

Case Study PayXpert E:\Python\Case Study PayXp

> .venv library root

Dao

- IEmployeeService.py
- IFinancialRecordService.py
- IPayrollService.py
- ITaxService.py

Entity

- Employee.py
- EmployeeService.py
- FinancialRecord.py
- FinancialRecordService.py
- Payroll.py
- PayrollService.py
- Tax.py
- TaxService.py

Exception

- Exceptions.py

Pyunit

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util

- main.py

External Libraries

Scratches and Consoles

## SQL Tables:

### 1. Employee Table:

```
mysql> desc employee;
```

Field	Type	Null	Key	Default	Extra
EmployeeID	int	NO	PRI	NULL	
FirstName	text	YES		NULL	
LastName	text	YES		NULL	
DateOfBirth	date	YES		NULL	
Gender	text	YES		NULL	
Email	text	YES		NULL	
PhoneNumber	text	YES		NULL	
Address	text	YES		NULL	
Position	text	YES		NULL	
JoiningDate	date	YES		NULL	
TerminationDate	date	YES		NULL	

11 rows in set (0.01 sec)

### 2. Payroll Table:

```
mysql> desc payroll;
```

Field	Type	Null	Key	Default	Extra
PayrollID	int	NO	PRI	NULL	
EmployeeID	int	YES	MUL	NULL	
PayPeriodStartingdate	date	YES		NULL	
PayPeriodEndingdate	date	YES		NULL	
BasicSalary	int	YES		NULL	
OvertimePay	int	YES		NULL	
Deductions	int	YES		NULL	
NetSalary	int	YES		NULL	

8 rows in set (0.00 sec)

### 3. Tax Table:

```
mysql> desc tax;
```

Field	Type	Null	Key	Default	Extra
TaxID	int	NO	PRI	NULL	
EmployeeID	int	YES	MUL	NULL	
TaxYear	year	YES		NULL	
TaxableIncome	int	YES		NULL	
TaxAmount	int	YES		NULL	

5 rows in set (0.00 sec)

#### 4. FinancialRecord Table:

```
mysql> desc FinancialRecord ;
+-----+-----+-----+-----+-----+-----+
| Field          | Type                               | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| RecordID       | int                               | NO   | PRI | NULL    |       |
| EmployeeID     | int                               | YES  | MUL | NULL    |       |
| RecordDate     | date                             | YES  |     | NULL    |       |
| Description    | text                             | YES  |     | NULL    |       |
| Amount        | int                               | YES  |     | NULL    |       |
| RecordType     | enum('Income','Expense','Tax Payment') | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)
```

## Classes :

- Employee:
- Properties: EmployeeID, FirstName, LastName, DateOfBirth, Gender, Email, PhoneNumber, Address, Position, JoiningDate, TerminationDate

```
1
2 usages
3
4 class Employee:
5     def __init__(self, employeeID=None, firstname=None, lastname=None, dateofbirth=None, gender=None, email=None,
6         phonenumber=None, address=None, position=None, joiningdate=None, terminationdate=None, db_connector=None):
7         self._employeeID = employeeID
8         self._Firstname = firstname
9         self._Lastname = lastname
10        self._DateofBirth = dateofbirth
11        self._Gender = gender
12        self._email = email
13        self._Phonenumber = phonenumber
14        self._Address = address
15        self._Position = position
16        self._joiningDate = joiningdate
17        self._terminationDate = terminationdate
18        self._db_connector = db_connector
19
20 @property
21 def employeeId(self):
22     return self._employeeID
23
24 @employeeId.setter
25 def employeeId(self, new_employeeId):
26     self._employeeID = new_employeeId
27
28 @property
29 def Firstname(self):
30     return self._Firstname
31
32 @Firstname.setter
33 def Firstname(self, new_Firstname):
34     self._Firstname = new_Firstname
35
36 @property
37 def Lastname(self):
38     return self._Lastname
```

```
36         return self._Lastname
37
38     @Lastname.setter
39     def Lastname(self, new_Lastname):
40         self._Lastname = new_Lastname
41
42     1 usage
43     @property
44     def DateofBirth(self):
45         return self._DateofBirth
46
47     @DateofBirth.setter
48     def DateofBirth(self, new_DateofBirth):
49         self._DateofBirth = new_DateofBirth
50
51     1 usage
52     @property
53     def Gender(self):
54         return self._Gender
55
56     @Gender.setter
57     def Gender(self, new_Gender):
58         self._Gender = new_Gender
59
60     1 usage
61     @property
62     def email(self):
63         return self._email
64
65     @email.setter
66     def email(self, new_email):
67         self._email = new_email
68
69     1 usage
70     @property
71     def Phonenumner(self):
72         return self._Phonenumner
```

```

1 usage
74 @property
75 def Address(self):
76     return self._Address
77
78 @Address.setter
79 def Address(self, new_Address):
80     self._Address = new_Address
81
82 1 usage
83 @property
84 def Position(self):
85     return self._Position
86
87 @Position.setter
88 def Position(self, new_Position):
89     self._Position = new_Position
90
91 1 usage
92 @property
93 def joiningDate(self):
94     return self._joiningDate
95
96 @joiningDate.setter
97 def joiningDate(self, new_joiningDate):
98     self._joiningDate = new_joiningDate
99
100 1 usage
101 @property
102 def terminationDate(self):
103     return self._terminationDate
104
105 @terminationDate.setter
106 def terminationDate(self, new_terminationDate):
107     self._terminationDate = new_terminationDate
108

```

## • Methods: CalculateAge()

```

1 usage
def CalculateAge(self):
    try:
        employeeID=input("Enter your EmployeeID for which you want to know the age : ")
        self._db_connector.open_connection()
        cur = self._db_connector.connection.cursor()
        query = "Select timestampdiff(YEAR,DateOfBirth,CurDate()) from Employee where EmployeeID=%s"
        value = (employeeID,)
        cur.execute(query, value)
        record = cur.fetchone()
        if record:
            print(f"The age of Employee whose employee ID is {employeeID} = {record[0]}")
        else:
            print("NO Employee Found")
    except Exception as e:
        print("Error in Fetching age")
    finally:
        self._db_connector.connection.close()

```

- Payroll:
- Properties: PayrollID, EmployeeID, PayPeriodStartDate, PayPeriodEndDate, BasicSalary, OvertimePay, Deductions, NetSalary

```
1  ~ class payroll:
2  ~     def __init__(self, PayrollID=None, EmployeeID=None, PayPeriodEndDate=None, BasicSalary=None, OvertimePay=None, deductions=None, Netsalary=None):
3      self.PayrollID=PayrollID
4      self.EmployeeID=EmployeeID
5      self.PayPeriodEndDate=PayPeriodEndDate
6      self.BasicSalary=BasicSalary
7      self.Overtimepay=OvertimePay
8      self.deductions=deductions
9      self.Netsalary=Netsalary
10
11     2 usages
12     @property
13     def PayrollID(self):
14         return self.PayrollID
15
16     2 usages
17     @PayrollID.setter
18     def PayrollID(self, new_PayrollID):
19         self.PayrollID = new_PayrollID
20
21     2 usages
22     @property
23     def EmployeeID(self):
24         return self.EmployeeID
25
26     2 usages
27     @EmployeeID.setter
28     def EmployeeID(self, new_EmployeeID):
29         self.EmployeeID = new_EmployeeID
30
31     2 usages
32     @property
33     def PayPeriodEndDate(self):
34         return self.PayPeriodEndDate
35
36     2 usages
37     @PayPeriodEndDate.setter
38     def PayPeriodEndDate(self, new_PayPeriodEndDate):
39         self.PayPeriodEndDate = new_PayPeriodEndDate
34
```

```
34
    2 usages
35     @property
36     def BasicSalary(self):
37         return self.BasicSalary
38
    2 usages
39     @BasicSalary.setter
40     def BasicSalary(self, new_BasicSalary):
41         self.BasicSalary = new_BasicSalary
42
    2 usages
43     @property
44     def Overtimepay(self):
45         return self.Overtimepay
46
    2 usages
47     @Overtimepay.setter
48     def Overtimepay(self, new_Overtimepay):
49         self.Overtimepay = new_Overtimepay
50
    2 usages
51     @property
52     def deductions(self):
53         return self.deductions
54
    2 usages
55     @deductions.setter
56     def deductions(self, new_deductions):
57         self.deductions = new_deductions
58
    2 usages
59     @property
60     def Netsalary(self):
61         return self.Netsalary
62
    2 usages
63     @Netsalary.setter
64     def Netsalary(self, new_Netsalary):
65         self.Netsalary = new_Netsalary
66
```

