Notation Translators(C++, WinAPI)

Notation Translator - is a program which converts mathematical expressions from given notation to two another(a+b -> ab+ or +ab). Both programs are written in C++ language in Microsoft Visual Studio IDE.

Program exists in two variants: 1-Console version and 2-Windowed(provided with GUI).
Console(1) interface provides basic i/o operations without any special options. Otherwise Windowed(2) has addition option for copying result to the buffer clip and choosing the examples.

So how the program translates?

Step[0] – Retrieving the Input(the only interface dependent part):

Console – trough a **while** loop inside **main()** function.

WinAPI – through **edit box** and **message processing** function(`case VK_RETURN`) of the Main window.

With **regex expression** input is checked for presense of odd symbols.

Step[1] - Processing the Input:

Implemented through calling **Terminal(input,...)** std::function wrapper which determining the notation type and verifying the correctness of the passed expression by calling certain **SpellCheckers()**.
After calls translator functions which converts the input from presented notation to another two (like **InfToPost()** – infix to postfix func.).

Step[2] – Actually the Translating:

Presented as 6 different functions with translating algorithms taken from the internet (Wiki, StackOveflow etc.).

These functions responsible for:

1) Allocating enough memory for new expression before translation (length could change).
2) Execution the translation algorithm.

Going backwards:

After **Step[2]** Terminal() func. will print to the console translated expressions and their notation type.

After **Step[1]** (after Terminal() execution) two smart pointers will be left pointing to the c-strings with translation or they will be null pointers if input was incorrect.

GUI version outputs the result in another way after Terminal() completion.

Manual button is responsible for a tabbed window which provides basic information about the program (key combination for console opening, input requirements etc.).