicy()

I. parameters: Policy Object

II. return type: boolean

b. getPolicy()

I. parameters: policyId

II. return type: Policy Object

c.getAllPolicies()

I. parameters: none

II. return type: Collection of Policy Objects

d.updatePolicy()

I. parameters: Policy Object

II. return type: boolean

e. deletePolicy()

I. parameters: PolicyId

II. return type: Boolean

```
Insurance > dao > 🏓 policy_dao.py > ધ PolicyService
      from abc import ABC, abstractmethod
      from entity.policy import Policy
      class PolicyService(ABC):
  5
          @abstractmethod
           def createPolicy(self, policy: Policy) -> bool:
               pass
           @abstractmethod
           def getPolicy(self, policyId) -> Policy:
 11
               pass
           @abstractmethod
           def getAllPolicies(self) -> list:
               pass
           @abstractmethod
           def updatePolicy(self, policy: Policy) -> bool:
               pass
           @abstractmethod
           def deletePolicy(self, policyId) -> bool:
               pass
```

6. Define InsuranceServiceImpl class and implement all the methods InsuranceServiceImpl .

```
return True

connection.cometic):

def getPolicy(self, policyI):

if connection.is_connection():

connection = D8Connection.getConnection():

cursor.except wysql.connector

connection.comet():

def createPolicy(self, policy: Policy) >> bool:

try:

connection = D8Connection.getConnection()

cursor = connection.cursor()

cursor.exceute("MISSER INTO policy: (policy.coverage, premium) VALUES (%s, %s, %s)",

(policy.policyName, policy.coverage, policy.premium))

connection.comet()

cursor.close()

return True

except wysql.connector.Error as e:

print("Error creating policy:", e)

return False

finally:

if connection.is_connected():

connection.close()

getPolicy(self, policyId) -> Policy:

try:

connection = D8Connection.getConnection()

cursor = connection.close()

fi policy_record = Cursor.fetchone()

cursor.exceute("SELECT * FRON policies MHERE policy_Id = %s", (policyId,))

policy_record:

return Policy(policy_record[0], policy_record[1], policy_record[2], policy_record[3])

else:

return None

except mysql.connector.Error as e:

print("Error getTing policy:", e)

return None

except mysql.connector.Fror as e:

print("Error getTing policy:", e)

return None

finally:

if connection.is_connected():

connection.close()

if policy_record:

return None

finally:

if connection.is_connected():

connection.close()
```

```
connection.close()

def deletePolicy(self, policyId) -> bool:
    try:
        connection = DBConnection.getConnection()
        cursor = connection.cursor()
        cursor.execute("DELETE FROM policies WHERE policy_id = %s", (policyId,))
        connection.commit()
        cursor.close()
        return True
    except mysql.connector.Error as e:
        print("Error deleting policy:", e)
        return False
    finally:
        if connection.is_connected():
        connection.close()
```

7. Create a utility class DBConnection in a package util with a static variable connection of Type

Connection and a static method getConnection() which returns connection.

Connection properties supplied in the connection string should be read from a property file.

Create a utility class PropertyUtil which contains a static method named getPropertyString() which

reads a property fie containing connection details like hostname, dbname, username, password, port

number and returns a connection string.

```
Insurance > util > Property_util.py > PropertyUtil > QetPropertyString > Property_file

import confignarser

class PropertyUtil:

destaticmethod

def getPropertyString(property_file):

config = confignarser.ConfigParser()

config.read(property_file)

connection_string = {

user': config['DATABASE']['user'],

host': config['DATABASE']['host'],

port': config['DATABASE']['passwd'],

passwd': config['DATABASE']['database']

database': config['DATABASE']['database']

return connection_string

return connection_string
```

8. Create the exceptions in package myexceptions

Define the following custom exceptions and throw them in methods whenever needed. Handle all the exceptions in main method,

1. PolicyNotFoundException :throw this exception when user enters an invalid patient number which doesn't exist in db

```
Insurance > exception >  custom_exceptions.py > ...

1    # myexceptions/policy_exceptions.py

2    class PolicyNotFoundException(Exception):

3          def __init__(self, message="Policy not found."):

4          self.message = message

5          super().__init__(self.message)

6
```

