Doctor's Clinic

A clinic has 4 consulting rooms and several doctors. The clinic functions between 7 AM and 19 PM and has each consulting room assigned to a doctor. When the doctor's shift is over, another doctor will take over the consulting room.

A doctor can be identified by first name, last name, age and identification number. Each doctor can consult a single patient at a time and he can work for maximum 7 hours a day.
A patient can be identified by first name, last name, age and the reason why he came to the doctor. The reason can be: consultation, treatment or prescription.

In order to provide better healthcare, the clinic has a categorizing system for patients using the age as a differentiating factor, in order to determine the consultation order:

- Children: 0-1 years
- Pupil: 1-7 years
- Student: 7-18 years
- Adult: > 18 years

According to the consultation's reason, each patient will stay in the consulting room for a predefined period of time and he will pay a predefined fee:

- Consultation: 30 minutes, 50 RON
- Prescription: 20 minutes, 20 RON
- Treatment: 40 minutes, 35 RON

Implement

a) **(10 points)** Generate a list of doctors, respecting the following requirements:
- The list must contain at least 8 doctors.
- Each doctor will be generated following the rules:
    - First Name: 3 characters;
    - Last Name: 2 characters.
    - Age: between 30 and 65.
    - Identification number: 4 numbers, must be unique in the list

b) **(10 points)** Generate a list of patients, respecting the following requirements:
- The list must contain 100 patients.
- Each patient will be generated following the rules:
    - First Name: 5 characters;
    - Last Name: 4 characters.
    - Age: between 0 and 85.
    - Reason: consultation, treatment or prescriptions.
- The list must contain at least one patient from each age category and at least one patient for each consultation reason.

To be continued on the next page

c) **(10 points)** Print the list of doctors and the list of patients on the console.
(extra / + 5 points) Print a summary of all patients based on their age group.
E.g.

Children (0-1): 25 patients
Pupil (1-7): 35 patients
Student (7-18): 20 patients
Adults (>18): 20 patients

d) **(5 points)** Store the list of patients from b) in a file on disk.

e) **(5 points)** Store the list of doctors from a) in a file on disk.

f) **(30 points)** Provide an implementation able to simulate the system described above, respecting the following requirements:

- Use the patient list from b)
- Use the doctor list from a)
- At the end print a summary of the doctors, the number of patients consulted and the total amount billed.

E.g.

A, B – 1234: 18 patients, 390 minutes, 250 RON
X, Y – 3331: 22 patients, 460 minutes, 310 RON
M, N – 1233: 0 patients, 0 minutes, 0 RON

- At the end print the list of patients which were not consulted (if any).

E.g.

A, B, 20 years, prescription
C, D, 14 years, treatment
E, F, 9 years, consultation

30 points – code style/approach.