Introduction into RPN

Overview and history of RPN

If you use a calculator regurarly ,it is smart to take a closer look at the advantages of RPN. RPN stands for Reverse Polish Notation (Reverse Polish Notation) and has been developed in 1920 by Jan Lukasiewicz. RPN is a method to write a mathematical expression without round or square brackets . In 1972, Hewlett –Packard Co. used the Polish Notation for the first pocket calculator , the HP-35 , because the company realized that the Lukasiewicz method was superior to standard algebraic ([1]) expressions when it was used on calculators and computers.

Why use RPN?

• RPN saves time and keystrokes. When performing calculations, you never have to use parentheses . The process is similar to the way in which you work out calculations on paper.
• You can also, while performing calculations, look at the interim results rather than just the outcome. This is an extremely convenient feature . This feature is used by mathematics teachers to give pupils a better understanding of maths.
• Since interim results are displayed, the user can better monitor the results and correct errors better. You'd better follow the computation order. The user defines the priority of the operators.
• RPN is logical to the user, first you enter a number and then specify that the calculation must be carried out accordingly.

HP offers complete RPN

Hewlett- Packard produces certain types of calculators with RPN because this is a very powerful but simple way is to perform calculations. The HP 50G and HP 12C financial calculator only use RPN. Because HP understands that some customers prefer the traditional algebraic entry mode , certain HP calculators work both in RPN mode as the algebraic mode . This is for instance the case with the 17BII+ , the 12c Platinum and the HP Prime.

RPN is also consistent in the use . Most non- RPN scientific calculators are half RPN and half algebraic . For example, for an addition , enter 2 + 4 (algebraic) , but when entering a sine calculation you must enter the number first and then press the SIN button , the RPN method of entering the calculation. In RPN calculators from HP you will not encounter this inconsistency .

RPN is easy to learn

Using RPN is similar to the way you have to learn to count . You may remember that you had to use a different calculation when you started using an algebraic calculator .
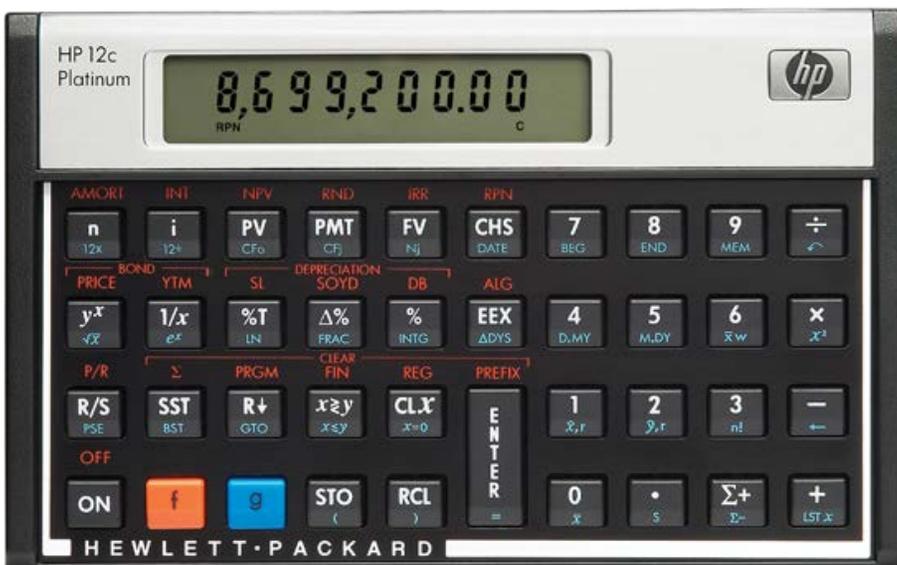
Example:

(3+5) ÷ (7+6) = x

- Algebraic method: Add: 3 + 5 = 8 . Write the answer down or store it in the memory. Add: 7 + 6 = 13 . Now enter the 8 from the first outcome and share these results through the second answer for the result x = 0.62 .
- RPN method : Type 3 and then press ENTER. Type 5 and then press the plus key (+). Type 7 and then press ENTER. Type 6 and then press the plus key (+). Note that the outcome is displayed , the second sum . Now comes the surprise : press the button for sharing and the calculator returns the result (0.62) again .

Algebraic : 13 steps , the effort to write results down or remember the first result when you run the second calculation , not even being counted.

RPN: 9 steps and you need to write down anything.

How do RPN-calculators work?

RPN captures calculations by placing them in a pile or stack [2] . In the example above, when you pressed ENTER the second time, the outcome of the first sum was placed on top of the stack [3] in anticipation of the next action. After the second sum was introduced, it was when you pressed the button to share the outcome of the first sum taken was that by results of the second sum was shared and the outcome appears [4] from the stack. In other words, the calculation performed with RPN is done in the logical order.

Learning how to use an RPN calculator usually takes just a few minutes , but it will save you much time and effort in the long run. With every HP calculator designed for RPN comes a manual with examples on how to use RPN. Take the test and find out why many HP customers for over 30 years are so excited about RPN.

(1) Algebraic mode : This is the name of the mathematic notation used on all non- RPN calculators where you enter a mathematic equation as follows: 1 + 3 * (3+ (2-5) / 3) . In algebraic mode, parentheses and the processing sequence are very important.
(2) Stack: A stack , also called LIFO (Last- In, First -Out), forms the basis of the RPN system and is the 'memory' where the user can enter numbers.
(3) Push / pushing : This is the action in which a number is added at the bottom of the stack , in which the other numbers are pushed upward.
(4) Pop / popping: The action where the last number is placed on the stack is removed .