# CS209 - LAB1

## Transliteration from Russian

The goal of this lab is to prepare a "technical" object that could be reused in another context. This object will be a "transliterator" and the class name will be **Translit**. "Transliteration" (it means "changing letters") is the process of rendering a language normally written with one script (set of characters) into another script. For instance, pinyin is a transliteration of Chinese characters into Latin letters. When the target script is Latin letters, as these letters were the ones used by ancient Romans it's often called "romanization".

Romanization of Chinese characters is tough (because there are many Chinese characters) but it's easier with a script such as Cyrillic (Russian characters), in which there are just a few more letters than in the Latin alphabet. Note that a single Russian character is sometimes replaced by a string (several Latin characters).

Your reference for this transliteration will be the following table:

https://en.wikipedia.org/wiki/Romanization_of_Russian - Transliteration_table

As there are several different transliteration system for Russian (and for almost all scripts), you will use the one in the column with the heading "Passport (2013), ICAO" (right-most column) with the following changes:

- Letter Ь (lowercase ь) will be replaced by an empty string.
- Any other character, including the Russian letters for which there is no equivalent in the "Passport (2013), ICAO" column (Pre-1918 letters and Pre-18th century letters), will be returned unchanged. If you try to transliterate a Chinese or English text, the result must be the original text.

**VERY IMPORTANT (FOR THIS LAB AND THE NEXT ONES!)**

We try in this course to have assignment submissions graded by scripts whenever possible. Those scripts use techniques frequently used in professional software development: they run a series of tests and check whether the program passes or fails each test. For every assignment, we'll try to crash your program or make it misbehave. Every failed test will mean points off. The assignment description specifies which tests will be run, so that you can check your program thoroughly before submitting it.

It's very important:

1. That you respect what is specified in the assignment, naming, input and output (no additional message, just the required result), otherwise it will be understood as a wrong result by the script.

2. That you check that your program behaves well - no Java stack dump - for all the test cases.

The Translit class must contain the following method:

```
public String convert(String russian_text) {
  ...
}
```

that returns the result of the conversion from Russian to Latin characters.

*Hint: when building a string, it's better to use a StringBuffer object than a String object.*

For this lab, you are provided with:

- A skeleton program that reads a file that contains UTF-8 encoded Russian text and calls what you must write
- To save you some typing, a text file containing uppercase and lowercase Russian letters and the Latin equivalent (note that the transliteration will always be in lowercase, even with Russian upper case)
- A text file containing the text of a popular Russian song for kids ("Blue Train"), which you will use for testing. The expected output when running Lab1 is this one:

```
$ java Lab1 Goluboi_Wagon.txt
Input:
Медленно минуты уплывают в даль,
Встречи с ними ты уже не жди.
И хотя нам прошлого немного жаль,
Лучшее, конечно, впереди.
Скатертью, скатертью
Дальний путь стелется,
И упирается прямо в небосклон.
Каждому, каждому
В лучшее верится...
Катится, катится
Голубой вагон.
Может мы обидели кого-то зря,
Календарь закроет этот лист.
```

К новым приключениям спешим, друзья...
Эй, прибавь-ка ходу, машинист!
Скатертью, скатертью
Дальний путь стелется,
И упирается прямо в небосклон.
Каждому, каждому
В лучшее верится...
Катится, катится
Голубой вагон.

Голубой вагон бежит, качается,
Скорый поезд набирает ход...
Ах, зачем же этот день кончается,
Пусть бы он тянулся целый год!

Скатертью, скатертью
Дальний путь стелется,
И упирается прямо в небосклон.
Каждому, каждому
В лучшее верится...
Катится, катится
Голубой вагон.

Каждому, каждому
В лучшее верится...
Катится, катится
Голубой вагон.

Output:
medlenno minuty uplyvaiut v dal,
vstrechi s nimi ty uzhe ne zhdi.
i khotia nam proshlogo nemnogo zhal,
luchshee, konechno, vperedi.
skatertiu, skatertiu
dalnii put steletsia,
i upiraetsia priamo v nebosklon.
kazhdomu, kazhdomu
v luchshee veritsia...
katitsia, katitsia
goluboi vagon.
mozhet my obideli kogo-to zria,
kalendar zakroet etot list.
k novym prikliucheniiam speshim, druzia...

```
ei, pribav-ka khodu, mashinist!
skatertiu, skatertiu
dalnii put steletsia,
i upiraetsia priamo v nebosklon.
kazhdomu, kazhdomu
v luchshee veritsia...
katitsia, katitsia
goluboi vagon.

goluboi vagon bezhit, kachaetsia,
skoryi poezd nabiraet khod...
akh, zachem zhe etot den konchaetsia,
pust by on tianulsia tselyi god!

skatertiu, skatertiu
dalnii put steletsia,
i upiraetsia priamo v nebosklon.
kazhdomu, kazhdomu
v luchshee veritsia...
katitsia, katitsia
goluboi vagon.

kazhdomu, kazhdomu
v luchshee veritsia...
katitsia, katitsia
goluboi vagon.
```

**What you must submit (upload it to blackboard):**

- The .java file that contains your code

**What will be tested when grading your program:**

1. That your program isn't the same as someone else's
2. That your program compiles correctly (javac)
3. That your program returns unchanged a text that isn't written with Russian letters
4. That when your program is applied to Russian text (it will be tested with a different text than the one that is provided to you) the result matches what is returned by a program known to be correct
5. That the result is obtained in a reasonable time

## Peer review

In addition to completing your own assignment, in the online presentation of the course you need to conduct a peer review of your colleagues work. Using Blackboard you will be allocated three assignments to review from other students.

As well as helping your collegues, your feedback will help you to learn as well. You should provide feedback on how you think their assignment could be improved in a constructive way. Providing useful feedback will be evaluated as part of the submission of the practical.