4. Absences

File *classregister.txt* contains the absences in a class in the second semester. The absences are grouped by days, each day starts with character #, then comes the ordinal number of the month and then the ordinal number of the day separated by one space each. The absences for a given day are given in separate lines per student, the student's daily absences are described by a character sequence consisting of seven characters. Each character of the character sequence stands for one lesson. Its value is letter O if the student was present on the given lesson, X stands for justified, I stands for unjustified absence, finally letter N stands for the student not having a class at the given time. For example:

```
# 01 15
Galagonya Alfonz OXXXXXN
# 01 16
Alma Hedvig OOOOOIO
Galagonya Alfonz XXXXXXX
```

The above example contains the absences for 15th and 16th January. Galagonya Alfonz would have had six lessons on 15th January, but he was present only on the first lesson, then he missed the other lessons in a justified way. Alma Hedvig would have had seven lessons on 16th January but she missed the 6th lesson in an unjustified way.

The file contains at most 600 lines and the class has at most 50 students. You can assume that there are no two students with the same name in the class and that each student has only one first name and surname. You can make use of the fact that an entry for an absence always consists of 7 characters.

Create a program that uses the data in the file to answer the following questions. Save the source code of the program as *absences*. (When you write the program, you do not have to check the correctness or the validity of the data given by the user and you can assume that the provided data correspond to the description.)

When you display results of exercise parts that require displaying data on the screen, display the number of the exercise before the data (for example: `Exercise 3:`). If you request data from the user, display the type and nature of the data to be entered on the screen. When you display results, refer to the meaning of the displayed data. Displays with format different from the example and without accents are also accepted.

1. Import and store the contents of file *classregister.txt*.
2. Determine and display the number of lines that describe absences in the file. (The above example contains 3 such entries.)
3. Count and display the total number of justified and the total number of unjustified missed lessons in the semester.

Some teachers assume that students miss certain lessons more frequently. In the next three exercises you have to prepare for this investigation.

4. Create a function with name **dayofweek** that determines the day of the week (Monday, Tuesday etc. for a date (month, day) given as parameter. We know that the given year was not a leap-year and that 1st January was Monday. You can use the following algorithm where the indexing of arrays starts with 0, but you can also create a function that solves the problem in a different way.

```
Function dayofweek(month:integer, day:integer): text
  daynames[]:=     ("Sunday", "Monday", "Tuesday", "Wednesday",
             "Thursday", "Friday", "Saturday")
  startingday[]:= (0, 31, 59, 90, 120, 151, 181, 212, 243, 273, 304,
335)
  ordinalday:= (startingday[month-1]+day) MOD 7
  dayofweek:= daynames[ordinalday]
End of function
```

5. Request a date (month, day) and display the day of the week corresponding to the entered date using function **dayofweek**.
6. Request the name of a school day of the week and the ordinal number of a lesson on that day (for example: Tuesday 3). Display the total number of absences on the given lesson during the semester.
7. Display the name(s) of the students(s) who missed the most lessons on the screen. If there are several such students, then display the name of each student separated by a single space.

45 marks

Example for laying out the text outputs:

```
Exercise 2.
The class register contains 139 entries.
Exercise 3.
Number of missed lessons: justified: 788, unjustified: 18.
Exercise 5.
Ordinal number of month=2
Ordinal number of day=3
That day was Saturday.
Exercise 6.
Name of the day=Wednesday
Ordinal number of the lesson=3
Then a total of 49 lessons were missed.
Exercise 7.
Students who missed the most lessons: Kivi Adrienn Jujuba Ibolya
```

Sources:

1. Fig

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3. National team

http://nela.hu/sel_mch.php Last access: 2016.10.18.