

Error-Correcting Codes: Factorization of $x^n - 1$ over $GF(2)$

n	Factorization of $x^n - 1$ over $GF(2)$
1	$x + 1$
2	$(x + 1)^2$
3	$(x^2 + x + 1)(x + 1)$
4	$(x + 1)^4$
5	$(x^4 + x^3 + x^2 + x + 1)(x + 1)$
6	$(x^2 + x + 1)^2(x + 1)^2$
7	$(x^3 + x + 1)(x^3 + x^2 + 1)(x + 1)$
8	$(x + 1)^8$
9	$(x^6 + x^3 + 1)(x^2 + x + 1)(x + 1)$
10	$(x^4 + x^3 + x^2 + x + 1)^2(x + 1)^2$
11	$(x^{10} + x^9 + x^8 + x^7 + x^6 + x^5 + x^4 + x^3 + x^2 + x + 1)(x + 1)$
12	$(x^2 + x + 1)^4(x + 1)^4$
13	$(x^{12} + x^{11} + x^{10} + x^9 + x^8 + x^7 + x^6 + x^5 + x^4 + x^3 + x^2 + x + 1)(x + 1)$
14	$(x^3 + x + 1)^2(x^3 + x^2 + 1)^2(x + 1)^2$
15	$(x^4 + x^3 + x^2 + x + 1)(x^4 + x^3 + 1)(x^4 + x + 1)(x^2 + x + 1)(x + 1)$
16	$(x + 1)^{16}$
17	$(x^8 + x^5 + x^4 + x^3 + 1)(x^8 + x^7 + x^6 + x^4 + x^2 + x + 1)(x + 1)$
18	$(x^6 + x^3 + 1)^2(x^2 + x + 1)^2(x + 1)^2$
19	$(x^{18} + x^{17} + x^{16} + x^{15} + x^{14} + \dots + x^7 + x^6 + x^5 + x^4 + x^3 + x^2 + x + 1)(x + 1)$
20	$(x^4 + x^3 + x^2 + x + 1)^4(x + 1)^4$
21	$(x^6 + x^5 + x^4 + x^2 + 1)(x^6 + x^4 + x^2 + x + 1)(x^3 + x^2 + 1)(x^3 + x + 1)(x^2 + x + 1)(x + 1)$
22	$(x^{10} + x^9 + x^8 + x^7 + x^6 + x^5 + x^4 + x^3 + x^2 + x + 1)^2(x + 1)^2$
23	$(x^{11} + x^{10} + x^6 + x^5 + x^4 + x^2 + 1)(x^{11} + x^9 + x^7 + x^6 + x^5 + x + 1)(x + 1)$
24	$(x^2 + x + 1)^8(x + 1)^8$
25	$(x^{20} + x^{15} + x^{10} + x^5 + 1)(x^4 + x^3 + x^2 + x + 1)(x + 1)$
26	$(x^{12} + x^{11} + x^{10} + x^9 + x^8 + x^7 + x^6 + x^5 + x^4 + x^3 + x^2 + x + 1)^2(x + 1)^2$
27	$(x^{18} + x^9 + 1)(x^6 + x^3 + 1)(x^2 + x + 1)(x + 1)$
28	$(x^3 + x + 1)^4(x^3 + x^2 + 1)^4(x + 1)^4$
29	$(x^{28} + x^{27} + x^{26} + x^{25} + x^{24} + x^{23} + x^{22} + x^{21} + x^{16} + \dots + x^5 + x^4 + x^3 + x^2 + x + 1)(x + 1)$
30	$(x^4 + x^3 + x^2 + x + 1)^2(x^4 + x + 1)^2(x^4 + x^3 + 1)^2(x^2 + x + 1)^2(x + 1)^2$
31	$(x^5 + x^4 + x^2 + x + 1)(x^5 + x^4 + x^3 + x + 1)(x^5 + x^3 + x^2 + x + 1)(x^5 + x^4 + x^3 + x^2 + 1)$
	$(x^5 + x^3 + 1)(x^5 + x^2 + 1)(x + 1)$
32	$(x + 1)^{32}$