

You are hired by the government to help with id code creating application. Goal is to program an Estonian ID code (isikukood) explainer and creator.

Read: <https://et.wikipedia.org/wiki/Isikukood>,
<http://www.cs.tlu.ee/~inga/progbaas/Praktiline/isikukood.txt> (more on the checknumber algorithm)

NB! Before solving this task think through what fields, properties and data you need and draw the 'skeleton' on paper first, dont start coding immediately. With good class design the exercise is much easier.

- a. Create a class representing id code and all the necessary fields and properties.
- b. Create a method that prints all info about existing Id code (sex, birthplace, date of birth, control number).

Näide 1: *Isik isikukoodiga 34501234215 on sündinud 23. jaanuaril 1945. a (...450123...). Ta on mees (3...), kelle isikukood registreeriti Pärnu haiglas (...42...) ja sel päeval oli ta esimene poisslaps (...1...). Isikukoodi kontrollnumbriks on 5 (...5)*

*Example: DecodeIDCode("34501234215") ->
Decoding id code 34501234215
Birthdate is: January 23 1945
Sex: male
Place of birth: Pärnu haigla
Nr of births: 1
CheckNr: 5*

If id code is invalid then display a message. Would be good if there are different messages ("Id code length is wrong", "90 is not a valid birth date" etc)

- c. Create a method that based on the birthplace and time and sex creates an id code.

Näide 2: *Kui tütarlaps sündis 13. märtsil 1994 Põlvamaal, on tema isikukood suure tõenäosusega 49403136515, või kui ta oli sel päeval piirkonnas teine sündinud tüdruk, siis 49403136526.*

Example: CreateIDCode(13.03.1994, Põlva, Female) ->"Id code could be: 49403136526"

Use random for creating data that you do not know (for example what was the nr of the birth on that day).

- d. Add an option to read id code(s) from a text file. Id codes have to be on separate lines in the file, for example:

```
48803214480
43801215664
33401214594
51107169959
61512311560
```

Example: ReadCodesFromFile("file.txt") - > decode method is called for all the id codes in that file and info is printed.

If file does not exist then display a message about it!

If file does not contain id codes then display a message about it!

- e. Add option to save info about an id code to a text file.

This method takes id code and file name to write to as parameter and writes all the info from decode method to the text file.

Example: SaveIdCode("34501234215", "file.txt") -> into the file is written:

Birthdate is: 23.01.1945

Sex: male

Place of birth: Pānu haigla

Nr: 1

CheckNr: 5

If file already contains text then do not overwrite it, append text! If file does not exist then create it.

Info and tips:

- Use different values for testing; also invalid ones. Display a message when a value is invalid.
- You can create random values for numbers that you do not know when creating an id code (for example what was the birth nr).
- Use different text files for reading and writing (do not try to read and write to a same file)
- Choose data types yourself. We can represent id code as *string* or as *long*. Think which is better and what we need to do with the code (*string* is recommended). Date values can be represented also as a DateTime object or as a string.
- Think of helpful data types.
- Avoid code duplication!
- Do not create methods longer than approximately 30 lines.
- Think of all the different things (exceptions, dictionaries, switch, enums, properties etc) that we have learned and try to find the best structures to use.
- Example: using switch for a range:

```
switch (i)
{
    case int n when(n >= 100):
        Console.WriteLine($"I am 100 or above: {n}");
        break;

    case int n when(n < 100 && n >= 50 ):
        Console.WriteLine($"I am between 99 and 50: {n}");
        break;

    case int n when(n < 50):
        Console.WriteLine($"I am less than 50: {n}");
        break;
}
```