- Tax:
- Properties: TaxID, EmployeeID, TaxYear, TaxableIncome, TaxAmount

```
per1 1 class tax:
2     def __init__(self, TaxID=None, EmployeeID=None, TaxYear=None, TaxableIncome=None, TaxAmount=None):
3         self.TaxID=TaxID
4         self.employeeId=EmployeeID
5         self.taxYear=TaxYear
6         self.TaxableIncome=TaxableIncome
7         self.TaxAmount=TaxAmount
8
9     2 usages
10    @property
11    def TaxID(self):
12        | return self.TaxID
13
14    2 usages
15    @TaxID.setter
16    def TaxID(self, new_TaxID):
17        | self.TaxID = new_TaxID
18
19    2 usages
20    @property
21    def EmployeeID(self):
22        | return self.EmployeeID
23
24    1 usage
25    @EmployeeID.setter
26    def EmployeeID(self, new_EmployeeID):
27        | self.EmployeeID = new_EmployeeID
28
29    2 usages
30    @property
31    def TaxYear(self):
32        | return self.TaxYear
33
34    1 usage
35    @TaxYear.setter
36    def TaxYear(self, new_TaxYear):
37        | self.TaxYear = new_TaxYear
38
39    2 usages
40    @property
41    def TaxableIncome(self):
```



```

        return self.TaxableIncome

2 usages
@TaxableIncome.setter
def TaxableIncome(self, new_TaxableIncome):
    self.TaxableIncome = new_TaxableIncome

2 usages
@property
def TaxAmount(self):
    return self.TaxAmount

2 usages
@TaxAmount.setter
def TaxAmount(self, new_TaxAmount):
    self.TaxAmount = new_TaxAmount

```

- FinancialRecord:
- Properties: RecordID, EmployeeID, RecordDate, Description, Amount, RecordType

```

class FinancialRecord:
    def __init__(self, RecordID=None, EmployeeID=None, RecordDate=None, Description=None, Amount=None, RecordType=None):
        self.recordID=RecordID
        self.employeeID=EmployeeID
        self.RecordDate=RecordDate
        self.description=Description
        self.Amount=Amount
        self.RecordType=RecordType

2 usages
@property
def recordID(self):
    return self.recordID

2 usages
@recordID.setter
def recordID(self, new_recordID):
    self.recordID = new_recordID

2 usages
@property
def employeeID(self):
    return self.employeeID

2 usages
@employeeID.setter
def employeeID(self, new_employeeID):
    self.employeeID = new_employeeID

2 usages
@property
def RecordDate(self):
    return self.RecordDate

2 usages
@RecordDate.setter
def RecordDate(self, new_RecordDate):
    self.RecordDate = new_RecordDate

2 usages

```

```

        return self.RecordDate

2 usages
@RecordDate.setter
def RecordDate(self, new_RecordDate):
    self.RecordDate = new_RecordDate

2 usages
@property
def description(self):
    return self.description

2 usages
@description.setter
def description(self, new_description):
    self.description = new_description

2 usages
@property
def Amount(self):
    return self.Amount

2 usages
@Amount.setter
def Amount(self, new_Amount):
    self.Amount = new_Amount

2 usages
@property
def RecordType(self):
    return self.RecordType

2 usages
@RecordType.setter
def RecordType(self, new_RecordType):
    self.RecordType = new_RecordType

```

- EmployeeService (implements IEmployeeService):
- Methods:

GetEmployeeById,

```

from Dao.IEmployeeService import IEmployeeService
from Exception.Exceptions import EmployeeNotFoundException
2 usages
class employeeService(IEmployeeService):
    def __init__(self,db_connector):
        self.db_connector=db_connector

1 usage
def GetEmployeeById(self):
    self.db_connector.open_connection()
    cur=self.db_connector.connection.cursor()
    employeeId=input("Please enter your employeeID : ")
    cur.execute("Select * from Employee Where employeeID =%s",(employeeId,))
    record=cur.fetchone()
    if record:
        print("Here are the details of th employee : ")
        print(f"Employee ID = {record[0]}")
        print(f"First name = {record[1]}")
        print(f"Last Name = {record[2]}")
        print(f>Date Of Birth = {record[3]}")
        print(f"Gender = {record[4]}")
        print(f>Email = {record[5]}")
        print(f"Phone Number = {record[6]}")
        print(f"Address = {record[7]}")
        print(f"Position = {record[8]}")
        print(f"Joining Date = {record[9]}")
        print(f"Termination Date = {record[10]}")
    else:
        raise EmployeeNotFoundException(employeeId)
    self.db_connector.close_connection()

```

GetAllEmployees,

```
1 usage
def GetAllEmployees(self):
    self.db_connector.open_connection()
    cur = self.db_connector.connection.cursor()
    cur.execute("Select FirstName from Employee")
    record=cur.fetchall()
    if record:
        for i in record:
            print(i[0])
    else:
        print("No employee work here")
    self.db_connector.close_connection()
```

AddEmployee,

```
1 usage
def AddEmployee(self):
    self.db_connector.open_connection()
    cur = self.db_connector.connection.cursor()
    print("Enter the details of employee you want to add")
    employeeID=self.GetuniqueEmployeeID()
    FirstName=input("Enter First Name : ")
    LastName=input("Enter Last Name : ")
    DateofBirth=input("Enter Date of birth in the format 'YYYY-MM-DD' : ")
    Gender=input("Enter Gender (Male,Female) : ")
    Email=input("Enter the email address : ")
    PhoneNumber=input("Enter Phone Number : ")
    Address=input("Enter Address : ")
    Positon=input("Enter Position : ")
    Joiningdate=input("Enter Joining Date in the format 'YYYY-MM-DD' :")
    query = "Insert into Employee (EmployeeId, Firstname, Lastname, Dateofbirth, Gender, Email, Phonenumber, Address, Position, Joiningdate) values(%s,%s,%s,%s,%s,%s,%s,%s,%s,%s)"
    values=(employeeID,FirstName,LastName,DateofBirth,Gender,Email,PhoneNumber,Address,Positon,Joiningdate,)
    cur.execute(query,values)
    print("Employee Added Successfully")
    self.db_connector.connection.commit()
    self.db_connector.close_connection()
```