9. Create class named MainModule with main method in package mainmod.

Trigger all the methods in service implementation class

```
sys.path.append(os.path.abspath(os.path.join(os.path.dirname(__file__), "..")))
    from dao.insurance_service_imp import InsuranceServiceImpl
    from entity.policy import Policy
    from\ exception.custom\_exceptions\ import\ PolicyNotFoundException
10 class MainModule:
            self.insurance_service = InsuranceServiceImpl()
        def display_menu(self):
           print("Insurance Management System")
            print("2. Get Policy")
           print("3. Get All Policies")
           print("4. Update Policy")
           print("5. Delete Policy")
           print("6. Exit")
           while True:
                self.display_menu()
                choice = input("Enter your choice: ")
                    self.create_policy()
                elif choice == "2":
                    self.get_policy()
                elif choice == "3":
                    self.get_all_policies()
                    self.update_policy()
                    self.delete_policy()
                elif choice == "6":
                    print("Exiting...")
                    break
                    print("Invalid choice. Please try again.")
```

```
Insurance > main > 💠 main_module.py > ધ MainModule
      class MainModule:
          def create_policy(self):
              policy_name = input("Enter policy name: ")
              coverage = input("Enter coverage: ")
              premium = float(input("Enter premium: "))
              policy = Policy(policyName=policy_name, coverage=coverage, premium=premium)
              success = self.insurance_service.createPolicy(policy)
                  print("Policy created successfully.")
                  print("Failed to create policy.")
          def get_policy(self):
                  policy_id = int(input("Enter policy ID: "))
                  policy = self.insurance_service.getPolicy(policy_id)
                  if policy is None:
                      raise PolicyNotFoundException()
                      print("Policy details:")
                      print(policy)
                  print("Invalid input. Policy ID must be an integer.")
              except PolicyNotFoundException as e:
                  print(e.message)
          def get_all_policies(self):
              policies = self.insurance_service.getAllPolicies()
              if not policies:
                  print("No policies found.")
                  print("All Policies:")
                  for policy in policies:
                      print(policy)
```

```
def update_policy(self):
    policy_id = int(input("Enter policy ID to update: "))
    policy_name = input("Enter updated policy name: ")
    coverage = input("Enter updated coverage: ")
    premium = float(input("Enter updated premium: "))
    policy = Policy(policy_id, policy_name, coverage, premium)
    success = self.insurance service.updatePolicy(policy)
    if success:
        print("Policy updated successfully.")
        print("Failed to update policy.")
def delete_policy(self):
    policy_id = int(input("Enter policy ID to delete: "))
    success = self.insurance service.deletePolicy(policy id)
    if success:
        print("Policy deleted successfully.")
        print("Failed to delete policy.")
main_module = MainModule()
main module.run()
```

Insurance Management System

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

PS C:\Users\raaji\OneDrive\Documents\hexaware training\Insurance> & C:/Users/raaji/AppDahexaware training/Insurance/main/main_module.py"

Insurance Management System

1. Create Policy
2. Get Policy
3. Get All Policies
4. Update Policy
5. Delete Policy
6. Exit
Enter your choice:
```

1.Create Policy

PROBLEMS OUTPUT DEBUG CONSOLE **PORTS** TERMINAL PS C:\Users\raaji\OneDrive\Documents\hexaware training\Insurance> & C:\Users\raaji/AppData/Local hexaware training/Insurance/main/main module.py" Insurance Management System 1. Create Policy 2. Get Policy 3. Get All Policies 4. Update Policy 5. Delete Policy 6. Exit Enter your choice: 1 Enter policy name: Car Insurance Enter coverage: Collision Damage Enter premium: 500.00 Connected to MySQL database successfully. Policy created successfully.

PROBLEMS OUTPUT DEBUG CONSOLE **TERMINAL PORTS** Insurance Management System Create Policy Get Policy Get All Policies 4. Update Policy 5. Delete Policy 6. Exit Enter your choice: 1 Enter policy name: Home Protection Enter coverage: Property Damage Enter premium: 100.00 Connected to MySQL database successfully. Policy created successfully.

Insurance Management System

1. Create Policy
2. Get Policy
3. Get All Policies
4. Update Policy
5. Delete Policy
6. Exit
Enter your choice: 1
Enter policy name: Home Protection
Enter coverage: Theft Protection
Enter premium: 100
Connected to MySQL database successfully.
Policy created successfully.

2. Get Policy

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

Policy created successfully.
Insurance Management System
1. Create Policy
2. Get Policy
3. Get All Policies
4. Update Policy
5. Delete Policy
6. Exit
Enter your choice: 2
Enter policy ID: 3
Connected to MySQL database successfully.
Policy details:
Policy(ID: 3, Name: Car Insurance, Coverage: Collision Damage, Premium: 500.00)
```

Insurance Management System

1. Create Policy
2. Get Policy
3. Get All Policies
4. Update Policy
5. Delete Policy
6. Exit
Enter your choice: 2
Enter policy ID: 7
Connected to MySQL database successfully.
Policy not found.

3. Get All Policies

```
Insurance Management System

1. Create Policy
2. Get Policy
3. Get All Policies
4. Update Policy
5. Delete Policy
6. Exit
Enter your choice: 3
Connected to MySQL database successfully.
All Policies:
Policy(ID: 3, Name: Car Insurance, Coverage: Collision Damage, Premium: 500.00)
Policy(ID: 4, Name: Home Protection, Coverage: Theft Protection, Premium: 100.00)
```

4. Update Policy

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL **PORTS** Insurance Management System 1. Create Policy 2. Get Policy 3. Get All Policies 4. Update Policy 5. Delete Policy 6. Exit Enter your choice: 4 Enter policy ID to update: 5 Enter updated policy name: Home Protection Enter updated coverage: Theft Protection Enter updated premium: 200 Connected to MySQL database successfully. Policy updated successfully.

Insurance Management System

1. Create Policy
2. Get Policy
3. Get All Policies
4. Update Policy
5. Delete Policy
6. Exit
Enter your choice: 2
Enter policy ID: 5
Connected to MySQL database successfully.
Policy details:
Policy(ID: 5, Name: Home Protection, Coverage: Theft Protection, Premium: 200.00)

5. Delete Policy

Insurance Management System

1. Create Policy
2. Get Policy
3. Get All Policies
4. Update Policy
5. Delete Policy
6. Exit
Enter your choice: 5
Enter policy ID to delete: 5
Connected to MySQL database successfully.
Policy deleted successfully.

Insurance Management System

1. Create Policy
2. Get Policy
3. Get All Policies
4. Update Policy
5. Delete Policy
6. Exit
Enter your choice: 2
Enter policy ID: 5
Connected to MySQL database successfully.
Policy not found.

6. Exit

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

Insurance Management System
1. Create Policy
2. Get Policy
3. Get All Policies
4. Update Policy
5. Delete Policy
6. Exit
Enter your choice: 6
Exiting...