**CME1212 Algorithms and Programming II**

**Homework 1**

**Upload** your program from *Google Classroom* until **10 March 2019, 23:55.**

**Cargo Management System**

In this homework, implement a ***Cargo Management*** program that will be used by "**D**okuz **E**ylul Cargo - DECargo".

The software has to include some entities to handle the records of offices, employees, customers, packets, etc.

Currently, the company has three offices, each one in different city (Izmir, Istanbul and Ankara) in Turkey. However, new offices can join the system over time. Each office deals with the cargo packets in its region and has some attributes, including name, address, and phone.

Several employees work on each office. Each employee has several properties, including name, birthdate, gender, address and phone number. There are two types of employees; the first one (*office boy*) always seats in the office and receives the packages from the customers, and the second one (*service staff*) delivers the packages to the receivers by driving a car. The intercity transport of the packages is provided by a third party company, ignore it in this system. The salary of each employee is the minimum wage (currently net 2020.58 TL). If an employee losses three packages, he / she is automatically fired from the DECargo.

When a customer arrives to the office to send a packet, the office boy enters both the sender and receiver customer information to the system, including his/her name, birthdate, gender, e-mail, address, and phone.

Cargo fees are calculated according to the volume and weight of each package, independently from the starting and destination cities.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Volume** | | |
| **Weight** | **small** | **medium** | **large** |
| 1-5 kg | 10 TL | 15 TL | 20 TL |
| 6-10 kg | 25 TL | 30 TL | 40 TL |
| >=11 kg | 45 TL | 50 TL | 55 TL |

When a new package is added to the system, its status must be “0”. This property must be updated to “1” when it is delivered to the receiver's address or it must be updated to “2” if it is lost. A user can track the status of the packet by its ID.

Office, Employee, Customer and Package entities have ID properties to identify each record. These properties must be auto increment numbers and the user should not have to (and cannot) enter ID information during adding new records.

The system should allow users to manage data by add, delete, update and list operations. The records should be flagged as “false” when they are deleted.

The software should also enable users to *search* packages according to the specified options.

The system should allow users the following operations:

- Finding top 3 customers (in terms of the number of packets they send)

- Increasing the salaries of all employees by %10 by using set method

- Finding the total income of a given office (only sum the fees of packages which are sent by the given office)

The program should correct all possible errors such as:

- Invalid date such as 29/02/2017

- Deleting a non-existing ID

- Updating a non-existing ID

- ...

Don’t forget to create Date, Address and Phone classes.

Your program should include at least one inner class.

In one class, there must be more than one constructor.

At the beginning of the program, an input file (*input.txt*) must be read and evaluated line by line. Semicolon character (;) is used as delimiter in this file. Each line corresponds an individual command. Each command must be parsed and executed in order.

Don’t take any input from the user !!!

**Commands**

|  |
| --- |
| addOffice;name;address;town;city;phone  addEmployee;officeID;type;name;birthdate;gender;address;town;city;phone  addCustomer;name;birthdate;gender;email;address;town;city;phone  addPacket;senderCustomer;receiverCustomer;weight;volume;date  updateOffice;officeID;name;address;town;city;phone  updateEmployee;employeeID;officeID;type;name;birthdate;gender;address;town;city;phone  updateCustomer;customerID;name;birthdate;gender;email;address;town;city;phone  updatePacket;packetID;senderCustomer;receiverCustomer;weight;volume;date  deleteEmployee;employeeID  deleteCustomer;cutomerID  deliverPacket;packetID;employeeID  lossPacket;packetID;employeeID  trackPacket;packetID  listOffices  listEmployees  listCustomers  listPackets  search;fromCity;toCity;status;min\_weight-max\_weigth;volume  top3Customers  increaseSalaries  totalIncome;officeID |

A sample input file content is given below:

|  |
| --- |
| addOffice;Center Office;Kordon Caddesi No:50;Alsancak;Izmir;+902324449988  addOffice;Istanbul Office;Kordon Caddesi No:50;Besiktas;Istanbul;+902324449988  listOffices  addEmployee;1;officeboy;Cem Durak;12/09/1990;erkek;40 sokak No:34;Buca;Izmir;+905551234567  addEmployee;1;servicestaff;Can Ak;10/12/1988;erkek;24 sokak No:12;Urla;Izmir;+905359843921  addEmployee;1;servicestaff;Yeliz Yilmaz;16/11/1980;kadin;5 sokak No:11;Goztepe;Izmir;+905356677889  addEmployee;2;servicestaff;Tarik Az;19/05/1980;erkek;4 sokak No:2;Levent;Istanbul;+905355586743  listEmployees  addCustomer;Sibel Tek;21/07/1977;kadin;sibel@deu.edu.tr;21 sokak;Konak;Izmir;+905356677331  addCustomer;Pelin Er;04/04/1970;kadin;pelin@gmail.com;Ak Caddesi;Ulus;Ankara;+905334545453  addCustomer;Ali Tas;15/01/1986;erkek;ali@yahoo.com;Er Caddesi No:2;Kadıkoy;Istanbul;+905354465263  addCustomer;Cenk Yer;08/08/1980;erkek;cenk@yahoo.com;Tank Bulvarı No:5;Bebek;Istanbul;+905551276764  addCustomer;Ahmet Engel;07/10/1965;erkek;ahmet@gmail.com;45 Sokak No:15;Karsiyaka;Izmir;+905551276764  addCustomer;Mehmet Al;66/77/1965;erkek;ahmet@gmail.com;45 Sokak No:15;Karsiyaka;Izmir;+905551276764  listCustomers  addPacket;1;3;8;medium;20/02/2019  addPacket;2;4;8;small;23/02/2019  addPacket;100;2;8;small;23/02/2019  listPackets  search;Izmir;;0;1-9;medium  search;;Istanbul;0;;  search;;;;;  updateOffice;1;Center Office;Hatay Caddesi No:45;Ucyol;İzmir;+902324449988  updateEmployee;1;1;officeboy;Cem Durak;14/09/1990;erkek;40 sokak No:34;Buca;Izmir;+905551234567  updateCustomer;4;Cenk Yer;08/08/1980;erkek;cenk@gmail.com;Tank Bulvarı No:5;Bebek;Istanbul;+905556667788  updatePacket;1;2;4;8;large;23/02/2019  updateOffice;100;Center Office;Hatay Caddesi No:45;Ucyol;İzmir;+902324449988  deleteEmployee;3  deleteCustomer;5  deleteCustomer;100  deliverPacket;1;4  trackPacket;2  lossPacket;2;3  top3Customers  increaseSalaries  totalIncome;1 |

**Notes**

**1-**If you are late, your grade will be decreased 10 points for each day.

After five days, your assignment will not be accepted.

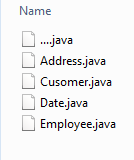
**2-** Upload format

**Step1:** Create a new folder, named by your student number and name (without any space)

For example: 2015510012\_Ali\_Tas



**Step2:** Copy all java files into this folder



**Step3:** Compress the folder **2015510012\_Ali\_Tas.zip**

**Step4:** Upload the file **2015510012\_Ali\_Tas.zip** from *google.classroom.com*

**3-** Don’t use ENIGMA or any other extra library.

**4-** Assignment must be your individual work.

**Cheating** is strictly prohibited.

All source codes will be automatically compared with each other by using a program.

If any cheating occurs, your assignment will be graded with **zero (0)**.