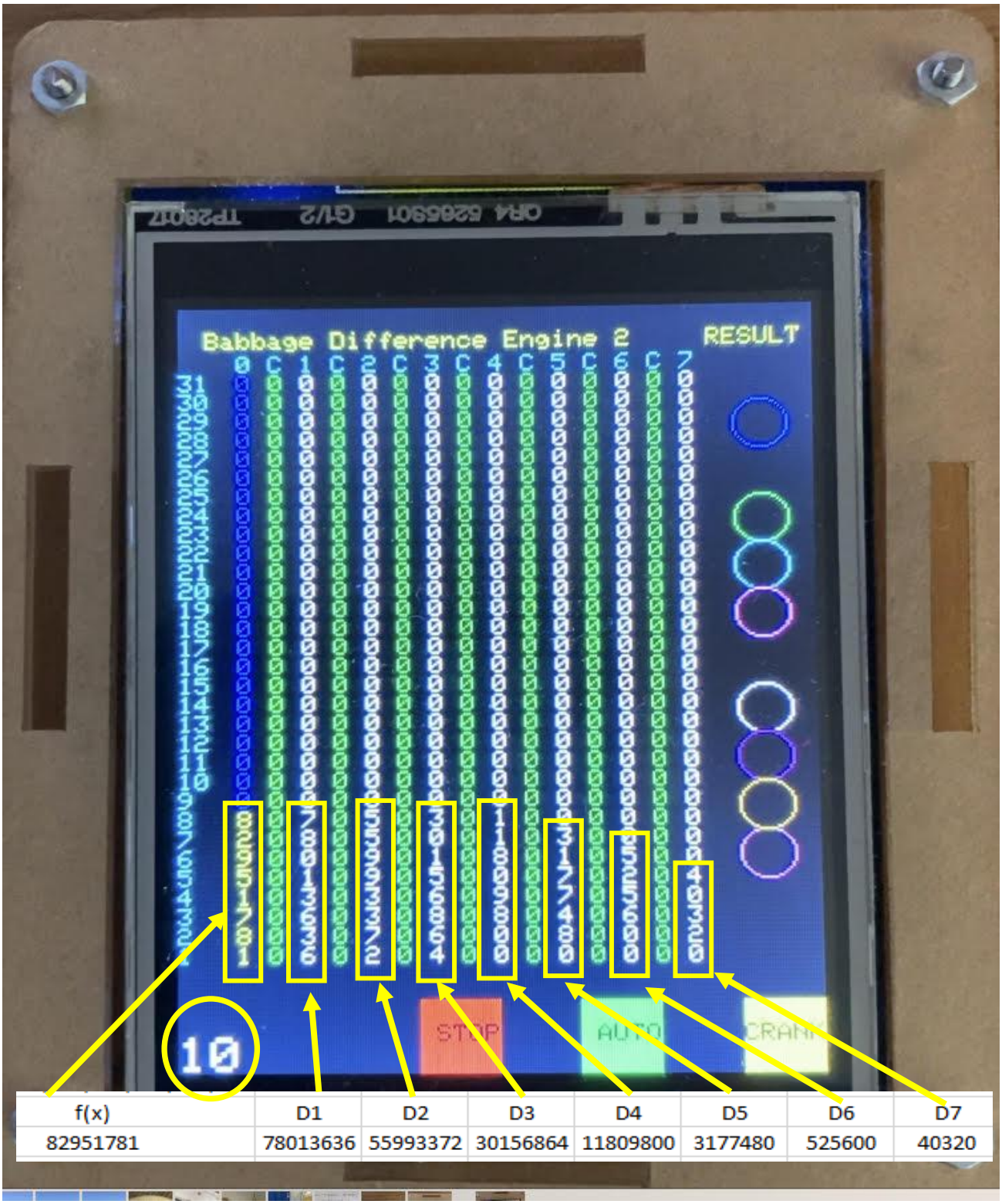
f(x)=41+ 4X + 7X^2 + X^3 + 5X^4 + 9X^5 + 2X^6 + 8X^7

