Java Programming 과제 #03

제출파일: Employee.java, Staff.java, Engineer.java, EmployeeEx.java

1. 어느 회사에 근무하는 직원들을 저장하고 관리하기 위한 클래스를 생성하고, 각 직원들의 신상 정보를 입력할 수 있는 프로그램을 작성하시오. (20점)

- 상속을 사용하지 않는 경우: -10점 감점

■ 4개의 클래스 파일 생성

- Employee: 직원 정보 관리 클래스, 공통 항목 관리 (상위 클래스)
- Staff:사무실 직원 관리 클래스 (Employee에서 상속 받음)
- Engineer: 개발자 관리 클래스 (Employee에서 상속 받음)
- EmployeeEx: main() 함수 및 메뉴 기능이 있는 클래스

■ Employee 클래스 구현

- 모든 멤버 변수는 private로 선언해서 사용
- 나이 입력 함수: public void setAge(int age)
- 직위 입력 함수: public void setPosition(String position)
- 이름 입력 함수: public void setName(String firstname, String lastname)
  - ✓ First name과 last name을 하나의 문자열 변수에 저장함
- 월급 입력 함수: public void setSalary(int salary)
- 한 명의 직원 정보 출력 함수: public void printEmployee()
  - ✓ 이름, 나이, 직위 순으로 모두 출력
- 이름 반환 함수: public String getName()
- 월급 반환 함수: public int getSalary()
- 직위 반환 함수: public String getPosition()
- 나이 반환 함수: public int getAge()

■ Staff 클래스: Employee 클래스에서 상속받음 (5점)

- 사무실 직원 관리 클래스
- 연봉 계산 함수(월급x12): public int getAnnualSalary() (2점)
- Staff 멤버 출력 함수: public void printEmployee()를 오버라이딩함 (3점)
  - ✓ 이름, 나이, 직위, 월급, 연봉 순서로 화면 출력

■ Engineer 클래스: Employee 클래스에서 상속받음 (9점)

- 개발자 관리 클래스
- Engineer 멤버 출력 함수: public void printEmployee()를 오버라이딩함 (3점)
  - ✓ 이름, 나이, 직위, 초과 근무 비용, 월급, 연봉 순서로 화면 출력
- 매달 초과 근무 일수 저장 (고정): public void setOverworkingDay(int day) **(2점)**
- 초과 근무 비용 계산 (하루 3만원): public int getOverworkingPay() **(2점)**
- 연봉 계산 함수: (월급+ 초과근무수당)x12 (2점)
  - ✓ public int getAnnualSalary() 함수

■ EmployeeEx 클래스 구현 내용 (6점)

- 메뉴 출력 및 선택 메뉴에 대한 Staff 및 Engineer 클래스의 함수 호출
  - ✓ 잘못된 번호 입력 시 에러 메시지 출력 (실행 결과 참고)

- Engineer 및 Staff 각각 최대 3명의 직원 정보를 저장할 수 있도록 객체 배열 사용

총 6개의 메뉴 (각 1점, 0.Quit 제외)

```
1. Display all employees' information (Staff, Engineer)
2. Display all staffs' information
3. Display all engineers' information
4. Display all employees' name, salary, annual salary
5. Display all employees' name, position
6. Display statistics of annual salary
0. Quit
```

Staff 저장 내용

이름	나이	직위	월급(만원)
John Smith	25	Newcomer	300
Marry Anne	45	Executive	600
Sue Jones	38	Office manager	450

Engineer 저장 내용

이름	나이	직위	월급(만원)	매달초과근무일수
Bob Lewis	28	Junior Engineer	350	17
Lisa Barnes	37	Senior Engineer	580	20
Michael Kevin	46	SW Manager	650	20

- 직원 정보는 사전에 입력하면 됨 (Staff 및 Engineer 객체 값 저장 예제)

```
    staffs[0].setName("John", "Smith");
    staffs[0].setAge(25);
    staffs[0].setPosition("Newcomer");
    staffs[0].setSalary(300);

    engineers[0].setName("Bob", "Lewis");
    engineers[0].setAge(28);
    engineers[0].setPosition("Junior Engineer");
    engineers[0].setSalary(350);
    engineers[0].setOverWorkingDay(17);
```

