Project: DERE

The subject of the project is to develop a *real estate management* software
for the **D**okuz **E**ylul **R**eal **E**state company.

General Information

The software has to include some entities to handle the records of agencies, real estates, customers,
employees, contracts etc. that are explained below:

Company

DERE is a real estate company operating in many cities. The company is represented by different
agencies in these cities. Each agency has its own employees and deals with the real estate market in
its region.

Agency

The company has four agencies in the cities Izmir, Istanbul, Ankara and Antalya. New agencies can
join the system over time. Each agency has some attributes including id, name, address, and phone.

Agent

Several agents can work on each agency, who has several properties such as id, name, the agency
where he/she works, birthdate, address, phone, gender, salary etc. The salary of each agent is
minimum wage (currently 2000 TL). Agents earn a 5‰ commission for every home they sell and earn
20% of rental price of property they rent. Commissions are payed collectively at the end of the month
with salaries.

Real Estate

The types of real estates that the company rents or sells can be classified as flat, villa, summer villa,
farmhouse and office. The system should store the information for each real estate, including its id,
type, status (for rent or for sale), availability (is it sold/rented or not), address, surface area, price and
number of rooms.

Customer

System stores the customer information such as id, name, birthdate, address, phone, gender etc.

Contract

When a customer arrives to an agency, if the customer will rent or purchase a real estate, he/she has
to fill a form about him/her and then an agent enters the customer information to the system.

When a customer rents or purchases a real estate, the system keeps the contract details into the system, such as related customer, rented/sold real estate, agent who performs operation, contract date, etc. The company gains 15‰ commissions from each sale or it charges 80% of rental price.

Operations

Agency, Agent, Real Estate, Customer and Contract entities have id properties to identify each record. These properties must be auto increment numbers and the system user should not have to enter id information during adding new records.

When a new real estate is added, the availability status must be "true". This property must be updated to false when it is sold or rented. Likewise, when a new agent or customer is added, the active status must be "true, and these records should be flagged as "false" when they are deleted.

The software should provide the followings for a given month and year:
- calculate salaries
- calculate total income
- find the most profitable agency
- find the agent of the month

The software should also enable users to search real estates according to the specified options.

Commands

```
>load;input.txt

>addAgency;name;address;town;city;phone
>addAgent;agency_id;name;birthdate;address;town;city;phone;gender
>addRealEstate;type;status;address;town;city;surface_area;price;#_of_rooms
>addCustomer;name;birthdate;address;town;city;phone;gender
>addContract;real_estate_id;customer_id;agent_id;contract_date

>deleteAgent;agent_id
>deleteRealEstate;real_estate_id
>deleteCustomer;customer_id

>displayAgencies
>displayAgents
>displayRealEstates
>displayCustomers
>displayContracts

>search;type;status;town;city;min_surface_area-max_surface_area;min_price-
max_price;min_#_of_rooms-max_#_of_rooms

>calculateSalaries;month/year
>calculateTotalIncome;month/year
>mostProfitableAgency;month/year
>agentOfTheMonth;month/year
```

Software Initialization

At the beginning of the program, an input file (input.txt) is generally 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.

The system user can also enter commands from console screen after loading of input file. A sample input file content is given below:

input.txt

```
>addAgency;Center Office;21 Sokak No:50;Buca;İzmir;02324449988
                                         (auto increment id 1)
>addAgent;1;Burcu Fidan;29/05/1988;Atatürk Cad. No:3 D:5;Konak;İzmir;
     05556667777;Bayan                  (auto increment id 1)
>addAgent;1;Adem Deniz;15/06/1960;220 Sokak No:50;Karşıyaka;İzmir;
     05556667777;Bayan                  (auto increment id 2)
>addRealEstate;Flat;For Sale;Menderes Cad. No:20;Buca;İzmir;120;220000;4
                                         (auto increment id 1)
>addRealEstate;Flat;For Rent;231 Sokak. No:30/3;Buca;İzmir;80;1500;3
                                         (auto increment id 2)
>addCustomer;Fatih Eren;25/10/1983;341 Sokak No:5/7;Çankaya;İzmir;
     05447778888;Erkek                  (auto increment id 1)
>addContract;1;1;2;18/02/2019           (auto increment id 1)
>deleteAgent;1
>displayAgents
>search;Flat;For Sale;Buca;İzmir;100-200;200000-250000;3-5
>search;Villa;For Rent;Urla;İzmir;;;4-6
>calculateSalaries;01/2019
```

Sample Screen

```
>addRealEstate;Flat;For Sale;Menderes Cad. No:20;Buca;İzmir;120;220000;4
The real estate has been added successfully!

>search;Flat;For Sale;;İzmir;100-200;;3-5
---- Search Results ----
 *** Real Estate 1 ***
 Flat For Sale
 Address: Menderes Cad. No:20
 Town: Buca
 City: İzmir
 Surface area: 120 m²
 Price: 220000
 Number of rooms: 4

 *** Real Estate 3 ***
 Flat For Sale
 Address: 120. Sok. No:54
 Town: Konak
 City: İzmir
 Surface area: 100 m²
```

```
 Price: 150000
 Number of rooms: 3

>calculateSalaries;01/2019
Agent 1 - Burcu Fidan
Salary: 4500
Agent 2 - Adem Deniz
Salary: 5700

>calculateTotalIncome;01/2019
105,250.75 TL

>mostProfitableAgency;01/2019
Center Office
38,740.50 TL

>agentOfTheMonth;01/2019
Adem Deniz with 3 sales and 7 rentals from Central Office
```