EXPERIMENT-3

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(A) Classes,Objects, Constructors, Inner class and Static method.

Code:

```
# -*- coding: utf-8 -*-
"""
@author: jkfrason
"""
class Employee():
    'Common base class for all employees'
    empCount = 0

    #constructor
    def __init__(self, eid, name, salary, did):
        self.eid = eid
        self.name = name
        self.salary = salary
        self.did = did
        Employee.empCount += 1

     #instance method
    def displayEmployee(self):
        print("eid : ", self.eid,", Name : ", self.name,  ", Salary: ", self.salary,  ", did: ", self.did)

    @staticmethod
    def info(msg):
        print("Total Employee %d" % Employee.empCount)

"This would create first object of Employee class"
emp1 = Employee(1,"Millena", 2000,10)
"This would create second object of Employee class"
emp2 = Employee(2,"Frason", 4000,20)
emp1.displayEmployee()
emp2.displayEmployee()

Employee.info("calling the static method")
```

```
In [21]: runcell(0, 'C:/Users/jkfra/Desktop/Py-Labs/EXP-3a.py')
eid :  1 , Name :  Millena , Salary:  2000 , did:  10
eid :  2 , Name :  Frason , Salary:  4000 , did:  20
Total Employee 2
```

(B) Different types of Inheritance

Code:

person.py

```
class Person:
    def __init__(self, first_name, last_name, age):
        self.first_name = first_name
        self.last_name = last_name
        self.age = age

    def introduce(self):
        return f"Hi. I'm {self.full_name}. I'm {self.age} years old."

    @property
    def age(self):
        return self.__age

    @age.setter
    def age(self, value):
        if value <= 0:
            raise ValueError('Age is not valid')

        self.__age = value

    @property
    def full_name(self):
        return f"{self.first_name} {self.last_name}"
```

employee.py

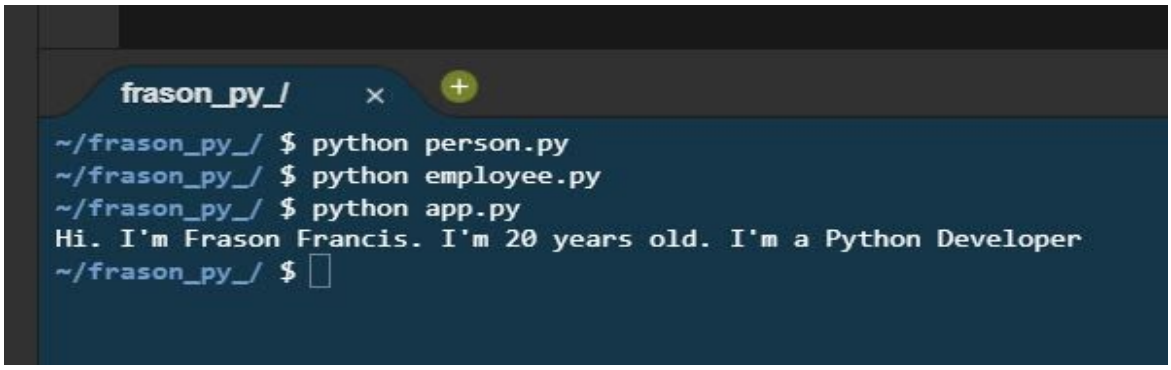
```
#importing the class from the person for
#code resusebality.

from person import Person


class Employee(Person):

    def __init__(self, first_name, last_name, age, job_title, salary):
        super().__init__(first_name, last_name, age)

        self.job_title = job_title
        self.salary = salary
```

```
    @property
    def job_title(self):
        return self.__job_title

    @job_title.setter
    def job_title(self, value):
        self.__job_title = value

    @property
    def salary(self):
        return self.__salary

    @salary.setter
    def salary(self, value):
        if value < 0:
            raise ValueError('Salary must be greater than zero.')

        self.__salary = value

    def introduce(self):
        introduction = super().introduce()
        introduction += f" I'm a {self.job_title}"
        return introduction
```

app.py

```
from employee import Employee

employee = Employee('Frason', 'Francis', 20 , 'Python Developer', 120000)
print(employee.introduce())
```

Output:



- Used inheritance to model the is-a relationship.
- Inheritance allows a class to inherit attributes and methods from another class.
- Inheritance promotes code reusability by reusing code from an existing class.

(C) Polymorphism using Operator overloading, Method overloading, Method overriding, Abstract class, Abstract method and Interfaces in Python.

```
class Employee:
     def salary(self):
       pass

class tester(Employee):
   def job(self,hours):
       print("Working hours excluding snacks = ", 100*hours)

   def intern(self):
       return "New to the company"

class analyst(Employee):
   def analyse(self,hours,snacks):
       print("Working hours including snacks = ",100*hours*snacks)


class manager(Employee):
   def __init__(self, length):
       super().__init__("Square")
       self.length = length


obj1 = tester()
obj1.job(7) #working for 7 hours
print(obj1.intern())
obj2 = analyst()
obj2.analyse(10,2) #no. of snack taken 2
```

```
In [17]: runcell(0, 'C:/Users/jkfra/Desktop/Py-Labs/untitled4.py')
Working hours excluding snacks =  700
New to the company
Working hours including snacks =  2000
```