ITS66704 Advanced Programming

Week 3 Tutorial

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Student Name	Student ID
Kushal Pandey	0355572

EXERCISE : Modify **EmployeeThree** program with the following requirements

1. Add attribute YearBorn to Manager and Officer

   The year born data are as follows :

   a. Joyah = 1965
   b. Mat = 1974
   c. Minah = 1983

2. Display details showing age assuming current year is 2014.

3. Add class clerk. Clerks are not entitled to company car or petrol allowance but they may get Cost of Living allowance (COLA).

4. Add a clerk and show the details. Name "Selamat" , Salary RM800, Year Born 1978, COLA RM50.

5. Redraw the class diagram to reflect the modified program

Program code of the modified program

EmployeeThree.java (Superclass definition)

```java
package week3;

3 inheritors
public class EmployeeThree {

    private final String name;
    private double salary;
    private boolean status;

    EmployeeThree(String n, double s) {
        name = n;
        salary = s;
        status = true;
    }

    public double getSalary() { return salary; }

    public void setSalary(double s) {
        if (s < 25000)
            salary = s;
    }

    public String getName() { return name; }

    public String getStatus() { return status ? "active" : "resigned"; }

    public void resigned() { status = false; }

    public void displayDetail() {
        System.out.println("==========================");
        System.out.println("NAME : " + name);
        System.out.println("SALARY : " + salary);
        System.out.println("STATUS : " + getStatus());
    }
}
```

Officer.java (Subclass definition)

```java
package week3;

public class Officer extends EmployeeThree {
    private final double petrol;
    private final int yearborn;

    public Officer(String n, double s, double p, int y) {
        super(n, s);
        petrol = p;
        yearborn = y;
    }

    public double getPetrol() { return petrol; }

    public int getAge(){
        return (2014 - yearborn);
    }

    @Override
    public void displayDetail() {
        super.displayDetail();
        System.out.println("AGE : " + getAge());
        System.out.println("PETROL : " + petrol);

    }
}
```

Manager.java (Subclass definition)

```java
package week3;

public class Manager extends EmployeeThree {
    private final String car;
    private final int  yearborn;

    public Manager(String n, double s, String c, int y) {
        super(n, s);
        car = c;
        yearborn = y;

    }

    public String getCar() { return car; }

    public int getAge() {
        return (2014 - yearborn);
    }

    @Override
    public void displayDetail() {

        super.displayDetail();
        System.out.println("AGE : " + getAge());
        System.out.println("CAR : " + car);
    }
}
```

Clerk.java (Subclass definition)

```java
package week3;

public class Clerk extends EmployeeThree{
    private final double cola;
    private final int yearborn;

    public Clerk(String n, double s, int y, double c){
        super(n,s);
        cola = c;
        yearborn = y;
    }

    public int getAge(){
        return (2014 - yearborn);

    }

    @Override
    public void displayDetail(){
        super.displayDetail();
        System.out.println("AGE : " + getAge());
        System.out.println("COLA : " + cola);
    }

}
```

MyCompanyThree.java (Main Program)

```java
package week3;

public class MyCompanyThree {
    public void init() {
        Officer staff1 = new Officer( n: "Joyah",  s: 3000,  p: 300, y: 1965);
        Officer staff2 = new Officer( n: "Mat",  s: 2000,  p: 100,  y: 1974);
        Manager staff3 = new Manager( n: "Minah",  s: 8000, c: "Honda Accord",  y: 1983);
        Clerk staff4 = new Clerk( n: "Selamat",  s: 800,  y: 1978,  c: 50);
        staff1.displayDetail();
        staff2.displayDetail();
        staff3.displayDetail();
        staff2.resigned();
        staff2.displayDetail();
        staff4.displayDetail();
    }
    public static void main(String[] args) {
        MyCompanyThree mct = new MyCompanyThree();
        mct.init();
    }
}
```

Program Output

```
C:\Users\Kushal\.jdks\openjdk-20\bin\java.exe "-javaagent:C:\Program Files\JetBrains\

========================
NAME : Joyah

SALARY : 3000.0

STATUS : active

AGE : 49

PETROL : 300.0

========================
NAME : Mat

SALARY : 2000.0

STATUS : active

AGE : 40

PETROL : 100.0

========================
NAME : Minah

SALARY : 8000.0

STATUS : active

AGE : 31

CAR : Honda Accord

========================
NAME : Mat
SALARY : 2000.0
STATUS : resigned
AGE : 40
PETROL : 100.0
========================
NAME : Selamat
SALARY : 800.0
STATUS : active
AGE : 36
COLA : 50.0


Process finished with exit code 0
```

Kushal Pandey (0355572)

Class Diagram

EmployeeThree

String :: name
double :: salary
boolean :: status

EmployeeThree()
getSalary()
setSalary()
getName()
getStatus()
resigned()
displayDetail()

Officer

int :: yearBorn
double :: petrol

Officer()
getPetrol()
getAge()
displayDetail()

Clerk

int :: yearBorn
double :: COLA

Clerk()
getCOLA()
getAge()
displayDetail()

Manager

int :: yearBorn
String : car

Manaeer()
getCar()
getAge()
displayDetail()

MyCompanyThree

init()
main()

Kushal Pandey (0355572)