Due Date: 01.05.2022, 23:55

CENG 112 - Data Structures

Assignment 3: Patient Management System

This homework will cover the topics given below:

- Priority Queue
- LinkedList
- Sorted List
- Comparable Interface
- Generics

You are expected to implement a “Patient Management System” using Java.

Assume that there is a patient system that manages the patients and their appointments. Patients have their appointment dates and times. They also have various priorities according to their pregnancy state, disability state, and age. Priority conditions are listed below. You are expected to implement a management system in which each patient is sorted according to his/her appointment information and priority condition in order to be taken care of by the doctor. The patient who has an earlier appointment date and time will be placed before.

The patients will be listed according to their appointment first and their priority conditions after that.

Condition	Priority
Disabled	5
Over 65	4
Pregnant	3
Child (under 18)	2
Regular	1

!!5 means the highest priority, 1 means the lowest priority.

Your application is expected to perform the following operations:

1. For each patient, compare appointment date and appointment time. (You can use Java LocalDateTime; import java.time.LocalDateTime) Put them to a list in a way that all patients are ordered according to their appointment (date and time) from earliest to latest. In order to do so, read the “***records.txt***” file, which has the following format:

   name_surname, age, gender, pregnancy, disability, date, time

2. After creating the list, **print** the listed patients with all their information.

3. Create **a waiting line of patients**. Determine the priorities of patients that are on the list and locate them in a waiting line of patients. When the waiting line is completed, the patient that has high priority should be taken care of first. A patient who has an earlier date and time is going to receive treatment before. In the case of two or more patients having an appointment on the same day, the patient who has the highest priority because of his/her condition is going to get treatment first. You must consider both the priority conditions and appointment (time and date) at the same time. Consider each day separate from other days while managing priority conditions.

4. After creating the waiting line of patients, **print** the line of patients according to their order of receiving treatment this time with all their information.

5. If one patient leaves the hospital before the treatment, the next one after that should get his/her turn. The turn should not be empty. Consider this situation while creating the waiting line of patients. ***!Hint:*** You can look at Priority Queue Implementation with LinkedList.

6. After every 5 treatments, **print** the remaining patients on the list. (print remaining patients after 5., 10., 15. patients received treatment and also the final patient that received treatment).

Assignment Rules

- This is a 2-person group assignment. However, inter-group collaboration is not allowed!
- All assignments are subject to plagiarism detection and the suspected solutions (derived from or inspired by the solution of other groups) will be graded as zero.
- It is not allowed to use Java Collections Framework.
- Your code should be easy to read and test:
  -Keep your code clean. Avoid duplication and redundancy. 🔗
  - Follow Java Naming Conventions. 🔗
  - Use relative paths instead of absolute ones. 🔗

Submission Rules

All submissions must:

- be performed via **Microsoft Teams** by only one of the group members,
- be exported as an Eclipse Project and saved in ZIP format,
- include all necessary data files (if any TXT, CSV, JSON, etc.) in the right directory,
- follow a specific naming convention such that CENG112_HW3_*groupID*.

  Eclipse Project: CENG112_HW3_*G5*
  Exported Archive File: CENG112_HW3_*G5*.zip

Submissions that do not comply with the rules above are penalized.
Those who want to change groups can send their requests on Microsoft Teams.