## UpdateEmployee,

```
1 usage
def UpdateEmployee(self):
    self.db_connector.open_connection()
    cur = self.db_connector.connection.cursor()
    employeeId = input("Enter the employeeID you want to update : ")
    print("Choose what you want to update : ")
    print("1.First name ")
    print("2.Last Name ")
    print("3.Date Of Birth ")
    print("4.Gender ")
    print("5.Email ")
    print("6.Phone Number ")
    print("7.Address ")
    print("8.Position ")
    print("9.Joining Date ")
    print("10.Termination Date ")
    choice = int(input("Enter your choice : "))
    cur.execute("Select * from Employee Where employeeID =%s", (employeeId,))
    record = cur.fetchone()
    if record:
        FirstName = record[1]
        LastName = record[2]
        DateOfBirth = record[3]
        Gender = record[4]
        Email = record[5]
        PhoneNumber = record[6]
        Address = record[7]
        Position = record[8]
        JoiningDate = record[9]
        TerminationDate = record[10]

        if choice == 1:
            FirstName = input("Enter Frist Name : ")
        elif choice == 2:
            LastName = input("Enter Last Name : ")
        elif choice == 3:
            DateOfBirth = input("Enter Date of birth in the format 'YYYY-MM-DD' : ")
```

```
        if choice == 1:
            FirstName = input("Enter Frist Name : ")
        elif choice == 2:
            LastName = input("Enter Last Name : ")
        elif choice == 3:
            DateOfBirth = input("Enter Date of birth in the format 'YYYY-MM-DD' : ")
        elif choice == 4:
            Gender = input("Enter Gender (Male,Female) : ")
        elif choice == 5:
            Email = input("Enter the email address : ")
        elif choice == 6:
            PhoneNumber = input("Enter Phone Number : ")
        elif choice == 7:
            Address = input("Enter Address : ")
        elif choice == 8:
            Position = input("Enter Position : ")
        elif choice == 9:
            JoiningDate = input("Enter Joining Date in the format 'YYYY-MM-DD' :")
        elif choice == 10:
            TerminationDate = input("Enter Termination Date in the format 'YYYY-MM-DD' : ")
        else:
            print("Enter correct choice !!! ")
        query = "Update employee set Firstname=%s,Lastname=%s,Dateofbirth=%s, Gender=%s, Email=%s, Phonenumber=%s, Address=%s, position=%s, joiningdate=%s, TerminationDate=%s"
        values = (FirstName, LastName, DateOfBirth, Gender, Email, PhoneNumber, Address, Position, JoiningDate, TerminationDate, employeeId,)
        cur.execute(query, values)
        print("Updated Successfully")
        self.db_connector.connection.commit()
    else:
        raise EmployeeNotFoundException(employeeId)
    self.db_connector.close_connection()
```

## RemoveEmployee

```
1 usage
def RemoveEmployee(self):
    self.db_connector.open_connection()
    cur = self.db_connector.connection.cursor()
    employeeID=input("Enter the employee id of the employee you want to remove : ")
    cur.execute("Delete from employee Where employeeId=%s",(employeeID,))
    print("Employee successfully removed")
    self.db_connector.connection.commit()
    self.db_connector.close_connection()
```

```
1 usage
def GetuniqueEmployeeID(self):
    return len(self.get_allemployee())+1
```

```
1 usage
def get_allemployee(self):
    self.db_connector.open_connection()
    cur = self.db_connector.connection.cursor()
    cur.execute("select FirstName from employee")
    record=cur.fetchall()
    return record
```

- PayrollService (implements IPayrollService):
- Methods:

## GeneratePayroll,

```
from Dao.IPayrollService import IPayrollService
from Exception.Exceptions import PayrollGenerationException
4 usages
class payrollservice(IPayrollService):
    def __init__(self,db_connector):
        self.db_connector= db_connector

1 usage
def GeneratePayroll(self):
    self.db_connector.open_connection()
    cur=self.db_connector.connection.cursor()
    employeeId=input("Enter the employeeID for which you want to generate payroll : ")
    payrollId=self.getuniquepayrollid()
    basesalary=int(input("Enter the base salary of the employee"))
    Payperiodstartingdate=input("Enter the pay period starting date in the format 'YYYY-MM-DD' : ")
    Payperiodendingdate = input("Enter the pay period ending date in the format 'YYYY-MM-DD' : ")
    OvertimePay=int(input("Enter the overtime pay of the employee"))
    Deductions=int(input("Enter the deduction for the employee : "))
    NetSalary=basesalary+OvertimePay-Deductions
    query="Insert into payroll values(%s,%s,%s,%s,%s,%s,%s,%s,%s)"
    values=(payrollId,employeeId,Payperiodstartingdate,Payperiodendingdate,basesalary,OvertimePay,Deductions,NetSalary,)
    cur.execute(query,values)
    self.db_connector.connection.commit()
    self.db_connector.close_connection()
```

GetPayrollById,

```
1 usage
def GetPayrollById(self):
    self.db_connector.open_connection()
    cur = self.db_connector.connection.cursor()
    payrollID=input("Enter the payrollId for details : ")
    cur.execute("Select * from payroll where PayrollId=%s", (payrollID,))
    record=cur.fetchone()
    if record:
        print("Here are the details : ")
        print(f"Payroll Id : {record[0]}")
        print(f"Employee Id : {record[1]}")
        print(f"Pay period starting date : {record[2]}")
        print(f"Pay period ending date : {record[3]}")
        print(f"Base Salary : {record[4]}")
        print(f"Overt time pay : {record[5]}")
        print(f"deductions : {record[6]}")
        print(f"Net salary : {record[7]}")
    else:
        raise PayrollGenerationException()
    self.db_connector.close_connection()
```

GetPayrollsForEmployee,

```
1 usage
def GetPayrollsForEmployee(self):
    self.db_connector.open_connection()
    cur = self.db_connector.connection.cursor()
    employeeID=input("Enter the employee Id for which you want Payrolls : ")
    cur.execute("Select * from payroll where EmployeeId=%s", (employeeID,))
    record = cur.fetchall()
    if record:
        print("Here are the details : ")
        for i in record:
            print(f"Payroll Id : {i[0]}")
            print(f"Employee Id : {i[1]}")
            print(f"Pay period starting date : {i[2]}")
            print(f"Pay period ending date : {i[3]}")
            print(f"Base Salary : {i[4]}")
            print(f"Overt time pay : {i[5]}")
            print(f"deductions : {i[6]}")
            print(f"Net salary : {i[7]}")
            print(" ")
    else:
        raise PayrollGenerationException()
    self.db_connector.close_connection()
```

## GetPayrollsForPeriod

```
1 usage
def GetPayrollsForPeriod(self):
    self.db_connector.open_connection()
    cur = self.db_connector.connection.cursor()
    startingdate=input("Enter the Starting date in the format 'YYYY-MM-DD' : ")
    endingdate=input("Enter the ending date in the format 'YYYY-MM-DD' : ")
    query="select * from payroll where Payperiodstartingdate >= %s and Payperiodendingdate <= %s"
    values=(startingdate,endingdate,)
    cur.execute(query,values)
    record=cur.fetchall()
    if record:
        print("Here are the payroll for the given period : ")
        for i in record:
            print(f"Payroll Id : {i[0]}")
            print(f"Employee Id : {i[1]}")
            print(f"Pay period starting date : {i[2]}")
            print(f"Pay period ending date : {i[3]}")
            print(f"Base Salary : {i[4]}")
            print(f"Overt time pay : {i[5]}")
            print(f"deductions : {i[6]}")
            print(f"Net salary : {i[7]}")
            print(" ")
    else:
        raise PayrollGenerationException()
    self.db_connector.close_connection()
```

1 usage

```
def getuniquepayrollid(self):
    return len(self.geallpayroll()+1)
```

1 usage

```
def geallpayroll(self):
    self.db_connector.open_connection()
    cur = self.db_connector.connection.cursor()
    cur.execute("select * from payroll")
    record=cur.fetchall()
    self.db_connector.close_connection()
    return record
```



- TaxService (implements ITaxService):
- Methods:

CalculateTax,

```
from Dao.ITaxService import ITaxService
from Exception.Exceptions import TaxCalculationException
from Exception.Exceptions import InvalidInputException

2 usages
class taxservice(ITaxService):
    def __init__(self,db_connector):
        self.db_connector=db_connector

    1 usage
    def CalculateTax(self):
        self.db_connector.open_connection()
        cur = self.db_connector.connection.cursor()
        cur.execute("Select TaxableIncome from tax")
        record=cur.fetchall()
        if record:
            for i in record:
                if i[0] <= 50000:
                    tax=i[0]*0.05
                    cur.execute("Update tax set TaxAmount=%s Where TaxableIncome=%s",(tax,i[0]))

                elif i[0]>50000:
                    tax = i[0] * 0.1
                    cur.execute("Update tax set TaxAmount=%s Where TaxableIncome=%s", (tax, i[0]))
            else:
                raise TaxCalculationException()

        self.db_connector.connection.commit()
        self.db_connector.close_connection()
        self.GetTaxesForEmployee()
```