Results from Excel - Modern Day Computer

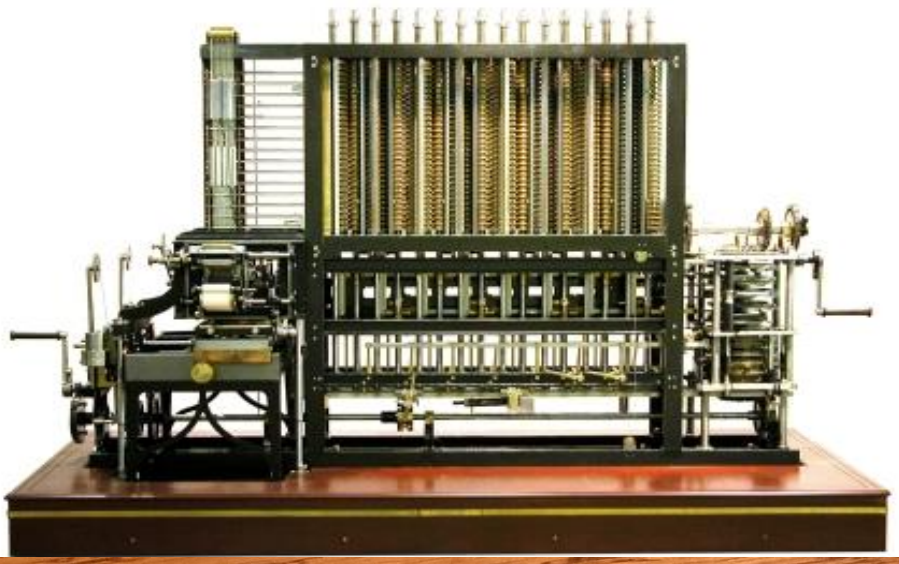
x	f(x)
0	41
1	77
2	1,605
3	21,689
4	149,993
5	687,861
6	2,409,797
7	6,987,665
8	17,617,929
9	39,892,253
10	82,951,781
20	10,397,610,921
30	176,640,783,461
40	1,319,846,475,401
50	6,284,093,892,741
100	802,090,501,070,441
200	102,530,888,008,281,000
300	1,751,079,910,527,630,000
400	13,115,484,288,065,100,000
500	62,531,531,562,626,800,000
600	224,042,812,488,219,000,000
700	659,071,211,830,846,000,000
800	1,678,248,839,168,520,000,000
900	3,827,443,399,691,230,000,000
1000	8,002,009,005,001,010,000,000