실행 결과

```
========================================================
1. Display all employees' information (Staff, Engineer)
2. Display all staffs' information
3. Display all engineers' information
4. Display all employees' name, salary, annual salary
5. Display all employees' name, position
6. Display statistics of annual salary
0. Quit
========================================================
-> 1
[Staff]
           Name  Age         Position     Salary    Annual Salary
--------------------------------------------------------------------
     John Smith   25        Newcommer        300             3600
     Marry Anne   45        Executive        600             7200
      Sue Jones   38   Office Manager        450             5400
[Engineer]
           Name  Age         Position  Overworking Pay     Salary    Annual Salary
-----------------------------------------------------------------------------------
      Bob Lewis   28  Junior Engineer               51        350             4812
    Lisa Barnes   37  Senior Engineer               60        580             7680
  Michael Kevin   46       SW Manager               60        650             8520
========================================================
1. Display all employees' information (Staff, Engineer)
2. Display all staffs' information
3. Display all engineers' information
4. Display all employees' name, salary, annual salary
5. Display all employees' name, position
6. Display statistics of annual salary
0. Quit
========================================================
-> 2
[Staff]
           Name  Age         Position     Salary    Annual Salary
--------------------------------------------------------------------
     John Smith   25        Newcommer        300             3600
     Marry Anne   45        Executive        600             7200
      Sue Jones   38   Office Manager        450             5400
========================================================
1. Display all employees' information (Staff, Engineer)
2. Display all staffs' information
3. Display all engineers' information
4. Display all employees' name, salary, annual salary
5. Display all employees' name, position
6. Display statistics of annual salary
0. Quit
========================================================
-> 3
[Engineer]
```