GetTaxById,

```
1 usage
def GettaxbyID(self):
    self.db_connector.open_connection()
    cur = self.db_connector.connection.cursor()
    taxID = input("Enter the tax ID for details : ")
    cur.execute("Select * from tax where taxid=%s", (taxID,))
    record = cur.fetchone()
    if record:
        print("Here are the details : ")
        print(f"Tax ID : {record[0]}")
        print(f"Employee Id : {record[1]}")
        print(f"Tax Year : {record[2]}")
        print(f"Taxable Income : {record[3]}")
        print(f"Tax Amount : {record[4]}")
    else:
        raise InvalidInputException
    self.db_connector.close_connection()
```

GetTaxesForEmployee,

2 usages

```
def GetTaxesForEmployee(self):
    self.db_connector.open_connection()
    cur = self.db_connector.connection.cursor()
    employeeID = input("Enter the employee Id for which you want tax : ")
    cur.execute("Select * from tax where EmployeeId=%s", (employeeID,))
    record = cur.fetchall()
    if record:
        print("Here are the details : ")
        for i in record:
            print(f"Tax ID : {i[0]}")
            print(f"Employee Id : {i[1]}")
            print(f"Tax Year : {i[2]}")
            print(f"Taxable Income : {i[3]}")
            print(f"Tax Amount : {i[4]}")
            print(" ")
    else:
        raise InvalidInputException
    self.db_connector.close_connection()
```

GetTaxesForYear

1 usage

```
def GetTaxesForYear(self):
    self.db_connector.open_connection()
    cur = self.db_connector.connection.cursor()
    Year = input("Enter the Year for which you want taxes : ")
    cur.execute("Select * from tax where TaxYear =%s", (Year,))
    record = cur.fetchall()
    if record:
        print("Here are the details : ")
        for i in record:
            print("Here are the details : ")
            print(f"Tax ID : {i[0]}")
            print(f"Employee Id : {i[1]}")
            print(f"Tax Year : {i[2]}")
            print(f"Taxable Income : {i[3]}")
            print(f"Tax Amount : {i[4]}")
            print(" ")
    else:
        print("No taxes Found")
    self.db_connector.close_connection()
```

- FinancialRecordService (implements IFinancialRecordService):
- Methods:

AddFinancialRecord,

```

from Dao.IFinancialRecordService import IFinancialRecordService
from Exception.Exceptions import FinancialRecordException
2 usages
class FinancialRecordService(IFinancialRecordService):
    def __init__(self,db_connector):
        self.db_connector=db_connector

1 usage
def AddFinancialRecord(self):
    self.db_connector.open_connection()
    cur = self.db_connector.connection.cursor()
    recordID=self.GetuniqueRecordID()
    employeeId=input("Enter the Employee Id : ")
    RecordDate=input("Enter the record date in the format 'YYYY-MM-DD' : ")
    description=input("Enter the description : ")
    amount=input("Enter the amount : ")
    recordType=input("Enter the Record type from three options ('Income','Expense','Tax Payment') : ")
    query="Insert into financialrecord values(%s,%s,%s,%s,%s,%s)"
    values=(recordID,employeeId,RecordDate,description,amount,recordType,)
    cur.execute(query,values)
    print("Successfully Added")
    self.db_connector.connection.commit()
    self.db_connector.close_connection()

```

GetFinancialRecordById,

```

1 usage
def GetFinancialRecordById(self):
    self.db_connector.open_connection()
    cur = self.db_connector.connection.cursor()
    recordId=input("Enter the record Id : ")
    cur.execute("Select * from financialrecord where recordid=%s",(recordId,))
    record=cur.fetchone()
    if record:
        print("Here are the details : ")
        print(f"Record ID : {record[0]}")
        print(f"employee ID : {record[1]}")
        print(f"Record Date : {record[2]}")
        print(f"description : {record[3]}")
        print(f"Amount : {record[4]}")
        print(f"Record Type : {record[5]}")
    else:
        raise FinancialRecordException
    self.db_connector.close_connection()

```

GetFinancialRecordsForEmployee,

1 usage

```
def GetFinancialRecordsForEmployee(self):
    self.db_connector.open_connection()
    cur = self.db_connector.connection.cursor()
    employeeID = input("Enter the employee Id for which you want record : ")
    cur.execute("Select * from financialrecord where EmployeeId=%s", (employeeID,))
    record = cur.fetchall()
    if record:
        print("Here are the details : ")
        for i in record:
            print(f"Record ID : {i[0]}")
            print(f"Employee Id : {i[1]}")
            print(f"Record Date : {i[2]}")
            print(f>Description : {i[3]}")
            print(f"Amount : {i[4]}")
            print(f"Record Type : {i[5]}")
            print(" ")
    else:
        raise FinancialRecordException
    self.db_connector.close_connection()
```

## GetFinancialRecordsForDate

1 usage

```
def GetFinancialRecordsForDate(self):
    self.db_connector.open_connection()
    cur = self.db_connector.connection.cursor()
    recorddate = input("Enter the record date in the format 'YYYY-MM-DD' : ")
    cur.execute("Select * from financialrecord where recorddate=%s", (recorddate,))
    record = cur.fetchall()
    if record:
        print("Here are the details : ")
        for i in record:
            print(f"Record ID : {i[0]}")
            print(f"Employee Id : {i[1]}")
            print(f"Record Date : {i[2]}")
            print(f>Description : {i[3]}")
            print(f"Amount : {i[4]}")
            print(f"Record Type : {i[5]}")
            print(" ")
    else:
        raise FinancialRecordException
    self.db_connector.close_connection()
```

1 usage

```
def GetuniquerecordID(self):
    return len(self.get_allrecord()+1)
```

1 usage

```
def get_allrecord(self):
    self.db_connector.open_connection()
    cur = self.db_connector.connection.cursor()
    cur.execute("select recordId from financialrecord")
    record=cur.fetchall()
    return record
```

# Abstract Class :

IEmployeeService:

```
from abc import ABC, abstractmethod

2 usages
class IEmployeeService(ABC):
    @abstractmethod
    def GetEmployeeById(self):
        pass

    @abstractmethod
    def GetAllEmployees(self):
        pass

    @abstractmethod
    def AddEmployee(self):
        pass

    @abstractmethod
    def UpdateEmployee(self):
        pass

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

IPayrollService:

```
from abc import ABC, abstractmethod

2 usages
class IPayrollService(ABC):
    @abstractmethod
    def GeneratePayroll(self):
        pass

    @abstractmethod
    def GetPayrollById(self):
        pass

    @abstractmethod
    def GetPayrollsForEmployee(self):
        pass

    @abstractmethod
    def GetPayrollsForPeriod(self):
        pass

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

ITaxService:

```
from abc import ABC, abstractmethod

2 usages
class ITaxService(ABC):
    @abstractmethod
    def CalculateTax(self):
        pass

    @abstractmethod
    def GettaxbyID(self):
        pass

    @abstractmethod
    def GetTaxesForEmployee(self):
        pass

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

IFinancialRecordService:

```
from abc import ABC, abstractmethod

2 usages
class IFinancialRecordService(ABC):
    @abstractmethod
    def AddFinancialRecord(self):
        pass

    @abstractmethod
    def GetFinancialRecordById(self):
        pass

    @abstractmethod
    def GetFinancialRecordsForEmployee(self):
        pass

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

# Exceptions :

3 usages

```
class EmployeeNotFoundException(Exception):  
  
    def __init__(self, employee_id):  
        self.employee_id = employee_id  
        self.message = f"Employee with ID {employee_id} not found"  
        super().__init__(self.message)
```

4 usages

```
class PayrollGenerationException(Exception):  
  
    def __init__(self, message="Error in payroll generation"):  
        self.message = message  
        super().__init__(self.message)
```