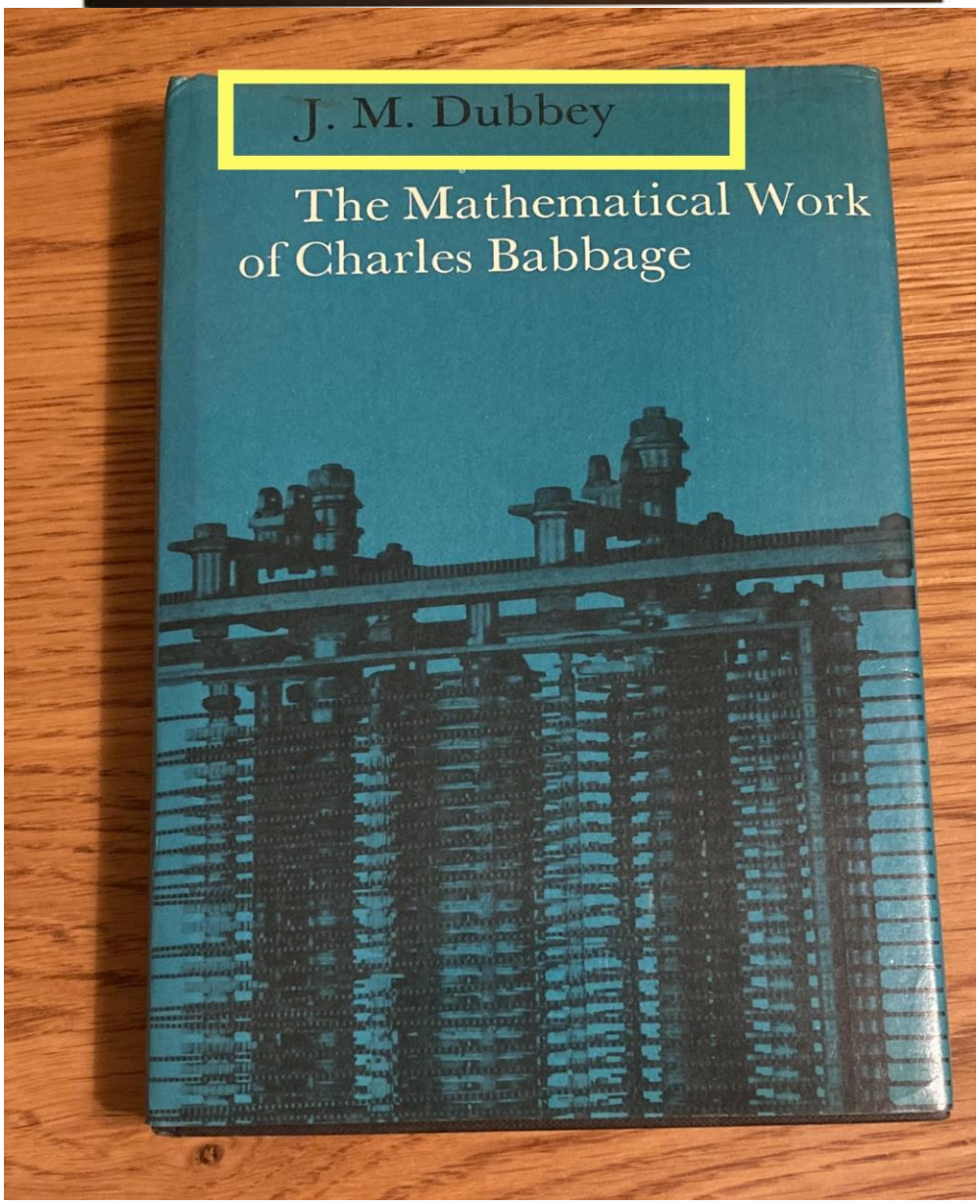
Accurate Results from Difference Engine

100	802,090,501,070,441
200	102,530,888,008,280,841
300	1,751,079,910,527,631,241
400	13,115,484,288,065,121,641
500	62,531,531,562,626,752,041
600	224,042,812,488,218,522,441
700	659,071,211,830,846,432,841
800	1,678,248,839,168,516,483,241
900	3,827,443,399,691,234,673,641
1000	8,002,009,005,001,007,004,041



f(x)	D1	D2	D3	D4	D5	D6	D7
82951781	78013636	55993372	30156864	11809800	3177480	525600	40320




J. M. Dubbey
The Mathematical Work
of Charles Babbage

f(x)=41+ 4X + 7X^2 + X^3 + 5X^4 + 9X^5 + 2X^6 + 8X^7

Wheel	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	*4	3	2	1
d0	0	0	0	0	0	8	0	0	2	0	0	9	0	0	5	0	0	1	0	0	7	0	0	4	0	4	1	1	0	0	0
d1	0	0	0	0	0	0	0	5	6	1	8	0	3	5	5	4	3	0	3	2	1	1	5	0	0	3	6	0	0	0	1
d2	0	0	0	0	0	0	0	0	0	3	3	6	0	6	0	7	4	0	1	2	0	2	0	8	0	2	8	0	0	0	0
d3	0	0	0	0	0	0	0	0	0	0	0	1	6	8	3	6	0	5	9	4	4	3	8	1	4	6	4	0	0	0	0
d4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	7	2	0	7	2	7	8	0	0	3	6	0	0	0	0	0
d5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	8	1	6	1	5	2	4	0	0	0	0	0
d6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	3	2	1	4	4	0	0	0	0	0
d7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	3	2	0	0	0	0	0

Figure 2: State of difference engine for demonstration polynomial at $n = 1000$.

