Medical analyses

Medical Software will design an application to help persons monitor their health state. The application will store all the analyses ever made for a person, regarding two medical markers: BMI (Body Mass Index) and BP (Blood Pressure). For any analysis, *the date* when it was made must be stored.

Any type of analysis (BMI or a BP) can be added:

- The BMI measurement is characterized by a real value. This result is considered ok if it belongs to the interval [18.5, 25].
- The BP measurement is characterized by a systolic value and a diastolic value, both integers. The result is considered ok if systolic value in an integer in the interval [90,119], and the diastolic one is an integer in the interval [60, 79].

The application should allow the following functionalities:

1. Add a new analysis. Read the type of analysis and the date. If it is BMI, then read the real value, otherwise read the two integer values (systolic and diastolic values). **(2.5p)**
2. Show all analyses, with their correct information. **(1p)**.
3. Show if the person is ill. The person is considered to be ill if **all** the analyses in the current month have **not OK** results. The current month will be given by the user. *The score for this functionality is given only if you use inheritance and polymorphism, as shown in the UML diagram below.* **(2p)**
4. Save to a file all the analyses between two given dates. For each analysis, write the correct data to the file: type (BMI or BP), date, values and if the result was ok or not. **(3.5p)** *The score for this functionality is given only if you use inheritance and polymorphism, as shown in the UML diagram below.*

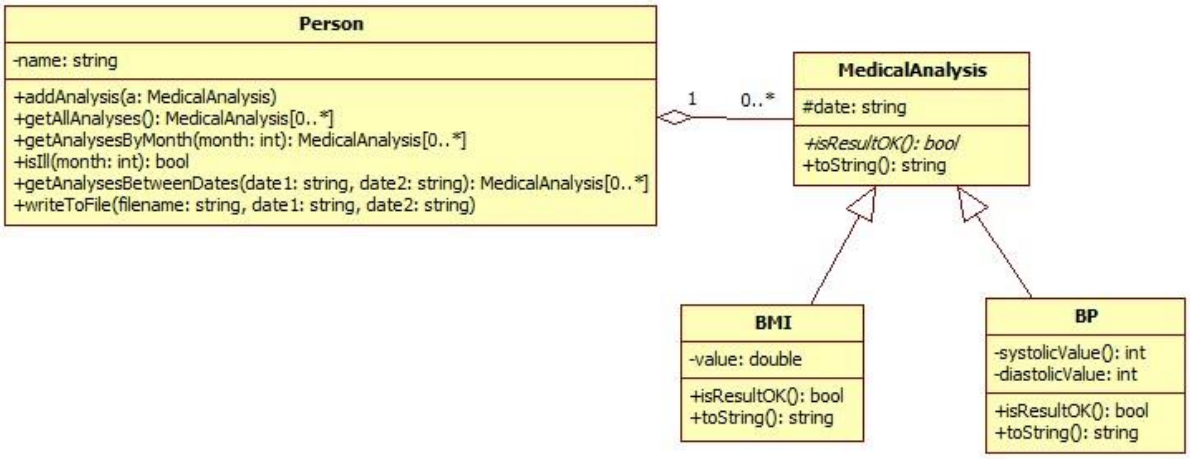
Hint: Store the date as a string "yyyy.mm.dd". In this way you can compare dates with the usual comparison operators (<, >). To get the month from a string date = "yyyy.mm.dd", use the following line (make sure you include **<string>**):

int month = stoi(date.substr(5, 2));

Please input at least 2 analyses to the initial list (from the source code).

The application must use a layered architecture and have at least 2 layers (one must be the UI). Otherwise, the maximum score for each requirement is 50% of the indicated score.

1p – of.



Obs. You can add new attributes or operations besides the ones on the diagram, if needed.

Allotted time: 70 minutes.

You may use **exclusively** the following sites for documentation: http://en.cppreference.com/w/, http://www.cplusplus.com/.