

```

> #This is Maple code
> # by Matt Anderson
> # have procedure to search for and find pairs of prime numbers
>
> #input difference between the two prime numbers in variable diff1 (meaning difference 1)
>
> # note the two prime numbers are not necessarily consecutive primes.
>
> # you could use ithprime() to optimise this code, and make the calculations sub microsecond.
> # but it is pretty fast already. It is nice clean simple code.
>
>
>
>
> mattsPrimePairsProc :=proc(diff1);
  local a, counter, searchstop;
  counter := 1 :
  searchstop := 1000;                                # local parameter
  for a from 3 to searchstop by 2 do
    if isprime(a) and isprime(a+diff1) then print(counter, "hourah!! we found a pair", a, " ", a + diff1);
    counter := counter+1;
  end if;
  end do;
end proc;
mattsPrimePairsProc := proc(diff1)                                         (1)
  local a, counter, searchstop;
  counter := 1;
  searchstop := 1000;
  for a from 3 by 2 to searchstop do
    if isprime(a) and isprime(a+diff1) then
      print(counter, "hourah!! we found a pair", a, " ", a+diff1); counter := counter+1
    end if
  end do
end proc
> # now try the procedure - like a test drive for computer code.
> # note OEIS.org only records prime pairs for even numbers 2 through 44.
> # we want original calculations, not in a public database.
> # calculate pairs for 46,48,50,52,54,100, and 1000.
> mattsPrimePairsProc(46)
  1, "hourah!! we found a pair", 7, " ", 53
  2, "hourah!! we found a pair", 13, " ", 59
  3, "hourah!! we found a pair", 37, " ", 83
  4, "hourah!! we found a pair", 43, " ", 89
  5, "hourah!! we found a pair", 61, " ", 107
  6, "hourah!! we found a pair", 67, " ", 113

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7, "hourah!! we found a pair", 103, " ", 149
8, "hourah!! we found a pair", 127, " ", 173
9, "hourah!! we found a pair", 151, " ", 197
10, "hourah!! we found a pair", 181, " ", 227
11, "hourah!! we found a pair", 193, " ", 239
12, "hourah!! we found a pair", 211, " ", 257
13, "hourah!! we found a pair", 223, " ", 269
14, "hourah!! we found a pair", 271, " ", 317
15, "hourah!! we found a pair", 307, " ", 353
16, "hourah!! we found a pair", 313, " ", 359
17, "hourah!! we found a pair", 337, " ", 383
18, "hourah!! we found a pair", 373, " ", 419
19, "hourah!! we found a pair", 397, " ", 443
20, "hourah!! we found a pair", 421, " ", 467
21, "hourah!! we found a pair", 433, " ", 479
22, "hourah!! we found a pair", 457, " ", 503
23, "hourah!! we found a pair", 463, " ", 509
24, "hourah!! we found a pair", 523, " ", 569
25, "hourah!! we found a pair", 541, " ", 587
26, "hourah!! we found a pair", 547, " ", 593
27, "hourah!! we found a pair", 571, " ", 617
28, "hourah!! we found a pair", 601, " ", 647
29, "hourah!! we found a pair", 607, " ", 653
30, "hourah!! we found a pair", 613, " ", 659
31, "hourah!! we found a pair", 631, " ", 677
32, "hourah!! we found a pair", 673, " ", 719
33, "hourah!! we found a pair", 727, " ", 773
34, "hourah!! we found a pair", 751, " ", 797
35, "hourah!! we found a pair", 811, " ", 857
36, "hourah!! we found a pair", 883, " ", 929
37, "hourah!! we found a pair", 907, " ", 953
38, "hourah!! we found a pair", 937, " ", 983
39, "hourah!! we found a pair", 967, " ", 1013

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```
> #yeaaaaaaah success
> # and that, gentlemen, is how you do that
> # quote from the awesome movie "Apollo 13", based on a real life near failure of a spacecraft.
> # Matt
> #share
>
> #now that we know that it works, here is another data set
> mattsPrimePairsProc(48)
      1, "hourah!! we found a pair", 5, " ", 53
      2, "hourah!! we found a pair", 11, " ", 59
```

