**Task 1 – Kaa language**

You have formed a secret society with your mates and want to encrypt your communication so that no one can understand you talking. In order to do that you decided to alter all words to add “kaa” after each vowel (‘Y’ is not considered vowel), e.g.:

*Hi, how are you?*

becomes

*Hikaa, hokaaw akaarekaa yokaaukaa?*

Your task is to write a program that converts messages from and to Kaa language. User should be able to enter any text into a TextBox and click on Encode or Decode buttons to get thetranslation**.** Empty input is considered invalid, if such input is supplied your program should notify the user with a message and terminate.

**30 marks**

**Task 2 – Time rounding**

You are required to implement time rounding and calculation logic for time tracking software.

The overall process is the following – every time an employee is coming to work or leaving home his/her entry and exit times are recorded. However, there is rounding policy which says to round entry/exit times to deal with whole numbers only. Number of minutes for rounding interval should be entered by user and should be in the range of 10 to 30 minutes. Rounding is done by standard rules:

* 0 to half of rounding interval (exclusive) => round down,
* half of rounding interval (inclusive) to next boundary=> round up

For example:

* Entry time: 08:50, Rounding interval: 30 minutes => Rounded time: 09:00 (because 50-30>=30/2)
* Entry time: 08:35, Rounding interval: 30 minutes => Rounded time: 08:30 (because 35-30<30/2)
* Entry time: 08:45, Rounding interval: 30 minutes => Rounded time: 09:00 (because 45-30>=30/2)
* Entry time: 08:20, Rounding interval: 15 minutes => Rounded time: 08:15 (because 20-15<15/2)
* Entry time: 08:15, Rounding interval: 15 minutes => Rounded time: 08:15 (because 15-15<15/2)
* Entry time: 08:40, Rounding interval: 15 minutes => Rounded time: 08:45 (because 40-15-15>=15/2)

Your task is to write a program that will round both entry and exit time and calculate net presence (how many hours an employee was at work):

Net presence = rounded exit time – rounded entry time

The program should accept the rounding interval, entry time and exit time as input parameters. You can use any controls you like to grab the input (hint: you are recommended use two NumericUpDown controls for each time input – one for hours and one for minutes). The result of the calculation should be shown via MessageBox in form of hh:mm. User input should be validated.

Full calculation example:

* Rounding interval: 30
* Entry time: 08:21 (so should be rounded to 08:30)
* Exit time: 16:40 (so should be rounded to 16:30)
* Net presence: 08:00

**70 marks**