

**Final Assignment**

Course Code : CSE214

Course Title : Object oriented programming.

Assignment Topic : OOP problem solving.

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**UML**

|  |
| --- |
| Employee |
| -employeeID: int  -name: String  -salary: double |
| +Employee(employeeID:int,name:string,salary:double)  +getEmployeeID(): int  +getName(): String  +getSalary(): double  +toString(): String  +totalSalary(employee:[]Employee): double |

|  |
| --- |
| Administrator |
| -department: String |
| +getDepartment(): String  +toString(): String |

|  |
| --- |
| SupportStuff |
| -jobTitle: String |
| +getJobTitle: String  +toString(): String |

|  |
| --- |
| Main |
|  |
| +main(String[] args): void |

|  |
| --- |
| Professor |
| -subjectOfExpertise: String |
| +getSubjectOfExpertise(): String  +toString(): String |

**JAVA CODE**

**Employee.java**

//Employee super class which have the following attributes and method.

**public** **abstract** **class** **Employee** {

**private** **int** employeeID; // unique identifier of an employee

**private** String name; // the of the employee

**private** **double** salary;// salary of the employee

// constructor for assigning value to variables

**public** **Employee**(**int** employeeID, String name, **double** salary) {

**this**.employeeID = employeeID;

**this**.name = name;

**this**.salary = salary;

}

// get method of employeeID. Tt can return employeeID to other class.

**public** **int** **getEmployeeID**() {

**return** employeeID;

}

// get method of name. It can return name to other class.

**public** String **getName**() {

**return** name;

}

// get method of salary. It can return salary to other class.

**public** **double** **getSalary**() {

**return** salary;

}

// toString() method can return the details of employee with string format

**public** String **toString**() {

**return** "Employee ID: " + employeeID + ", Name: " + name + ", Salary: " + salary + " Tk.";

}

// total salary method can sum of all employees salary and return total sum

**public** **static** **double** **totalSalary**(Employee[] employees) {

**double** total = **0**;

**for** (Employee employee : employees) {

total += employee.getSalary();

}

**return** total;

}

}

**Professor.java**

// Professor subclass

**public** **class** **Professor** **extends** Employee {

**private** String subjectOfExpertise; // subject that the professor expert in

// constructor for assign value

**public** **Professor**(**int** employeeID, String name, **double** salary, String subjectOfExpertise) {

**super**(employeeID, name, salary);

**this**.subjectOfExpertise = subjectOfExpertise;

}

// this method return subjectOfExpertise

**public** String **getSubjectOfExpertise**() {

**return** subjectOfExpertise;

}

//this method override the super class method to include subjectOfExpertise

**public** String **toString**() {

**return** **super**.toString() + ", Subject of Expertise: " + subjectOfExpertise;

}

}

**Administrator.java**

// Administrator subclass

**public** **class** **Administrator** **extends** Employee {

**private** String department; // the department that the administrator work in

// constructor for assign value

**public** **Administrator**(**int** employeeID, String name, **double** salary, String department) {

**super**(employeeID, name, salary);

**this**.department = department;

}

// this method return department

**public** String **getDepartment**() {

**return** department;

}

//this method override the super class method to include department

**public** String **toString**() {

**return** **super**.toString() + ", Department: " + department;

}

}

**SupportStuff.java**

// SupportStuff subclass

**public** **class** **SupportStuff** **extends** Employee {

**private** String jobTitle; // the job title of supportStuff

// constructor for assign value

**public** **SupportStuff**(**int** employeeID, String name, **double** salary, String jobTitle) {

**super**(employeeID, name, salary);

**this**.jobTitle = jobTitle;

}

// this method return jobTitle

**public** String **getJobTitle**() {

**return** jobTitle;

}

// this method override the super class method to include the jobTitle

**public** String **toString**() {

**return** **super**.toString() + ", Job Title: " + jobTitle;

}

}

**Main.java**

// this class contain main method

**public** **class** **Main** {

**public** **static** **void** **main**(String[] args) {

// create required object for each class

Professor professor1 = **new** Professor(**5658**, "Abdullah Al Mahmud", **90000.00**, "CSE");

Professor professor2 = **new** Professor(**4827**, "Raihan Hossain", **100000.00**, "SWE");

Administrator administrator1 = **new** Administrator(**5688**, "Rakibul hassan Akash", **70000.00**, "Finance");

SupportStuff supportStuff1 = **new** SupportStuff(**4652**, "Moinul Islam", **60000.00**, "IT Support");

// print the details of each object

System.out.println(professor1);

System.out.println(professor2);

System.out.println(administrator1);

System.out.println(supportStuff1);

// create an array which store the details of each employee

Employee[] employees = {professor1, professor2, administrator1, supportStuff1};

// call totalSalary for calculating the summation of all employee's salary

**double** totalSalary = Employee.totalSalary(employees);

// print the total salary of all employee

System.out.println("Total salary of all employees: " + totalSalary + " Tk.");

}

}

**OUTPUT:**

**Text

Description automatically generated**

**GitHub Repository Link:**

[**https://github.com/mahmud5658/OOP\_final\_assignment\_theory**](https://github.com/mahmud5658/OOP_final_assignment_theory)