Programming 2: Data Structures in MATLAB – Exercise 10

Instructions

Download the latest version of Hospital code package from Moodle.

Submit two m-files: Hospital.m, Physician.m

Important! It is your responsibility to verify your code is running properly. Clear all variables and run your code for each question in the command line to verify it runs properly.

Please don't write `clear all;` command inside the files you submit.
20 points will be deducted automatically from each file that prompts an error, no matter which.

Submission date: 25.6.20, 23:55

Question 1

It is required to manage a patient list for each physician:
a. Add the property `patient_list` to the Physician class, then set the `patient_list` as an empty cell array in the Physician constructor.
b. Add a function to the Physician class that receives a physician and a patient and adds the patient to the physician's patients list. Use the following declaration:
   `function add_patient_to_physician_list(ph,pt)`
c. Add a function to the Physician class that receives a physician and a patient and removes the patient from the physician's patients list. Use the following declaration:
   `function remove_patient_from_physician_list(ph,pt)`
d. Add a function to the Hospital class that allocates a physician to a patient and adds the patient to the physician's patients list. Use the following declaration:
   `function allocate_physician_to_patient(h, pt_first_name, pt_last_name, ph_first_name, ph_last_name)`

- Hint: use the function `find_person` from tutorial 11

e. Modify the `release_patient` function in the Hospital class so that when a patient is released from the hospital he is also removed from the physician's list.

Question 2

Assume that in the hospital all employees are physicians, and calculate the hospital balance by subtracting the total physicians' salary from the total patients' bill:

a. Add the property `salary` to Physician class and set the value of the salary to 1500 in the Physician constructor.
b. Add a function to Hospital class that calculates and displays the hospital balance. Use the following declaration:
   `function disp_hospital_balance(h)`

Use the following code to test your answers to both questions:

```
Clear;
h    = Hospital;
pt(1) = Patient('Keith','Emerson','OR','Cardiology');
pt(2) = Patient('Greg' ,'Lake'    ,'Radiology','MS');
pt(3) = Patient('Carl' ,'Palmer' ,pt(2));

ph(1) = Physician('Jo','Blake','OR','Cardiology');
ph(2) = Physician('Jo','Blage','OR','Cardiology');

for i=1:length(pt)
    admit_patient(h,pt(i));
end

for i=1:length(ph)
    add_physician(h,ph(i));
end

h.disp_hospital_balance()

allocate_physician_to_patient(h,'Keith','Emerson','Jo','Blake');
ph(1).patient_list{1}
[h,pt] = release_patient(h,'Keith','Emerson');
ph(1).patient_list{1}

h.disp_hospital_balance()
```

expected output:
```
The hospital balance is = -2700

ans =

  Patient with properties:

                    dept: 'OR'
                 disease: 'Cardiology'
                    bill: 100
               physician: [1×1 Physician]
                hospital: [1×1 Hospital]
            test_results: []
               sick_flag: -1
    PATIENT_STATUS_UNKNOWN: -1
    PATIENT_STATUS_HEALTHY: 0
       PATIENT_STATUS_SICK: 1
              first_name: 'Keith'
               last_name: 'Emerson'
                     uid: [1×1 struct]


ans =

     []

The hospital balance is = -2800
```