3, "hourah!! we found a pair", 13, " ", 61
4, "hourah!! we found a pair", 19, " ", 67
5, "hourah!! we found a pair", 23, " ", 71
6, "hourah!! we found a pair", 31, " ", 79
7, "hourah!! we found a pair", 41, " ", 89
8, "hourah!! we found a pair", 53, " ", 101
9, "hourah!! we found a pair", 59, " ", 107
10, "hourah!! we found a pair", 61, " ", 109
11, "hourah!! we found a pair", 79, " ", 127
12, "hourah!! we found a pair", 83, " ", 131
13, "hourah!! we found a pair", 89, " ", 137
14, "hourah!! we found a pair", 101, " ", 149
15, "hourah!! we found a pair", 103, " ", 151
16, "hourah!! we found a pair", 109, " ", 157
17, "hourah!! we found a pair", 131, " ", 179
18, "hourah!! we found a pair", 149, " ", 197
19, "hourah!! we found a pair", 151, " ", 199
20, "hourah!! we found a pair", 163, " ", 211
21, "hourah!! we found a pair", 179, " ", 227
22, "hourah!! we found a pair", 181, " ", 229
23, "hourah!! we found a pair", 191, " ", 239
24, "hourah!! we found a pair", 193, " ", 241
25, "hourah!! we found a pair", 223, " ", 271
26, "hourah!! we found a pair", 229, " ", 277
27, "hourah!! we found a pair", 233, " ", 281
28, "hourah!! we found a pair", 263, " ", 311
29, "hourah!! we found a pair", 269, " ", 317
30, "hourah!! we found a pair", 283, " ", 331
31, "hourah!! we found a pair", 311, " ", 359
32, "hourah!! we found a pair", 331, " ", 379
33, "hourah!! we found a pair", 349, " ", 397
34, "hourah!! we found a pair", 353, " ", 401
35, "hourah!! we found a pair", 373, " ", 421
36, "hourah!! we found a pair", 383, " ", 431
37, "hourah!! we found a pair", 401, " ", 449
38, "hourah!! we found a pair", 409, " ", 457
39, "hourah!! we found a pair", 419, " ", 467
40, "hourah!! we found a pair", 431, " ", 479
41, "hourah!! we found a pair", 439, " ", 487
42, "hourah!! we found a pair", 443, " ", 491
43, "hourah!! we found a pair", 461, " ", 509
44, "hourah!! we found a pair", 499, " ", 547

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45, "hourah!! we found a pair", 509, " ", 557
46, "hourah!! we found a pair", 521, " ", 569
47, "hourah!! we found a pair", 523, " ", 571
48, "hourah!! we found a pair", 569, " ", 617
49, "hourah!! we found a pair", 571, " ", 619
50, "hourah!! we found a pair", 593, " ", 641
51, "hourah!! we found a pair", 599, " ", 647
52, "hourah!! we found a pair", 613, " ", 661
53, "hourah!! we found a pair", 643, " ", 691
54, "hourah!! we found a pair", 653, " ", 701
55, "hourah!! we found a pair", 661, " ", 709
56, "hourah!! we found a pair", 691, " ", 739
57, "hourah!! we found a pair", 709, " ", 757
58, "hourah!! we found a pair", 739, " ", 787
59, "hourah!! we found a pair", 761, " ", 809
60, "hourah!! we found a pair", 773, " ", 821
61, "hourah!! we found a pair", 809, " ", 857
62, "hourah!! we found a pair", 811, " ", 859
63, "hourah!! we found a pair", 829, " ", 877
64, "hourah!! we found a pair", 839, " ", 887
65, "hourah!! we found a pair", 859, " ", 907
66, "hourah!! we found a pair", 863, " ", 911
67, "hourah!! we found a pair", 881, " ", 929
68, "hourah!! we found a pair", 919, " ", 967
69, "hourah!! we found a pair", 929, " ", 977
70, "hourah!! we found a pair", 971, " ", 1019
71, "hourah!! we found a pair", 983, " ", 1031
72, "hourah!! we found a pair", 991, " ", 1039
```

(3)