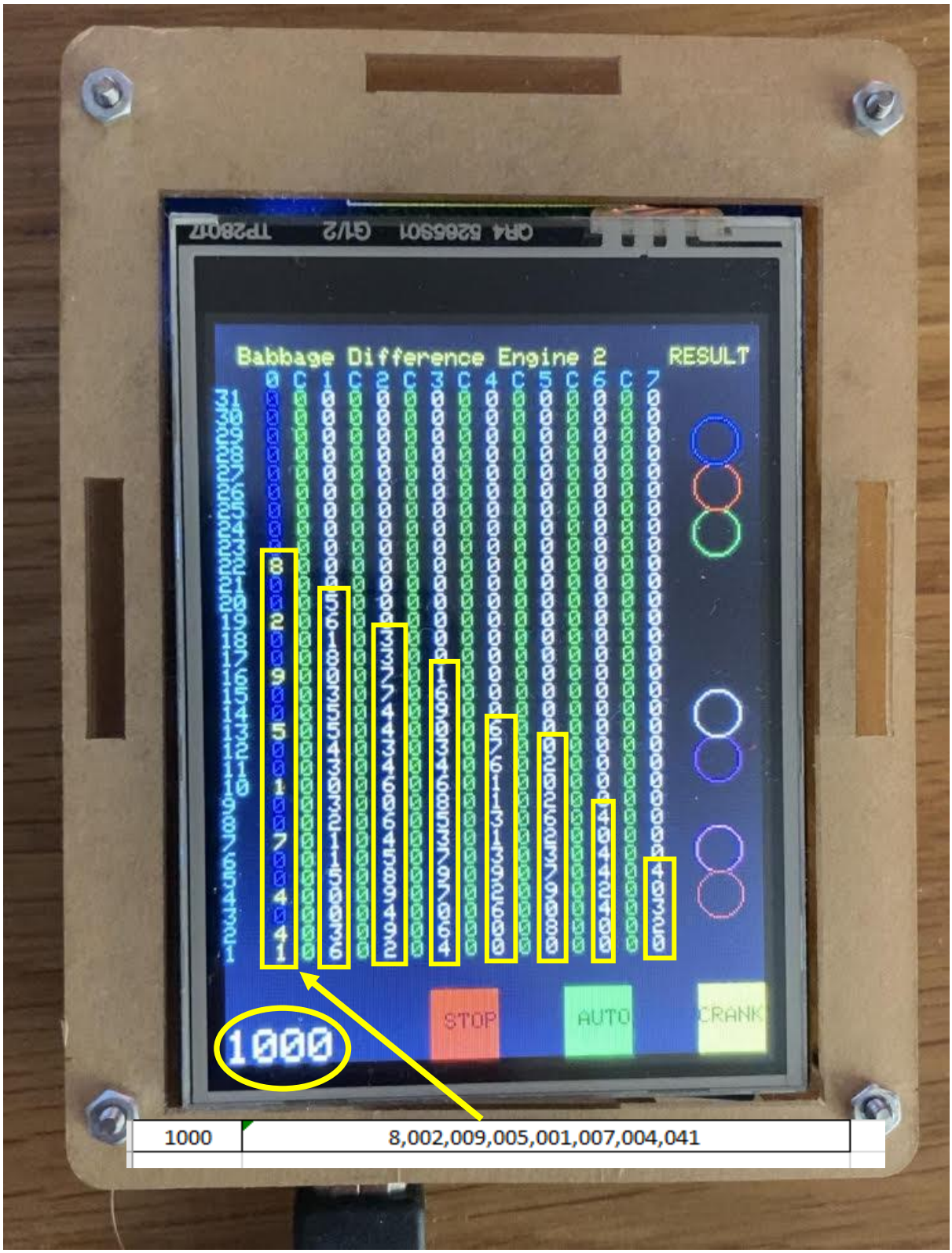
Result

Common Difference

Used as a Crank Counter in Actual Difference Engine 2 Demonstration

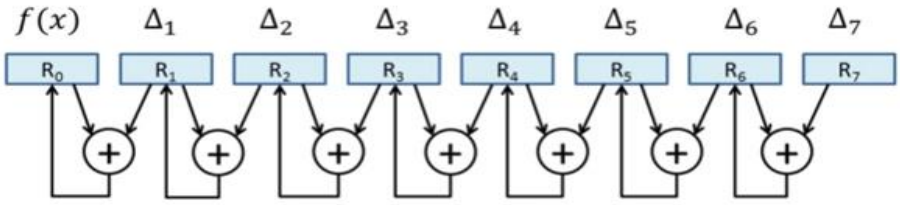
Intermediate Values

Working Calculation Area

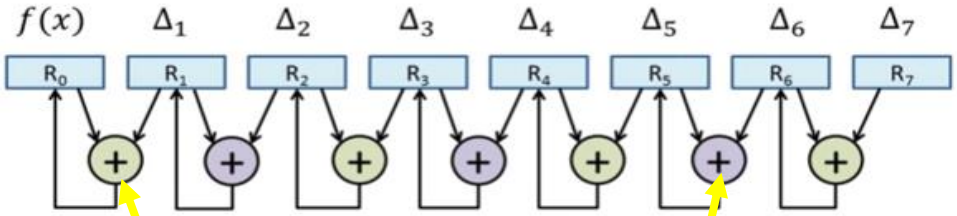


1000	8,002,009,005,001,007,004,041

Simple Difference Engine



Parallel Difference Engine



Crank Wheel from Difference Engine 2