2 usages

```
class TaxCalculationException(Exception):  
  
    def __init__(self, message="Error in tax calculation"):  
        self.message = message  
        super().__init__(self.message)
```

4 usages

```
class FinancialRecordException(Exception):  
  
    def __init__(self, message="Financial record management error"):  
        self.message = message  
        super().__init__(self.message)
```

3 usages

```
class InvalidInputException(Exception):  
  
    def __init__(self, message="Invalid input data"):  
        self.message = message  
        super().__init__(self.message)
```

```
class DatabaseConnectionException(Exception):  
  
    def __init__(self, message="Database connection error"):  
        self.message = message  
        super().__init__(self.message)
```



# Database Connectivity :

```
import mysql.connector
2 usages
class DBConnector:
    def __init__(self, host, user, password, port, database):
        self.host = host
        self.user = user
        self.password = password
        self.port = port
        self.database = database
        self.connection = None

    21 usages (21 dynamic)
    def open_connection(self):
        if self.connection is None or not self.connection.is_connected():
            self.connection = mysql.connector.connect(
                host=self.host,
                user=self.user,
                password=self.password,
                port=self.port,
                database=self.database
            )

    18 usages (18 dynamic)
    def close_connection(self):
        if self.connection is not None and self.connection.is_connected():
            self.connection.close()
```

# Main() :

```
from Entity.Employee import Employee
from util.DB_connection import DBConnector
from Entity.EmployeeService import employeeservice
from Entity.PayrollService import payrollservice
from Entity.TaxService import taxservice
from Entity.FinancialRecordService import FinancialRecordService

1 usage
class Payxpert:
    5 usages
    def main(self):
        db_connector = DBConnector(host="localhost", user="root", password="root", port=3306, database="payxpert")
        Emp = Employee(db_connector=db_connector)
        ES = employeeservice(db_connector)
        PS = payrollservice(db_connector)
        TS = taxservice(db_connector)
        FS = FinancialRecordService(db_connector)

        print("Hi folks !! This is Pay Xpert")
        print("Choose from the following Options : ")
        print("1. If you need help with the employee database ")
        print("2. If you need help with the Payroll database ")
        print("3. If you need help with the Tax database ")
        print("4. If you need help with the Financial Record database ")
        choice=input("Now Enter Your Choice : ")
        if choice=='1':
            print("Employee Database Loading...")
            print("Now, Choose from the following options ")
            print("1. If you want to know the age of employee")
            print("2. If you want employee Details")
            print("3. All the Employees working here")
            print("4. If you want to Add a new Employee")
            print("5. If you want to update database")
            print("6. If you want to delete the employee details from the database")
            print("7. Exit")
            emp=input("Enter the choice : ")
            if emp=='1':
                Emp.CalculateAge()
            elif emp=='2':
                ES.GetEmployeeById()
            elif emp=='3':
```

```

elif emp=='3':
    ES.GetAllEmployees()
elif emp=='4':
    ES.AddEmployee()
elif emp=='5':
    ES.UpdateEmployee()
elif emp=='6':
    ES.RemoveEmployee()
elif emp=='7':
    self.main()
else:
    print("Invalid Choice")
elif choice=='2':
    print("Payroll Database Loading ...")
    print("Now, Choose from the following options : ")
    print("1. If you want to generate payroll")
    print("2. IF you want to Payroll Details")
    print("3. If you want to know all Payrolls for an employee")
    print("4. If you want all payrolls for a specific period")
    print("5. Exit")
    pay=input("Enter your choice : ")
    if pay=='1':
        PS.GeneratePayroll()
    elif pay=='2':
        PS.GetPayrollById()
    elif pay=='3':
        PS.GetPayrollsForEmployee()
    elif pay=='4':
        PS.GetPayrollsForPeriod()
    elif pay=='5':
        self.main()
    else:
        print("Invalid Choice")
elif choice=='3':
    print("Tax Database Loading...")
    print("Now, Choose from the following options ")
    print("1. If you want to Calculate Tax")
    print("2. If you want to Know tax details")
    print("3. If you want to know all Taxes for an employee")
    print("4. If you want to know all taxes in a year ")
    print("5. Exit")

```

```

        elif tax=='1':
            TS.CalculateTax()
        elif tax=='2':
            TS.GetTaxbyID()
        elif tax=='3':
            TS.GetTaxesForEmployee()
        elif tax=='4':
            TS.GetTaxesForYear()
        elif tax=='5':
            self.main()
        else:
            print("Invalid Choice")
    elif choice=='4':
        print("Financial Record Loading...")
        print("Now, Choose from the following options ")
        print("1. IF you want to add a financial record")
        print("2. If you want to Financial Record details")
        print("3. If you want to know all financial records for an employee")
        print("4. If you want to know all Financial Records for a specific date")
        print("5. Exit")
        fin=input("Enter Your Choice : ")
        if fin=='1':
            FS.AddFinancialRecord()
        elif fin=='2':
            FS.GetFinancialRecordById()
        elif fin=='3':
            FS.GetFinancialRecordsForEmployee()
        elif fin=='4':
            FS.GetFinancialRecordsForDate()
        elif fin=='5':
            self.main()
        else:
            print("Invalid Choice")
    else:
        print("Invalid Choice")

if __name__=='__main__':
    obj=Payxpert()
    obj.main()

```

# Output :

```
"E:\Python\Case Study PayXpert\.venv\Scripts\python.exe" "E:\Python\Case Study PayXpert\main.py"
Hi folks !! This is Pay Xpert
Choose from the following Options :
1. If you need help with the employee database
2. If you need help with the Payroll database
3. If you need help with the Tax database
4. If you need help with the Financial Record database
Now Enter Your Choice :
```

```
"E:\Python\Case Study PayXpert\.venv\Scripts\python.exe" "E:\Python\Case Study PayXpert\main.py"
Hi folks !! This is Pay Xpert
Choose from the following Options :
1. If you need help with the employee database
2. If you need help with the Payroll database
3. If you need help with the Tax database
4. If you need help with the Financial Record database
Now Enter Your Choice : 1
Employee Database Loading...
Now, Choose from the following options
1. If you want to know the age of employee
2. If you want employee Details
3. All the Employees working here
4. If you want to Add a new Employee
5. If you want to update database
6. If you want to delete the employee details from the database
7. Exit
Enter the choice : 1
Enter your EmployeeID for which you want to know the age : 5
The age of Employee whose employee ID is 5 = 43

Process finished with exit code 0
|
```

```
"E:\Python\Case Study PayXpert\.venv\Scripts\python.exe" "E:\Python\Case Study PayXpert\main.py"
Hi folks !! This is Pay Xpert
Choose from the following Options :
1. If you need help with the employee database
2. If you need help with the Payroll database
3. If you need help with the Tax database
4. If you need help with the Financial Record database
Now Enter Your Choice : 1
Employee Database Loading...
Now, Choose from the following options
1. If you want to know the age of employee
2. If you want employee Details
3. All the Employees working here
4. If you want to Add a new Employee
5. If you want to update database
6. If you want to delete the employee details from the database
7. Exit
Enter the choice : 2
Please enter your employeeID : 5
Here are the details of th employee :
Employee ID = 5
First name = Daniel
Last Name = Miller
Date Of Birth = 1980-07-05
Gender = Male
Email = daniel.miller@example.com
Phone Number = 777-888-9999
Address = 202 Oak St, City, Country
Position = Project Manager
Joining Date = 2022-05-15
Termination Date = 2023-10-30

Process finished with exit code 0
```

```
"E:\Python\Case Study PayXpert\.venv\Scripts\python.exe" "E:\Python\Case Study PayXpert\main.py"
Hi folks !! This is Pay Xpert
Choose from the following Options :
1. If you need help with the employee database
2. If you need help with the Payroll database
3. If you need help with the Tax database
4. If you need help with the Financial Record database
Now Enter Your Choice : 1
Employee Database Loading...
Now, Choose from the following options
1. If you want to know the age of employee
2. If you want employee Details
3. All the Employees working here
4. If you want to Add a new Employee
5. If you want to update database
6. If you want to delete the employee details from the database
7. Exit
Enter the choice : 3
John
Jane
Michael
Emily
Daniel
Eva
Andrew
Olivia
Matthew
Sophia
William
Emma
Christopher
Isabella
Alexander

Process finished with exit code 0
```

```

"E:\Python\Case Study PayXpert\.venv\Scripts\python.exe" "E:\Python\Case Study PayXpert\main.py"
Hi folks !! This is Pay Xpert
Choose from the following Options :
1. If you need help with the employee database
2. If you need help with the Payroll database
3. If you need help with the Tax database
4. If you need help with the Financial Record database
Now Enter Your Choice : 1
Employee Database Loading...
Now, Choose from the following options
1. If you want to know the age of employee
2. If you want employee Details
3. All the Employees working here
4. If you want to Add a new Employee
5. If you want to update database
6. If you want to delete the employee details from the database
7. Exit
Enter the choice : 5
Enter the employeeID you want to update : 2
Choose what you want to update :
1.First name
2.Last Name
3.Date Of Birth
4.Gender
5.Email
6.Phone Number
7.Address
8.Position
9.Joining Date
10.Termination Date
Enter your choice : 2
Enter Last Name : Foster
Updated Successfully

Process finished with exit code 0