```
> #lets try a bigger number
> mattsPrimePairsProc(50)
```

```
1, "hourah!! we found a pair", 3, " ", 53
2, "hourah!! we found a pair", 11, " ", 61
3, "hourah!! we found a pair", 17, " ", 67
4, "hourah!! we found a pair", 23, " ", 73
5, "hourah!! we found a pair", 29, " ", 79
6, "hourah!! we found a pair", 47, " ", 97
7, "hourah!! we found a pair", 53, " ", 103
8, "hourah!! we found a pair", 59, " ", 109
9, "hourah!! we found a pair", 89, " ", 139
10, "hourah!! we found a pair", 101, " ", 151
11, "hourah!! we found a pair", 107, " ", 157
12, "hourah!! we found a pair", 113, " ", 163
13, "hourah!! we found a pair", 131, " ", 181
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14, "hourah!! we found a pair", 149, " ", 199
15, "hourah!! we found a pair", 173, " ", 223
16, "hourah!! we found a pair", 179, " ", 229
17, "hourah!! we found a pair", 191, " ", 241
18, "hourah!! we found a pair", 227, " ", 277
19, "hourah!! we found a pair", 233, " ", 283
20, "hourah!! we found a pair", 257, " ", 307
21, "hourah!! we found a pair", 263, " ", 313
22, "hourah!! we found a pair", 281, " ", 331
23, "hourah!! we found a pair", 317, " ", 367
24, "hourah!! we found a pair", 347, " ", 397
25, "hourah!! we found a pair", 359, " ", 409
26, "hourah!! we found a pair", 383, " ", 433
27, "hourah!! we found a pair", 389, " ", 439
28, "hourah!! we found a pair", 449, " ", 499
29, "hourah!! we found a pair", 491, " ", 541
30, "hourah!! we found a pair", 521, " ", 571
31, "hourah!! we found a pair", 557, " ", 607
32, "hourah!! we found a pair", 563, " ", 613
33, "hourah!! we found a pair", 569, " ", 619
34, "hourah!! we found a pair", 593, " ", 643
35, "hourah!! we found a pair", 641, " ", 691
36, "hourah!! we found a pair", 659, " ", 709
37, "hourah!! we found a pair", 677, " ", 727
38, "hourah!! we found a pair", 683, " ", 733
39, "hourah!! we found a pair", 701, " ", 751
40, "hourah!! we found a pair", 719, " ", 769
41, "hourah!! we found a pair", 761, " ", 811
42, "hourah!! we found a pair", 773, " ", 823
43, "hourah!! we found a pair", 809, " ", 859
44, "hourah!! we found a pair", 827, " ", 877
45, "hourah!! we found a pair", 857, " ", 907
46, "hourah!! we found a pair", 887, " ", 937
47, "hourah!! we found a pair", 941, " ", 991
48, "hourah!! we found a pair", 947, " ", 997
49, "hourah!! we found a pair", 971, " ", 1021
50, "hourah!! we found a pair", 983, " ", 1033

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> # similarly,

> mattsPrimePairsProc(52)

1, "hourah!! we found a pair", 7, " ", 59
2, "hourah!! we found a pair", 19, " ", 71
3, "hourah!! we found a pair", 31, " ", 83
4, "hourah!! we found a pair", 37, " ", 89

5, "hourah!! we found a pair", 61, " ", 113
6, "hourah!! we found a pair", 79, " ", 131
7, "hourah!! we found a pair", 97, " ", 149
8, "hourah!! we found a pair", 127, " ", 179
9, "hourah!! we found a pair", 139, " ", 191
10, "hourah!! we found a pair", 181, " ", 233
11, "hourah!! we found a pair", 199, " ", 251
12, "hourah!! we found a pair", 211, " ", 263
13, "hourah!! we found a pair", 229, " ", 281
14, "hourah!! we found a pair", 241, " ", 293
15, "hourah!! we found a pair", 307, " ", 359
16, "hourah!! we found a pair", 331, " ", 383
17, "hourah!! we found a pair", 337, " ", 389
18, "hourah!! we found a pair", 349, " ", 401
19, "hourah!! we found a pair", 367, " ", 419
20, "hourah!! we found a pair", 379, " ", 431
21, "hourah!! we found a pair", 397, " ", 449
22, "hourah!! we found a pair", 409, " ", 461
23, "hourah!! we found a pair", 439, " ", 491
24, "hourah!! we found a pair", 457, " ", 509
25, "hourah!! we found a pair", 541, " ", 593
26, "hourah!! we found a pair", 547, " ", 599
27, "hourah!! we found a pair", 601, " ", 653
28, "hourah!! we found a pair", 607, " ", 659
29, "hourah!! we found a pair", 631, " ", 683
30, "hourah!! we found a pair", 691, " ", 743
31, "hourah!! we found a pair", 709, " ", 761
32, "hourah!! we found a pair", 757, " ", 809
33, "hourah!! we found a pair", 769, " ", 821
34, "hourah!! we found a pair", 787, " ", 839
35, "hourah!! we found a pair", 811, " ", 863
36, "hourah!! we found a pair", 829, " ", 881
37, "hourah!! we found a pair", 859, " ", 911
38, "hourah!! we found a pair", 877, " ", 929
39, "hourah!! we found a pair", 919, " ", 971
40, "hourah!! we found a pair", 967, " ", 1019
41, "hourah!! we found a pair", 997, " ", 1049

