FACTORIZATION OF 36 FIBONACCI NUMBERS F_n WITH $n>100$

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The Fibonacci numbers F_n are defined by $F_1 = F_2 = 1$ and $F_{n+1} = F_n + F_{n-1}$ for $n > 1$. We present below the factorization of certain F_n with $n > 100$. The factors of F_n before the double asterisk are improper factors of F_n (they divide F_m with $m < n$), and those behind the double asterisk are proper factors of F_n. All the factors shown are believed to be primes. We obtained the results on the Elliott 803 computer at Reading University, and we hope to discuss our methods and extend the table in a later paper.

F102 = 2^3 * 1597 * 3571 * 6376021 ** 919 * 3469

F104 = 3 * 7 * 233 * 521 * 90481 ** 103 * 102193207

F105 = 2 * 5 * 13 * 61 * 421 * 141961 ** 8288823481

F106 = 953 * 55945741 ** 119218851371

F108 = 2^4 * 3^4 * 17 * 19 * 53 * 107 * 109 * 5779 ** 11128427

F110 = 5 * 11^2 * 89 * 199 * 661 * 474541 ** 331 * 39161

F112 = 3 * 7^2 * 13 * 29 * 47 * 281 * 14503 ** 10745088481

F114 = 2^3 * 37 * 113 * 797 * 9349 * 54833 ** 229 * 95419

F116 = 3 * 59 * 19489 * 514229 ** 347 * 1270083883

F117 = 2 * 17 * 233 * 135721 ** 29717 * 39589685693

F118 = 353 * 2710260697 ** 709 * 8969 * 336419

F120 = 2^5 * 3^2 * 5 * 7 * 11 * 23 * 31 * 41 * 61 * 2161 * 2521 ** 241 * 20641

F126 = 2^3 * 13 * 17 * 19 * 29 * 211 * 421 * 35239681 ** 1009 * 31249

F128 = 3 * 7 * 47 * 1087 * 2207 * 4481 ** 127 * 186812208641

F129 = 2 * 433494437 ** 257 * 5417 * 8513 * 39639893

F130 = 5 * 11 * 233 * 521 * 14736206161 ** 131 * 2081 * 24571

F132 = 2^4 * 3^2 * 43 * 89 * 199 * 307 * 9901 * 19801 ** 261399601

F134 = 269 * 116849 * 1429913 ** 4021 * 24994118449

F138 = 2^3 * 137 * 139 * 461 * 829 * 18077 * 28657 ** 691 * 1485571

F140 = 3 * 5 * 11 * 13 * 29 * 41 * 71 * 281 * 911 * 141961 ** 12317523121

F144 = 2^6 * 3^3 * 7 * 17 * 19 * 23 * 47 * 107 * 1103 * 103681 ** 10749957121

F147 = 2 * 13 * 97 * 421 * 6168709 ** 293 * 3529 * 347502052673

F148 = 3 * 73 * 149 * 2221 * 54018521 ** 11987 * 81143477963

$F150 = 2^3 * 5^2 * 11 * 31 * 61 * 101 * 151 * 3001 * 230686501 ** 12301 * 18451$

$F156 = 2^4 * 3^2 * 79 * 233 * 521 * 859 * 90481 * 135721 ** 12280217041$

$F162 = 2^3 * 17 * 19 * 53 * 109 * 2269 * 4373 * 5779 * 19441 ** 3079 * 62650261$

$F165 = 2 * 5 * 61 * 89 * 661 * 19801 * 474541 ** 86461 * 518101 * 900241$

$F168 = 2^5 * 3^2 * 7^2 * 13 * 23 * 29 * 83 * 211 * 281 * 421 * 1427 * 14503$
$** 167 * 65740583$

$F174 = 2^3 * 59 * 173 * 19489 * 514229 * 3821263937 ** 349 * 947104099$

$F180 = 2^4 * 3^3 * 5 * 11 * 17 * 19 * 31 * 41 * 61 * 107 * 181 * 541 * 2521$
$* 109441 ** 10783342081$

$F190 = 5 * 11 * 37 * 113 * 761 * 9349 * 29641 * 67735001 ** 191 * 41611$
$* 87382901$

$F198 = 2^3 * 17 * 19 * 89 * 197 * 199 * 9901 * 19801 * 18546805133 ** 991$
$* 2179 * 1513909$

$F204 = 2^4 * 3^2 * 67 * 919 * 1597 * 3469 * 3571 * 63443 * 6376021 ** 409$
$* 66265118449$

$F210 = 2^3 * 5 * 11 * 13 * 29 * 31 * 61 * 71 * 211 * 421 * 911 * 141961 *$
$8288823481 ** 21211 * 767131$

$F216 = 2^5 * 3^4 * 7 * 17 * 19 * 23 * 53 * 107 * 109 * 5779 * 103681$
$* 11128427 ** 6263 * 177962167367$

$F228 = 2^4 * 3^2 * 37 * 113 * 229 * 797 * 9349 * 54833 * 95419 * 29134601$
$** 227 * 26449 * 212067587$

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LETTER TO THE EDITOR

ERIC HALSEY
Redlands, California

Re: My article The Fibonacci Number F_u where u is not an integer in issue number 2 of the current volume of the Quarterly. I have discovered that, due to excessive haste and timidity on my part, I placed undue restrictions on the letter u. This variable can assume not only all rational values, as stated in the article, but all real values as well. Obviously, only for rational values can a complete numerical expression of F_u be obtained.