```

```
mysql> select*from employee;
```

EmployeeID	FirstName	LastName	DateOfBirth	Gender	Email	PhoneNumber	Address	Position	JoiningDate	TerminationDate
1	John	Doe	1990-01-01	Male	john.doe@example.com	123-456-7890	123 Main St, City, Country	Software Developer	2022-01-01	NULL
2	Jane	Smith	1985-05-15	Female	jane.smith@example.com	987-654-3210	456 Oak St, City, Country	Software Developer	2022-02-15	2023-05-20
3	Michael	Jackson	1988-09-20	Male	michael.johnson@example.com	555-123-4567	789 Pine St, City, Country	Manager	2021-12-10	NULL
4	Emily	Davis	1993-03-12	Female	emily.davis@example.com	111-222-3333	101 Elm St, City, Country	HR Coordinator	2023-03-01	NULL
5	Daniel	Miller	1980-07-05	Male	daniel.miller@example.com	777-888-9999	202 Oak St, City, Country	Project Manager	2022-05-15	2023-10-30
6	Eva	Anderson	1992-04-18	Female	eva.anderson@example.com	444-555-6666	303 Cedar St, City, Country	Software Developer	2022-07-01	NULL
7	Andrew	Taylor	1987-11-25	Male	andrew.taylor@example.com	999-888-7777	505 Maple St, City, Country	Software Developer	2023-02-28	NULL
8	Olivia	Clark	1995-08-08	Female	olivia.clark@example.com	777-666-5555	707 Walnut St, City, Country	Manager	2022-04-15	2023-09-30
9	Matthew	Baker	1983-12-03	Male	matthew.baker@example.com	111-999-4444	909 Pine St, City, Country	Manager	2022-09-01	NULL
10	Sophia	Wright	1998-06-22	Female	sophia.wright@example.com	333-222-1111	101 Walnut St, City, Country	Software Developer	2023-01-10	2023-07-15
11	William	Harris	1991-02-15	Male	william.harris@example.com	666-777-8888	202 Cedar St, City, Country	HR Coordinator	2022-05-20	NULL
12	Emma	Martin	1989-09-30	Female	emma.martin@example.com	444-333-2222	404 Oak St, City, Country	HR Coordinator	2023-03-15	NULL
13	Christopher	Robinson	1981-07-12	Male	christopher.robinson@example.com	222-333-4444	606 Pine St, City, Country	Software Developer	2022-08-10	NULL
14	Isabella	Garcia	1994-05-29	Female	isabella.garcia@example.com	888-999-1111	303 Elm St, City, Country	Analyst	2023-04-01	NULL
15	Alexander	Young	1986-03-08	Male	alexander.young@example.com	555-444-3333	808 Maple St, City, Country	HR Coordinator	2022-10-15	NULL

```
15 rows in set (0.00 sec)
```

```
mysql> select*from employee;
```

EmployeeID	FirstName	LastName	DateOfBirth	Gender	Email	PhoneNumber	Address	Position	JoiningDate	TerminationDate
1	John	Doe	1990-01-01	Male	john.doe@example.com	123-456-7890	123 Main St, City, Country	Software Developer	2022-01-01	NULL
2	Jane	Foster	1985-05-15	Female	jane.smith@example.com	987-654-3210	456 Oak St, City, Country	Software Developer	2022-02-15	2023-05-20
3	Michael	Jackson	1988-09-20	Male	michael.johnson@example.com	555-123-4567	789 Pine St, City, Country	Manager	2021-12-10	NULL
4	Emily	Davis	1993-03-12	Female	emily.davis@example.com	111-222-3333	101 Elm St, City, Country	HR Coordinator	2023-03-01	NULL
5	Daniel	Miller	1980-07-05	Male	daniel.miller@example.com	777-888-9999	202 Oak St, City, Country	Project Manager	2022-05-15	2023-10-30
6	Eva	Anderson	1992-04-18	Female	eva.anderson@example.com	444-555-6666	303 Cedar St, City, Country	Software Developer	2022-07-01	NULL
7	Andrew	Taylor	1987-11-25	Male	andrew.taylor@example.com	999-888-7777	505 Maple St, City, Country	Software Developer	2023-02-28	NULL
8	Olivia	Clark	1995-08-08	Female	olivia.clark@example.com	777-666-5555	707 Walnut St, City, Country	Manager	2022-04-15	2023-09-30
9	Matthew	Baker	1983-12-03	Male	matthew.baker@example.com	111-999-4444	909 Pine St, City, Country	Manager	2022-09-01	NULL
10	Sophia	Wright	1998-06-22	Female	sophia.wright@example.com	333-222-1111	101 Walnut St, City, Country	Software Developer	2023-01-10	2023-07-15
11	William	Harris	1991-02-15	Male	william.harris@example.com	666-777-8888	202 Cedar St, City, Country	HR Coordinator	2022-05-20	NULL
12	Emma	Martin	1989-09-30	Female	emma.martin@example.com	444-333-2222	404 Oak St, City, Country	HR Coordinator	2023-03-15	NULL
13	Christopher	Robinson	1981-07-12	Male	christopher.robinson@example.com	222-333-4444	606 Pine St, City, Country	Software Developer	2022-08-10	NULL
14	Isabella	Garcia	1994-05-29	Female	isabella.garcia@example.com	888-999-1111	303 Elm St, City, Country	Analyst	2023-04-01	NULL
15	Alexander	Young	1986-03-08	Male	alexander.young@example.com	555-444-3333	808 Maple St, City, Country	HR Coordinator	2022-10-15	NULL

```
15 rows in set (0.00 sec)
```

```

"E:\Python\Case Study PayXpert\.venv\Scripts\python.exe" "E:\Python\Case Study PayXpert\main.py"
Hi folks !! This is Pay Xpert
Choose from the following Options :
1. If you need help with the employee database
2. If you need help with the Payroll database
3. If you need help with the Tax database
4. If you need help with the Financial Record database
Now Enter Your Choice : 1
Employee Database Loading...
Now, Choose from the following options
1. If you want to know the age of employee
2. If you want employee Details
3. All the Employees working here
4. If you want to Add a new Employee
5. If you want to update database
6. If you want to delete the employee details from the database
7. Exit
Enter the choice : 4
Enter the details of employee you want to add
Enter Frist Name : Manas
Enter Last Name : Rustagi
Enter Date of birth in the format 'YYYY-MM-DD' : 2002-06-16
Enter Gender (Male,Female) : Male
Enter the email address : manastrustagi10@gmail.com
Enter Phone Number : 7982681438
Enter Address : kanol bagh
Enter Position : PGET
Enter Joining Date in the format 'YYYY-MM-DD' :2024-02-01
Employee Added Successfully

Process finished with exit code 0
|