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[> # more

> mattsPrimePairsProc(54)

```
1, "hourah!! we found a pair", 5, " ", 59
2, "hourah!! we found a pair", 7, " ", 61
3, "hourah!! we found a pair", 13, " ", 67
4, "hourah!! we found a pair", 17, " ", 71
5, "hourah!! we found a pair", 19, " ", 73
6, "hourah!! we found a pair", 29, " ", 83
7, "hourah!! we found a pair", 43, " ", 97
8, "hourah!! we found a pair", 47, " ", 101
9, "hourah!! we found a pair", 53, " ", 107
10, "hourah!! we found a pair", 59, " ", 113
11, "hourah!! we found a pair", 73, " ", 127
12, "hourah!! we found a pair", 83, " ", 137
13, "hourah!! we found a pair", 97, " ", 151
14, "hourah!! we found a pair", 103, " ", 157
15, "hourah!! we found a pair", 109, " ", 163
16, "hourah!! we found a pair", 113, " ", 167
17, "hourah!! we found a pair", 127, " ", 181
18, "hourah!! we found a pair", 137, " ", 191
19, "hourah!! we found a pair", 139, " ", 193
20, "hourah!! we found a pair", 157, " ", 211
21, "hourah!! we found a pair", 173, " ", 227
22, "hourah!! we found a pair", 179, " ", 233
23, "hourah!! we found a pair", 197, " ", 251
24, "hourah!! we found a pair", 223, " ", 277
25, "hourah!! we found a pair", 227, " ", 281
26, "hourah!! we found a pair", 229, " ", 283
27, "hourah!! we found a pair", 239, " ", 293
28, "hourah!! we found a pair", 257, " ", 311
29, "hourah!! we found a pair", 263, " ", 317
30, "hourah!! we found a pair", 277, " ", 331
31, "hourah!! we found a pair", 283, " ", 337
32, "hourah!! we found a pair", 293, " ", 347
33, "hourah!! we found a pair", 313, " ", 367
34, "hourah!! we found a pair", 347, " ", 401
35, "hourah!! we found a pair", 367, " ", 421
36, "hourah!! we found a pair", 379, " ", 433
37, "hourah!! we found a pair", 389, " ", 443
38, "hourah!! we found a pair", 409, " ", 463
39, "hourah!! we found a pair", 433, " ", 487
40, "hourah!! we found a pair", 449, " ", 503
41, "hourah!! we found a pair", 467, " ", 521
```