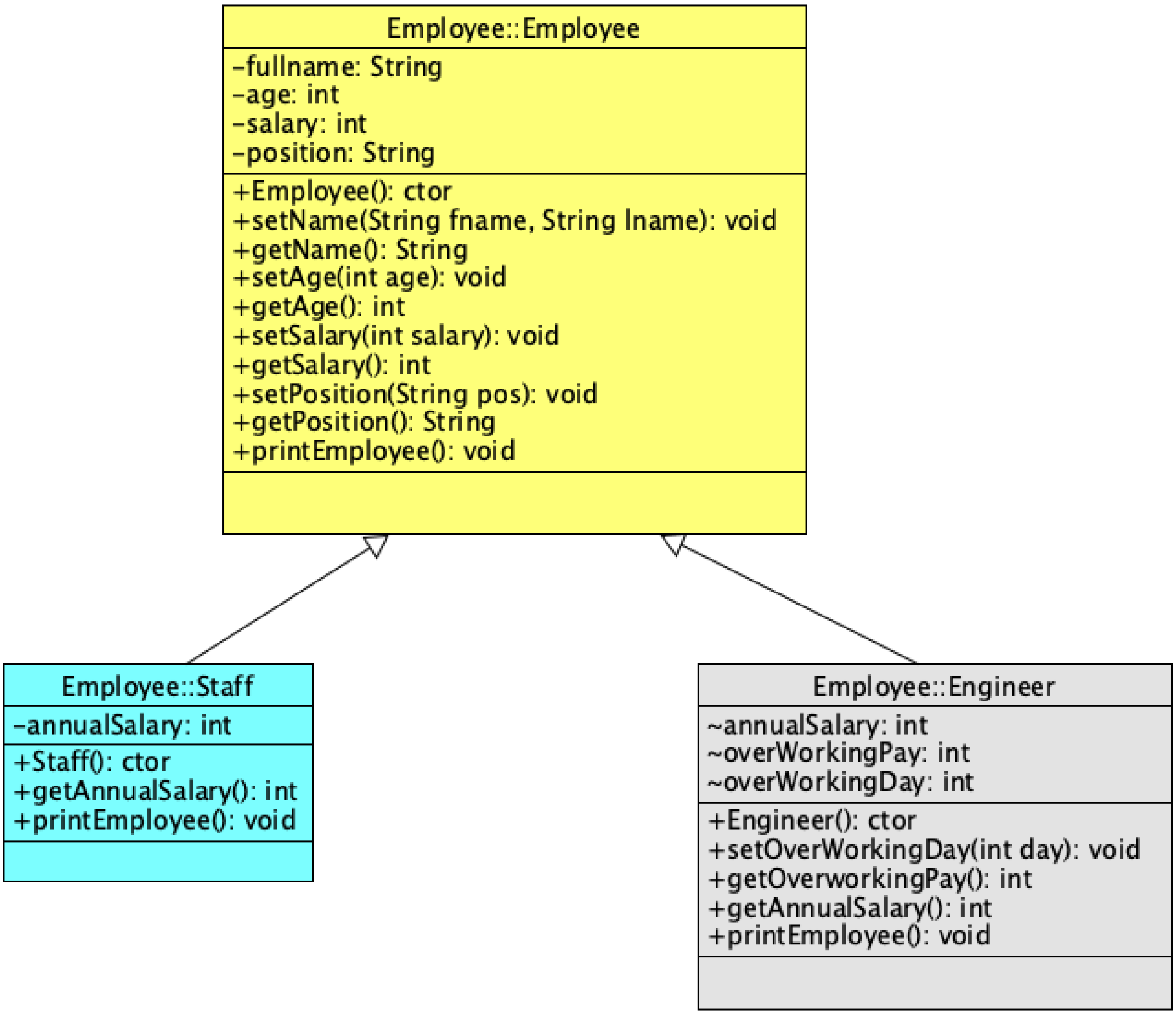
```
           Name  Age         Position  Overworking Pay     Salary    Annual Salary
-----------------------------------------------------------------------------------
      Bob Lewis   28  Junior Engineer               51        350             4812
    Lisa Barnes   37  Senior Engineer               60        580             7680
  Michael Kevin   46       SW Manager               60        650             8520
========================================================
1. Display all employees' information (Staff, Engineer)
2. Display all staffs' information
3. Display all engineers' information
4. Display all employees' name, salary, annual salary
5. Display all employees' name, position
6. Display statistics of annual salary
0. Quit
========================================================
-> 4
[Staff]
           Name     Salary    Yearly Salary
----------------------------------------------------
     John Smith      300           3600
     Marry Anne      600           7200
      Sue Jones      450           5400

[Engineer]
           Name     Salary    Yearly Salary
----------------------------------------------------
      Bob Lewis      350           4812
    Lisa Barnes      580           7680
  Michael Kevin      650           8520
========================================================
1. Display all employees' information (Staff, Engineer)
2. Display all staffs' information
3. Display all engineers' information
4. Display all employees' name, salary, annual salary
5. Display all employees' name, position
6. Display statistics of annual salary
0. Quit
========================================================
-> 5
[Staff]
           Name             Position
----------------------------------------------------
     John Smith            Newcommer
     Marry Anne            Executive
      Sue Jones       Office Manager

[Engineer]
           Name             Position
----------------------------------------------------
      Bob Lewis      Junior Engineer
    Lisa Barnes      Senior Engineer
  Michael Kevin           SW Manager
```

```
========================================================
1. Display all employees' information (Staff, Engineer)
2. Display all staffs' information
3. Display all engineers' information
4. Display all employees' name, salary, annual salary
5. Display all employees' name, position
6. Display statistics of annual salary
0. Quit
========================================================
-> 6
[0000]:
[1000]:
[2000]:
[3000]: #
[4000]: #
[5000]: #
[6000]:
[7000]: ##
[8000]: #
[9000]:
========================================================
1. Display all employees' information (Staff, Engineer)
2. Display all staffs' information
3. Display all engineers' information
4. Display all employees' name, salary, annual salary
5. Display all employees' name, position
6. Display statistics of annual salary
0. Quit
========================================================
-> 7
Wrong input. Try again!
========================================================
1. Display all employees' information (Staff, Engineer)
2. Display all staffs' information
3. Display all engineers' information
4. Display all employees' name, salary, annual salary
5. Display all employees' name, position
6. Display statistics of annual salary
0. Quit
========================================================
-> -1
Wrong input. Try again!
========================================================
1. Display all employees' information (Staff, Engineer)
2. Display all staffs' information
3. Display all engineers' information
4. Display all employees' name, salary, annual salary
5. Display all employees' name, position
6. Display statistics of annual salary
0. Quit
========================================================
-> 0
Bye!
```

Class Diagram


Employee::Employee
-fullname: String
-age: int
-salary: int
-position: String
+Employee(): ctor
+setName(String fname, String lname): void
+getName(): String
+setAge(int age): void
+getAge(): int
+setSalary(int salary): void
+getSalary(): int
+setPosition(String pos): void
+getPosition(): String
+printEmployee(): void
Employee::Staff
-annualSalary: int
+Staff(): ctor
+getAnnualSalary(): int
+printEmployee(): void
Employee::Engineer
~annualSalary: int
~overWorkingPay: int
~overWorkingDay: int
+Engineer(): ctor
+setOverWorkingDay(int day): void
+getOverworkingPay(): int
+getAnnualSalary(): int
+printEmployee(): void