```

```
mysql> select*from employee;
```

EmployeeID	FirstName	LastName	DateOfBirth	Gender	Email	PhoneNumber	Address	Position	JoiningDate	TerminationDate
1	John	Doe	1990-01-01	Male	john.doe@example.com	123-456-7890	123 Main St, City, Country	Software Developer	2022-01-01	NULL
2	Jane	Foster	1985-05-15	Female	jane.smith@example.com	987-654-3210	456 Oak St, City, Country	Software Developer	2022-02-15	2023-05-20
3	Michael	Jackson	1988-09-20	Male	michael.johnson@example.com	555-123-4567	789 Pine St, City, Country	Manager	2021-12-10	NULL
4	Emily	Davis	1993-03-12	Female	emily.davis@example.com	111-222-3333	101 Elm St, City, Country	HR Coordinator	2023-03-01	NULL
5	Daniel	Miller	1980-07-05	Male	daniel.miller@example.com	777-888-9999	202 Oak St, City, Country	Project Manager	2022-05-15	2023-10-30
6	Eva	Anderson	1992-04-18	Female	eva.anderson@example.com	444-555-6666	303 Cedar St, City, Country	Software Developer	2022-07-01	NULL
7	Andrew	Taylor	1987-11-25	Male	andrew.taylor@example.com	999-888-7777	505 Maple St, City, Country	Software Developer	2023-02-28	NULL
8	Olivia	Clark	1995-08-08	Female	olivia.clark@example.com	777-666-5555	707 Walnut St, City, Country	Manager	2022-04-15	2023-09-30
9	Matthew	Baker	1983-12-03	Male	matthew.baker@example.com	111-999-4444	909 Pine St, City, Country	Manager	2022-09-01	NULL
10	Sophia	Wright	1998-06-22	Female	sophia.wright@example.com	333-222-1111	101 Walnut St, City, Country	Software Developer	2023-01-10	2023-07-15
11	William	Harris	1991-02-15	Male	william.harris@example.com	666-777-8888	202 Cedar St, City, Country	HR Coordinatorr	2022-05-20	NULL
12	Emma	Martin	1989-09-30	Female	emma.martin@example.com	444-333-2222	404 Oak St, City, Country	HR Coordinator	2023-03-15	NULL
13	Christopher	Robinson	1981-07-12	Male	christopher.robinson@example.com	222-333-4444	606 Pine St, City, Country	Software Developer	2022-08-10	NULL
14	Isabella	Garcia	1994-05-29	Female	isabella.garcia@example.com	888-999-1111	303 Elm St, City, Country	Analyst	2023-04-01	NULL
15	Alexander	Young	1986-03-08	Male	alexander.young@example.com	555-444-3333	808 Maple St, City, Country	HR Coordinator	2022-10-15	NULL

15 rows in set (0.00 sec)

```
mysql> select*from employee;
```

EmployeeID	FirstName	LastName	DateOfBirth	Gender	Email	PhoneNumber	Address	Position	JoiningDate	TerminationDate
1	John	Doe	1990-01-01	Male	john.doe@example.com	123-456-7890	123 Main St, City, Country	Software Developer	2022-01-01	NULL
2	Jane	Foster	1985-05-15	Female	jane.smith@example.com	987-654-3210	456 Oak St, City, Country	Software Developer	2022-02-15	2023-05-20
3	Michael	Jackson	1988-09-20	Male	michael.johnson@example.com	555-123-4567	789 Pine St, City, Country	Manager	2021-12-10	NULL
4	Emily	Davis	1993-03-12	Female	emily.davis@example.com	111-222-3333	101 Elm St, City, Country	HR Coordinator	2023-03-01	NULL
5	Daniel	Miller	1980-07-05	Male	daniel.miller@example.com	777-888-9999	202 Oak St, City, Country	Project Manager	2022-05-15	2023-10-30
6	Eva	Anderson	1992-04-18	Female	eva.anderson@example.com	444-555-6666	303 Cedar St, City, Country	Software Developer	2022-07-01	NULL
7	Andrew	Taylor	1987-11-25	Male	andrew.taylor@example.com	999-888-7777	505 Maple St, City, Country	Software Developer	2023-02-28	NULL
8	Olivia	Clark	1995-08-08	Female	olivia.clark@example.com	777-666-5555	707 Walnut St, City, Country	Manager	2022-04-15	2023-09-30
9	Matthew	Baker	1983-12-03	Male	matthew.baker@example.com	111-999-4444	909 Pine St, City, Country	Manager	2022-09-01	NULL
10	Sophia	Wright	1998-06-22	Female	sophia.wright@example.com	333-222-1111	101 Walnut St, City, Country	Software Developer	2023-01-10	2023-07-15
11	William	Harris	1991-02-15	Male	william.harris@example.com	666-777-8888	202 Cedar St, City, Country	HR Coordinator	2022-05-20	NULL
12	Emma	Martin	1989-09-30	Female	emma.martin@example.com	444-333-2222	404 Oak St, City, Country	HR Coordinator	2023-03-15	NULL
13	Christopher	Robinson	1981-07-12	Male	christopher.robinson@example.com	222-333-4444	606 Pine St, City, Country	Software Developer	2022-08-10	NULL
14	Isabella	Garcia	1994-05-29	Female	isabella.garcia@example.com	888-999-1111	303 Elm St, City, Country	Analyst	2023-04-01	NULL
15	Alexander	Young	1986-03-08	Male	alexander.young@example.com	555-444-3333	808 Maple St, City, Country	HR Coordinator	2022-10-15	NULL
16	Manas	Rustagi	2002-06-16	Male	manastrustagi10@gmail.com	7982681438	kanol bagh	PGET	2024-02-01	NULL

16 rows in set (0.00 sec)



```
"E:\Python\Case Study PayXpert\.venv\Scripts\python.exe" "E:\Python\Case Study PayXpert\main.py"
```

Hi folks !! This is Pay Xpert

Choose from the following Options :

1. If you need help with the employee database
2. If you need help with the Payroll database
3. If you need help with the Tax database
4. If you need help with the Financial Record database

Now Enter Your Choice : 2

Payroll Databasse Loading ...

Now, Choose from the following options :

1. If you want to generate payroll
2. IF you want to Payroll Details
3. If you want to know all Payrolls for an employee
4. If you want all payrolls for a specific period
5. Exit

Enter your choice : 3

Enter the employee Id for which you want Payrolls : 5

Here are the details :

Payroll Id : 5

Employee Id : 5

Pay period starting date : 2022-06-01

Pay period ending date : 2022-06-15

Base Salary : 70000

Overt time pay : 300

deductions : 500

Net salary : 69800

Process finished with exit code 0

|

```
"E:\Python\Case Study PayXpert\.venv\Scripts\python.exe" "E:\Python\Case Study PayXpert\main.py"
```

Hi folks !! This is Pay Xpert

Choose from the following Options :

1. If you need help with the employee database
2. If you need help with the Payroll database
3. If you need help with the Tax database
4. If you need help with the Financial Record database

Now Enter Your Choice : 2

Payroll Databasse Loading ...