42, "hourah!! we found a pair", 487, " ", 541
43, "hourah!! we found a pair", 503, " ", 557
44, "hourah!! we found a pair", 509, " ", 563
45, "hourah!! we found a pair", 523, " ", 577
46, "hourah!! we found a pair", 547, " ", 601
47, "hourah!! we found a pair", 563, " ", 617
48, "hourah!! we found a pair", 577, " ", 631
49, "hourah!! we found a pair", 587, " ", 641
50, "hourah!! we found a pair", 593, " ", 647
51, "hourah!! we found a pair", 599, " ", 653
52, "hourah!! we found a pair", 607, " ", 661
53, "hourah!! we found a pair", 619, " ", 673
54, "hourah!! we found a pair", 647, " ", 701
55, "hourah!! we found a pair", 673, " ", 727
56, "hourah!! we found a pair", 719, " ", 773
57, "hourah!! we found a pair", 733, " ", 787
58, "hourah!! we found a pair", 743, " ", 797
59, "hourah!! we found a pair", 757, " ", 811
60, "hourah!! we found a pair", 769, " ", 823
61, "hourah!! we found a pair", 773, " ", 827
62, "hourah!! we found a pair", 809, " ", 863
63, "hourah!! we found a pair", 823, " ", 877
64, "hourah!! we found a pair", 827, " ", 881
65, "hourah!! we found a pair", 829, " ", 883
66, "hourah!! we found a pair", 853, " ", 907
67, "hourah!! we found a pair", 857, " ", 911
68, "hourah!! we found a pair", 883, " ", 937
69, "hourah!! we found a pair", 887, " ", 941
70, "hourah!! we found a pair", 929, " ", 983
71, "hourah!! we found a pair", 937, " ", 991
72, "hourah!! we found a pair", 967, " ", 1021
73, "hourah!! we found a pair", 977, " ", 1031
74, "hourah!! we found a pair", 997, " ", 1051

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> # furthur

```
> mattsPrimePairsProc(100)
    1, "hourah!! we found a pair", 3, " ", 103
    2, "hourah!! we found a pair", 7, " ", 107
    3, "hourah!! we found a pair", 13, " ", 113
    4, "hourah!! we found a pair", 31, " ", 131
    5, "hourah!! we found a pair", 37, " ", 137
    6, "hourah!! we found a pair", 67, " ", 167
    7, "hourah!! we found a pair", 73, " ", 173
    8, "hourah!! we found a pair", 79, " ", 179
    9, "hourah!! we found a pair", 97, " ", 197
   10, "hourah!! we found a pair", 127, " ", 227
   11, "hourah!! we found a pair", 139, " ", 239
   12, "hourah!! we found a pair", 151, " ", 251
   13, "hourah!! we found a pair", 157, " ", 257
   14, "hourah!! we found a pair", 163, " ", 263
   15, "hourah!! we found a pair", 181, " ", 281
   16, "hourah!! we found a pair", 193, " ", 293
   17, "hourah!! we found a pair", 211, " ", 311
   18, "hourah!! we found a pair", 283, " ", 383
   19, "hourah!! we found a pair", 331, " ", 431
   20, "hourah!! we found a pair", 349, " ", 449
   21, "hourah!! we found a pair", 367, " ", 467
   22, "hourah!! we found a pair", 379, " ", 479
   23, "hourah!! we found a pair", 409, " ", 509
   24, "hourah!! we found a pair", 421, " ", 521
   25, "hourah!! we found a pair", 457, " ", 557
   26, "hourah!! we found a pair", 463, " ", 563
   27, "hourah!! we found a pair", 487, " ", 587
   28, "hourah!! we found a pair", 499, " ", 599
   29, "hourah!! we found a pair", 541, " ", 641
   30, "hourah!! we found a pair", 547, " ", 647
   31, "hourah!! we found a pair", 577, " ", 677
   32, "hourah!! we found a pair", 601, " ", 701
   33, "hourah!! we found a pair", 619, " ", 719
   34, "hourah!! we found a pair", 643, " ", 743
   35, "hourah!! we found a pair", 661, " ", 761
   36, "hourah!! we found a pair", 673, " ", 773
   37, "hourah!! we found a pair", 709, " ", 809
   38, "hourah!! we found a pair", 727, " ", 827
   39, "hourah!! we found a pair", 739, " ", 839
   40, "hourah!! we found a pair", 757, " ", 857
   41, "hourah!! we found a pair", 787, " ", 887
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```
42, "hourah!! we found a pair", 811, " ", 911  
43, "hourah!! we found a pair", 829, " ", 929  
44, "hourah!! we found a pair", 853, " ", 953  
45, "hourah!! we found a pair", 877, " ", 977  
46, "hourah!! we found a pair", 883, " ", 983  
47, "hourah!! we found a pair", 919, " ", 1019  
48, "hourah!! we found a pair", 991, " ", 1091  
49, "hourah!! we found a pair", 997, " ", 1097
```

