Project Euler - Problem 1 - RPN code for the HP-41C family

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1 Multiples of 3 or 5

If we list all the natural numbers below 10 that are multiples of 3 or 5, we get 3, 5, 6 and 9.
The sum of these multiples is 23.

Find the sum of all the multiples of 3 or 5 below 1000.

The web page for this problem is: *https://projecteuler.net/problem=1*

2 Project Euler - Problem 1 - HP-41C code

key strokes	step	display code(s)	remark
[ON]			Put the calculator [ON]
[PRGM]			Enter program mode
□ GTO . .		00 REG nnn	Set program counter @ end of code
□ LBL [ALPHA]EPA[ALPHA]	01	LBL"EPA	Start position for problem 1
ENTER↑	02	ENTER↗	Get range
1	03	1	Decrease the range with 1
-	04	-	
STO 00	05	STO 00	Save the decreased range
3	06	3	Get the multiples of 3
÷	07	/	
XEQ [ALPHA]INT[ALPHA]	08	INT	Only work with the integer part
ENTER↑	09	ENTER↗	
ENTER↑	10	ENTER↗	
1	11	1	Sum series: $\frac{n*(n+1)}{2}$
+	12	+	
×	13	*	
1.5	14	1.5	
×	15	*	
STO 01	16	STO 01	Save sum - multiples of 3

key strokes	step	display code(s)	remark
RCL 00	17	RCL 00	
5	18	5	Get the multiples of 5
÷	19	/	
XEQ [ALPHA]INT[ALPHA]	20	INT	Only work with the integer part
ENTER↑	21	ENTER↗	
ENTER↑	22	ENTER↗	
1	23	1	Sum series: $\frac{n*(n+1)}{2}$
+	24	+	
×	25	*	
2.5	26	2.5	
×	27	*	
RCL 01	28	RCL 01	Add sum - multiples of 5
+	29	+	
STO 01	30	STO 01	Save new sum
RCL 00	31	RCL 00	
15	32	15	Get the multiples of 15
÷	33	/	
XEQ [ALPHA]INT[ALPHA]	34	INT	Only work with the integer part
☐ X=0?	35	X=0?	Skip rest if there are no multiples
☐ GTO [ALPHA]EPQ[ALPHA]	36	GTO"EPQ	
ENTER↑	37	ENTER↗	
ENTER↑	38	ENTER↗	

key strokes	step	display code(s)	remark
1	39	1	Sum series: $\frac{n*(n+1)}{2}$
+	40	+	
×	41	*	
7.5	42	7.5	
×	43	*	
RCL 01	44	RCL 01	Subtrack sum - multiples of 3×5
$X \leqslant Y$	45	X<>Y	
-	46	-	
STO 01	47	STO 01	Save new sum
□ LBL [ALPHA]EPQ[ALPHA]	48	LBL"EPQ	End part of program for problem 1
RCL 01	49	RCL 01	Get the end sum
□ RTN	50	RTN	Return
□ GTO . .		00 REG nnn	End RPN coding
[PRGM]			Leave program mode
□ ASN [ALPHA]EPA[ALPHA] LN			Assign "EPA" to LN
[USER]			Set USER mode

3 How to use the program

The program wil solve Euler Project problem 1 for a given range.

The HP-41C calculator has been set in USER-mode.
Enter the range value and run the program by LN (in user-mode) or direct by:

```
XEQ [ALPHA]EPA[ALPHA]
```

```
Example input:
   10
   LN
```

Output: 23.00000000

or:

Example input:

```
   1000
   XEQ [ALPHA]EPA[ALPHA]
```

Output: $233,168.0000$

This code also worked correct a HP-11C by changing the label names and register numbers.
For example; change label **EPA** to **E** and label **EPQ** to **D**.
Registers 00 and 01 on the HP-41C can be changed to registers 0 and 1.