Now, Choose from the following options :

1. If you want to generate payroll
2. IF you want to Payroll Details
3. If you want to know all Payrolls for an employee
4. If you want all payrolls for a specific period
5. Exit

Enter your choice : 4

Enter the Starting date in the format 'YYYY-MM-DD' : 2022-01-01

Enter the ending date in the format 'YYYY-MM-DD' : 2022-05-01

Here are the payroll for the given period :

Payroll Id : 1

Employee Id : 1

Pay period starting date : 2022-01-01

Pay period ending date : 2022-01-15

Base Salary : 50000

Overt time pay : 200

deductions : 300

Net salary : 49900

Payroll Id : 2

Employee Id : 2

Pay period starting date : 2022-02-01

Pay period ending date : 2022-02-15

Base Salary : 55000

Overt time pay : 150

deductions : 250

Net salary : 54900

```
"E:\Python\Case Study PayXpert\.venv\Scripts\python.exe" "E:\Python\Case Study PayXpert\main.py"
```

```
Hi folks !! This is Pay Xpert
```

```
Choose from the following Options :
```

1. If you need help with the employee database
2. If you need help with the Payroll database
3. If you need help with the Tax database
4. If you need help with the Financial Record database

```
Now Enter Your Choice : 2
```

```
Payroll Databasse Loading ...
```

```
Now, Choose from the following options :
```

1. If you want to generate payroll
2. If you want to Payroll Details
3. If you want to know all Payrolls for an employee
4. If you want all payrolls for a specific period
5. Exit

```
Enter your choice : 5
```

```
Hi folks !! This is Pay Xpert
```

```
Choose from the following Options :
```

1. If you need help with the employee database
2. If you need help with the Payroll database
3. If you need help with the Tax database
4. If you need help with the Financial Record database

```
Now Enter Your Choice : 3
```

```
Tax Database Loading...
```

```
Now, Choose from the following options
```

1. If you want to Calculate Tax
2. If you want to Know tax details
3. If you want to know all Taxes for an employee
4. If you want to know all taxes in a year
5. Exit

```
Enter your Choice : 1
```

```
Enter the employee Id for which you want tax : 5
```

```
Here are the details :
```

```
Tax ID : 5
```

```
Employee Id : 5
```

```
Tax Year : 2022
```

```
Taxable Income : 69800
```

```
Tax Amount : 6980
```

```
"E:\Python\Case Study PayXpert\.venv\Scripts\python.exe" "E:\Python\Case Study PayXpert\main.py"
```

```
Hi folks !! This is Pay Xpert
```

```
Choose from the following Options :
```

1. If you need help with the employee database
2. If you need help with the Payroll database
3. If you need help with the Tax database
4. If you need help with the Financial Record database

```
Now Enter Your Choice : 3
```

```
Tax Database Loading...
```

```
Now, Choose from the following options
```

1. If you want to Calculate Tax
2. If you want to Know tax details
3. If you want to know all Taxes for an employee
4. If you want to know all taxes in a year
5. Exit

```
Enter your Choice : 4
```

```
Enter the Year for which you want taxes : 2021
```

```
No taxes Found
```

```
Process finished with exit code 0
```

```
|
```

```

"E:\Python\Case Study PayXpert\.venv\Scripts\python.exe" "E:\Python\Case Study PayXpert\main.py"
Hi folks !! This is Pay Xpert
Choose from the following Options :
1. If you need help with the employee database
2. If you need help with the Payroll database
3. If you need help with the Tax database
4. If you need help with the Financial Record database
Now Enter Your Choice : 4
Financial Record Loading...
Now, Choose from the following options
1. If you want to add a financial record
2. If you want to Financial Record details
3. If you want to know all financial records for an employee
4. If you want to know all Financial Records for a specific date
5. Exit
Enter Your Choice : 1
Enter the Employee Id : 5
Enter the record date in the format 'YYYY-MM-DD' : 2024-02-01
Enter the description : phone
Enter the amount : 5000
Enter the Record type from three options ('Income','Expense','Tax Payment') : Expense
Successfully Added

Process finished with exit code 0
|

```

```
mysql> select*from financialrecord;
```

RecordID	EmployeeID	RecordDate	Description	Amount	RecordType
1	1	2022-01-05	Income	2000	Income
2	2	2022-02-10	Expense	500	Expense
3	3	2022-02-20	Income	2500	Income
4	4	2023-03-10	Expense	300	Expense
5	5	2022-06-05	Income	3500	Income
6	6	2022-08-05	Income	2500	Income
7	7	2023-03-20	Expense	700	Expense
8	8	2022-05-10	Income	3000	Income
9	9	2022-10-20	Expense	800	Expense
10	10	2023-02-05	Income	2000	Income
11	11	2022-06-20	Expense	600	Expense
12	12	2023-04-20	Income	3500	Income
13	13	2022-09-10	Expense	900	Expense
14	14	2023-05-05	Income	4000	Income
15	15	2022-11-05	Expense	700	Expense
16	5	2024-02-01	phone	5000	Expense

```
16 rows in set (0.00 sec)
```

```
"E:\Python\Case Study PayXpert\.venv\Scripts\python.exe" "E:\Python\Case Study PayXpert\main.py"
Hi folks !! This is Pay Xpert
Choose from the following Options :
1. If you need help with the employee database
2. If you need help with the Payroll database
3. If you need help with the Tax database
4. If you need help with the Financial Record database
Now Enter Your Choice : 4
Financial Record Loading...
Now, Choose from the following options
1. If you want to add a financial record
2. If you want to Financial Record details
3. If you want to know all finacial records for an employee
4. If you want to know all Financial Records for a specific date
5. Exit
Enter Your Choice : 3
Enter the employee Id for which you want record : 5
Here are the details :
Record ID : 5
Employee Id : 5
Record Date : 2022-06-05
Description : Income
Amount : 3500
Record Type : Income

Record ID : 16
Employee Id : 5
Record Date : 2024-02-01
Description : phone
Amount : 5000
Record Type : Expense

Process finished with exit code 0
|
```

## Exception

```
"E:\Python\Case Study PayXpert\.venv\Scripts\python.exe" "E:\Python\Case Study PayXpert\main.py"
Hi folks !! This is Pay Xpert
Choose from the following Options :
1. If you need help with the employee database
2. If you need help with the Payroll database
3. If you need help with the Tax database
4. If you need help with the Financial Record database
Now Enter Your Choice : 4
Financial Record Loading...
Now, Choose from the following options
1. If you want to add a financial record
2. If you want to Financial Record details
3. If you want to know all finacial records for an employee
4. If you want to know all Financial Records for a specific date
5. Exit
Enter Your Choice : 4
Enter the record date in the format 'YYYY-MM-DD' : 2024-05-01
Traceback (most recent call last):
  File "E:\Python\Case Study PayXpert\main.py", line 121, in <module>
    obj.main()
  File "E:\Python\Case Study PayXpert\main.py", line 109, in main
    FS.GetFinancialRecordsForDate()
  File "E:\Python\Case Study PayXpert\Entity\FinancialRecordService.py", line 79, in GetFinancialRecordsForDate
    raise FinancialRecordException
Exception.Exceptions.FinancialRecordException: Financial record management error

Process finished with exit code 1
|
```

```
main.py Exceptions.py Test_Unittest.py x FinancialRecordService.py PayrollService.py EmployeeService.py DB_connection.py
import unittest
2
3 from util.DB_connection import DBConnector
4 from Entity.EmployeeService import employeeservice
5 from Entity.PayrollService import payrollservice
6 db_connector = DBConnector(host="localhost", user="root", password="root", port: 3306, database="payxpert")
7
8 esl = employeeservice(db_connector)
9 psl = payrollservice(db_connector)
10
11
12
13 class PayrollSystemTestCase(unittest.TestCase):
14     db_connector = DBConnector(host="localhost", user="root", password="root", port: 3306, database="payxpert")
15     def test_calculate_net_salary_after_deductions(self):
16         self.db_connector.open_connection()
17         cur = self.db_connector.connection.cursor()
18         query = 'SELECT NetSalary, Overtime, Deductions FROM payroll'
19         netCheck = []
20         cur.execute(query)
21         record=cur.fetchall()
22         for NetSalary, Overtime, ded in record:
23             netCheck.append(int(NetSalary + Overtime - ded))
24         expected_net_salary = netCheck
25         actual_net_salary = psl.CalculateSalary(record[0],record[1],record[2])
26         self.assertEqual(actual_net_salary, expected_net_salary)
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