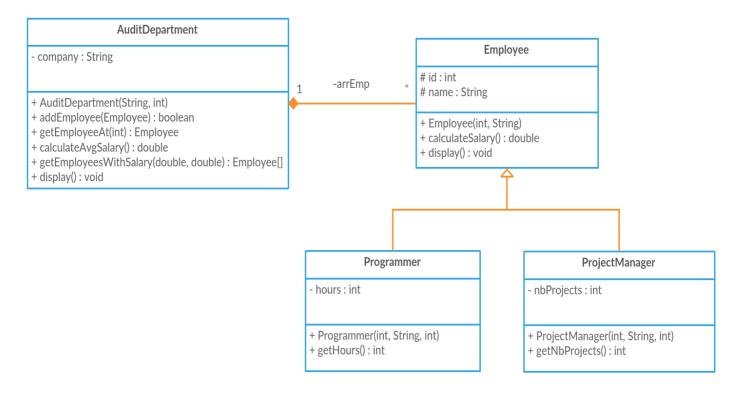
King Saud University

College of Computer and Information Sciences Department of Computer Science

CSC113 - Computer Programming II - Exception Handling Lab - Fall 2017



Employee class:

- Attributes:
 - o id: ID of the employee
 - o *name:* name of the employee
- Methods:
 - o *Employee(int id, String name):* constructor
 - o *calculateSalary():* calculates monthly salary as following:
 - *for Programmers:* hours * 55 * 30
 - for ProjectManagers: nbProjects * 500 * 30
 - o display(): displays the id, name, and salary of the employee

Programmer class:

- Attributes:
 - o hours: the number of daily work hours for the programmer
- Methods:
 - o Programmer(int id, String name, int hours): constructor
 - getHours(): returns the number of hours of the programmer

ProjectManager class:

- Attributes:
 - o *nbProjects*: the number of projects the manager is working on
- Methods:

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- o ProjectManager(int id, String name, int nbProjects): constructor
- o getNbProjects(): returns the number of projects the manager is working on

AuditDepartment class:

- Attributes:
 - o *company*: the name of the company the department belongs to
- Methods:
 - o AuditDepartment(String company, int size): constructor
 - Throws a NegativeArraySizeException when created with a negative size
 - o addEmployee(Employee e): adds Employee e in the department
 - o getEmployeeAt(int i): returns the Employee at index i
 - Throws an *ArrayIndexOutOfBoundsException* when *i* is out of bounds
 - Throws a *NullPointerException* when employee at i is null
 - o *calculateAvgSalary():* calculates the average salary for all employees
 - Throws an *ArithmeticException* when dividing by zero
 - o *getEmployeesWithSalary(double lower, double upper):* returns an array of employees having salaries between *lower* and *upper* bounds inclusive
 - Throws an *IllegalArgumentException* when *from* is larger than *to*
 - o *dispay*(): displays the information of all employees in the department

Exercise 1: Translate into Java code classes *Employee*, *Programmer*, *ProjectManager*, and *AuditDepartment*.

Exercise 2: Create a main class that tests the functionalities of the previous classes. The main class should display an interactive menu for the user in the following way:

- Please enter the name of the company and the number of employees in the Audit Department:
 - To add an employee, enter 1
 - o Enter 1 for a Programmer, or 2 for a ProjectManager
 - ...Proceed to take the required info
 - To print the info of an employee, enter 2
 - o Enter the index of the employee
 - To print the average salary, enter 3
 - To list the employees with certain salary range, enter 4
 - Enter the *lower* and *upper* bounds
 - To display the information of all employees, enter 5
 - To exit, enter 6
 - Enter your option:

In each method call that could throw an exception, handle that exception using try-catch statements and print a useful message when an exception is caught e.g. since we know that the *AuditDepartment* constructor will throw a *NegativeArraySizeException* when passed a negative size, we will surround that method call with a try statement, and catch the specified exception. There are five exceptions to be caught overall.