

Prime Factorization for the HP-15C model

Prof. Bernd Ulmann

December 18, 2013

Contents

1	Prime Factorization HP-15C code	2
2	How to use the Prime Factorization program	4

1 Prime Factorization HP-15C code

key strokes	step	display code(s)	remark
ON			Switch the calculator ON
\boxed{g} P/R			Enter program mode
\boxed{f} CLEAR PRGM			Clear all program memory
\boxed{f} LBL A	01	42,21, A	Start
\boxed{g} SF 5	02	43, 4, 5	Set user flag
STO 0	03	44 0	Save input
2	04	2	
STO 1	05	44 1	Save first prime
\boxed{f} LBL 1	06	42,21, 1	
RCL 0	07	45 0	Read working number
RCL 1	08	45 1	Read prime
\div	09	10	
ENTER	10	36	
\boxed{f} FRAC	11	42 44	
\boxed{g} TEST 0	12	43,30, 0	Test $X \neq Y$?
GTO 2	13	22 2	
RCL 1	14	45 1	Read prime
\boxed{f} PSE	15	42 31	Pause and show register X (prime factor)
R \downarrow	16	33	(Get register Y)
R \downarrow	17	33	Get register Z

key strokes	step	display code(s)	remark
STO 0	18	44 0	
GTO 1	19	22 1	Next...
f LBL 2	20	42,21, 2	
1	21	1	
STO + 1	22	44,40, 1	
g F? 5	23	43, 6, 5	
STO + 1	24	44,40, 1	
g CF 5	25	43, 5, 5	
RCL 0	26	45 0	Read working number
RCL 1	27	45 1	Read prime
g x^2	28	43 11	
g $X \leq Y$	29	43 10	
GTO 1	30	22 1	Next...
RCL 0	31	45 0	Read working number
g RTN	32	43 32	Return
g P/R			Leave program mode

2 How to use the Prime Factorization program

Enter number N and run with `f` A . The program will show all the prime factors of N from a low prime (2) and then up.

Example:

```
10
f A
```

Output:

```
running
2      (pause one second)
running
5
```

BUT with 33 this program does not work:

33

f A

SHOULD Output:

running

2 (*pause one second*)

running

11

BUT ALAS... Output:

running

33