

Results

Huffman encoding and the Digram codes both have a roughly 0.566 compression ratio on average throughout the books. LZW has a better ratio, at roughly 0.4 on average, and even better in the larger files. The encoding times are low across all version, although slightly higher for Digram encodings. In terms of decompression time, however, Huffman dominates and Digram does similarly well, with LZW taking substantially longer to decode. This is likely due to the fact that the LZW dictionary is built *while* decoding, rather than in advance as the other algorithms do.

Compression Ratio

Book	huff	digr256	digr512	digr1024	Z
booksconcatenated.txt	0.5604945	0.5652089	0.574964	0.622456	0.388507
COSC351Book9.txt	0.5534413	0.5642071	0.5736630	0.627523	0.3986813
COSC351Book8.txt	0.5551739	0.5537669	0.5621748	0.610779	0.4033066
COSC351Book1.txt	0.5770561	0.5818505	0.5891774	0.629991	0.3701997
COSC351Book3.txt	0.5595096	0.5607416	0.5693236	0.617735	0.3717153
COSC351Book2.txt	0.6133744	0.5959994	0.6015364	0.627999	0.4422218
COSC351Book11.txt	0.5760216	0.581714	0.5877749	0.631578	0.4363853
COSC351Book6.txt	0.5377800	0.5502413	0.5707676	0.626192	0.3297937
COSC351Book7.txt	0.5858161	0.5913031	0.5928237	0.633499	0.4487791
COSC351Book10.txt	0.5525951	0.561842	0.5748724	0.627915	0.3756025
COSC351Book12.txt	0.5692011	0.579192	0.5809537	0.629481	0.4368339
COSC351Book5.txt	0.5677460	0.5690558	0.5726505	0.615454	0.4293189
COSC351Book4.txt	0.5532878	0.5533734	0.5613407	0.610969	0.4018553
Average (Excluding concatenated file)	0.5667	0.5702	0.5780	0.6240	0.4037

Compression Time

Book	huff	digr256	digr512	digr1024	Z
booksconcatenated.txt	2.15940	11.2626	59.7247	37.6709	3.57204
COSC351Book9.txt	0.101715	0.32118	1.45907	0.85355	0.150858
COSC351Book8.txt	0.089279	0.36119	1.65650	0.99814	0.163541
COSC351Book1.txt	0.552514	2.97059	14.5745	9.15734	0.904412
COSC351Book3.txt	0.151484	0.70284	3.55290	2.12817	0.263904
COSC351Book2.txt	0.057547	0.18637	0.81170	0.55909	0.103832
COSC351Book11.txt	0.12146	0.54985	2.74783	1.68928	0.216869
COSC351Book6.txt	0.419373	2.12332	10.6359	7.27540	0.653938
COSC351Book7.txt	0.096311	0.41647	2.09133	1.32673	0.176856
COSC351Book10.txt	0.12441	0.55280	2.53451	1.46008	0.210440
COSC351Book12.txt	0.07899	0.30008	1.44488	0.91307	0.144340
COSC351Book5.txt	0.153254	0.70225	3.42205	2.00806	0.262462
COSC351Book4.txt	0.550812	2.92268	16.1308	9.32581	0.952356
TotalExcludingConcat	2.4971	12.1096	61.0621	37.6947	4.20381

Decompression Time

Book	huff	digr256	digr512	digr1024	Z
booksconcatenated.txt	4.49210	40.28276	36.16540	35.3852	853.2904
COSC351Book9.txt	0.145374	1.03933	0.96927	0.94345	39.50965
COSC351Book8.txt	0.157040	1.17539	1.07582	1.06425	41.00156
COSC351Book1.txt	1.171580	10.1384	9.23941	8.87138	77.28481
COSC351Book3.txt	0.292222	2.37355	2.15834	2.14727	40.08681
COSC351Book2.txt	0.090286	0.56682	0.51859	0.49412	14.97989
COSC351Book11.txt	0.22727	1.82853	1.63576	1.57090	263.5291
COSC351Book6.txt	0.869923	7.25149	6.67096	6.69210	42.85514

Book	huff	digr256	digr512	digr1024	Z
COSC351Book7.txt	0.180341	1.38990	1.21485	1.19728	47.77176
COSC351Book10.txt	0.23198	1.83959	1.69322	1.67957	69.21210
COSC351Book12.txt	0.13364	0.97381	0.88491	0.85177	38.09902
COSC351Book5.txt	0.295069	2.31903	2.07831	2.00297	85.80793
COSC351Book4.txt	1.169624	9.97354	9.01954	8.96145	654.3306
TotalExcludingConcat	4.9643	40.8694	37.1590	36.4765	1414.4685