(7)

> # and for a shorter list, let's look at prime pairs with a difference of 1000.

```
> mattsPrimePairsProc(1000);
1, "hourah!! we found a pair", 13, " ", 1013
2, "hourah!! we found a pair", 19, " ", 1019
3, "hourah!! we found a pair", 31, " ", 1031
4, "hourah!! we found a pair", 61, " ", 1061
5, "hourah!! we found a pair", 97, " ", 1097
6, "hourah!! we found a pair", 103, " ", 1103
7, "hourah!! we found a pair", 109, " ", 1109
8, "hourah!! we found a pair", 151, " ", 1151
9, "hourah!! we found a pair", 163, " ", 1163
10, "hourah!! we found a pair", 181, " ", 1181
11, "hourah!! we found a pair", 193, " ", 1193
12, "hourah!! we found a pair", 223, " ", 1223
13, "hourah!! we found a pair", 229, " ", 1229
14, "hourah!! we found a pair", 277, " ", 1277
15, "hourah!! we found a pair", 283, " ", 1283
16, "hourah!! we found a pair", 307, " ", 1307
17, "hourah!! we found a pair", 367, " ", 1367
18, "hourah!! we found a pair", 373, " ", 1373
19, "hourah!! we found a pair", 409, " ", 1409
20, "hourah!! we found a pair", 433, " ", 1433
21, "hourah!! we found a pair", 439, " ", 1439
22, "hourah!! we found a pair", 487, " ", 1487
23, "hourah!! we found a pair", 499, " ", 1499
24, "hourah!! we found a pair", 523, " ", 1523
25, "hourah!! we found a pair", 571, " ", 1571
26, "hourah!! we found a pair", 601, " ", 1601
27, "hourah!! we found a pair", 607, " ", 1607
28, "hourah!! we found a pair", 613, " ", 1613
29, "hourah!! we found a pair", 619, " ", 1619
30, "hourah!! we found a pair", 709, " ", 1709
31, "hourah!! we found a pair", 733, " ", 1733
32, "hourah!! we found a pair", 787, " ", 1787
33, "hourah!! we found a pair", 811, " ", 1811
34, "hourah!! we found a pair", 823, " ", 1823
35, "hourah!! we found a pair", 877, " ", 1877
36, "hourah!! we found a pair", 907, " ", 1907
37, "hourah!! we found a pair", 997, " ", 1997
```

```
> # you know that song "don't loose that (phone) number 867-5309"? well add a 0 to make it  
even.  
> mattsPrimePairsProc(86753090);  
 1, "hourah!! we found a pair", 11, " ", 86753101  
 2, "hourah!! we found a pair", 53, " ", 86753143  
 3, "hourah!! we found a pair", 89, " ", 86753179  
 4, "hourah!! we found a pair", 113, " ", 86753203  
 5, "hourah!! we found a pair", 167, " ", 86753257  
 6, "hourah!! we found a pair", 179, " ", 86753269  
 7, "hourah!! we found a pair", 191, " ", 86753281  
 8, "hourah!! we found a pair", 197, " ", 86753287  
 9, "hourah!! we found a pair", 233, " ", 86753323  
10, "hourah!! we found a pair", 251, " ", 86753341  
11, "hourah!! we found a pair", 257, " ", 86753347  
12, "hourah!! we found a pair", 347, " ", 86753437  
13, "hourah!! we found a pair", 383, " ", 86753473  
14, "hourah!! we found a pair", 641, " ", 86753731  
15, "hourah!! we found a pair", 719, " ", 86753809  
16, "hourah!! we found a pair", 809, " ", 86753899  
17, "hourah!! we found a pair", 821, " ", 86753911  
18, "hourah!! we found a pair", 827, " ", 86753917  
19, "hourah!! we found a pair", 881, " ", 86753971  
20, "hourah!! we found a pair", 971, " ", 86754061  
21, "hourah!! we found a pair", 977, " ", 86754067
```

(9)

```
> # That was 21 data points. Who knew that 977 is a prime number? I sure didn't.  
> # now share on web. (wheather it wants it or not :-)  
> # have a nice day  
> # Matthew
```