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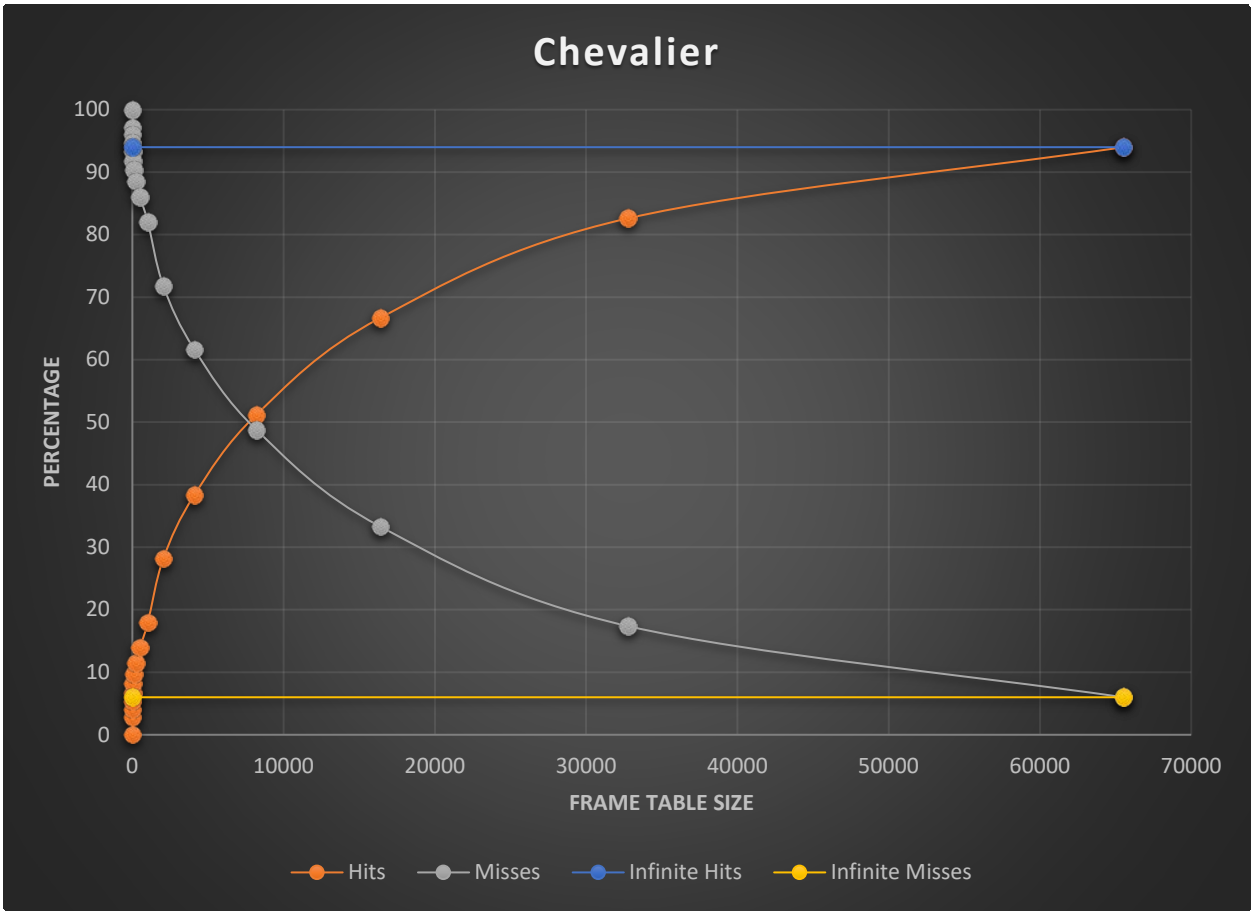
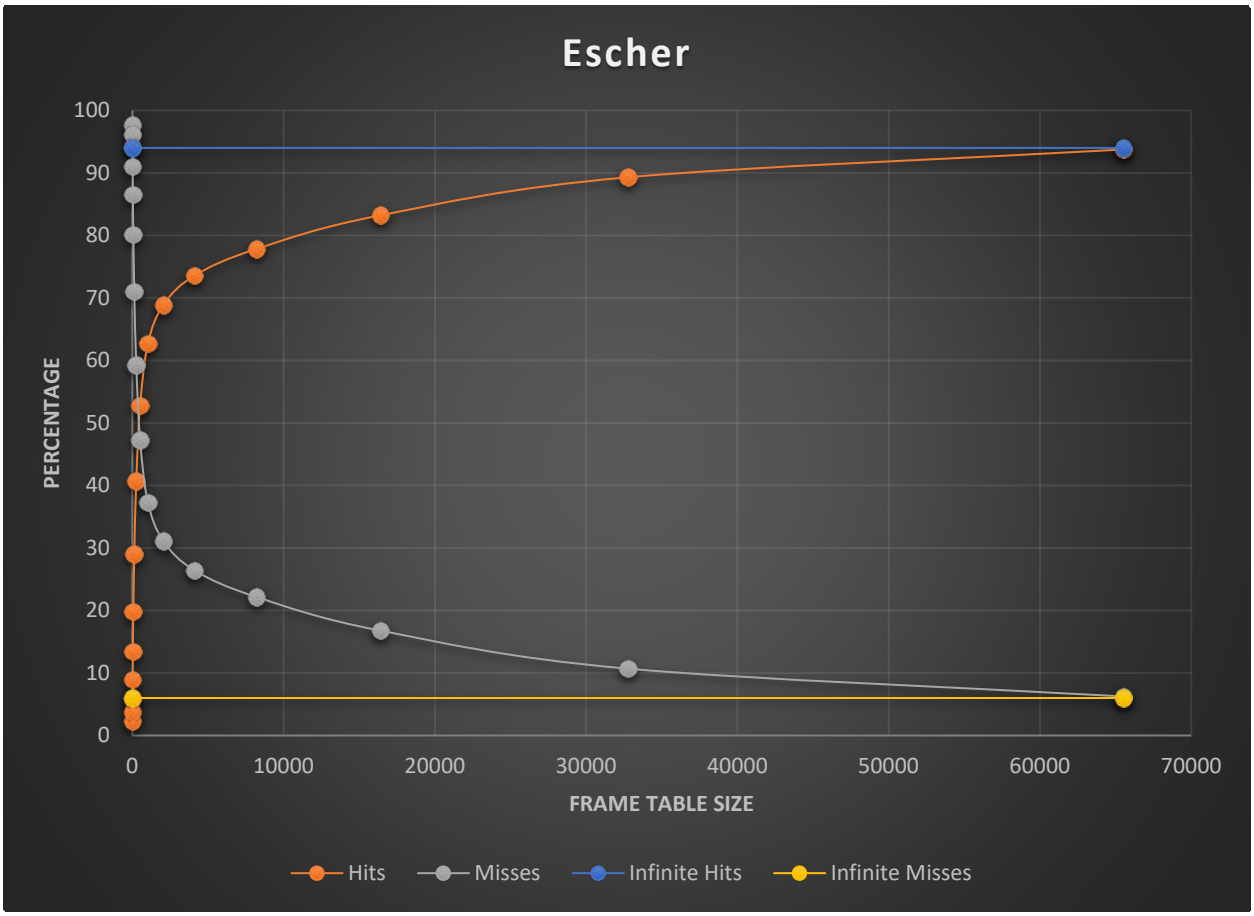
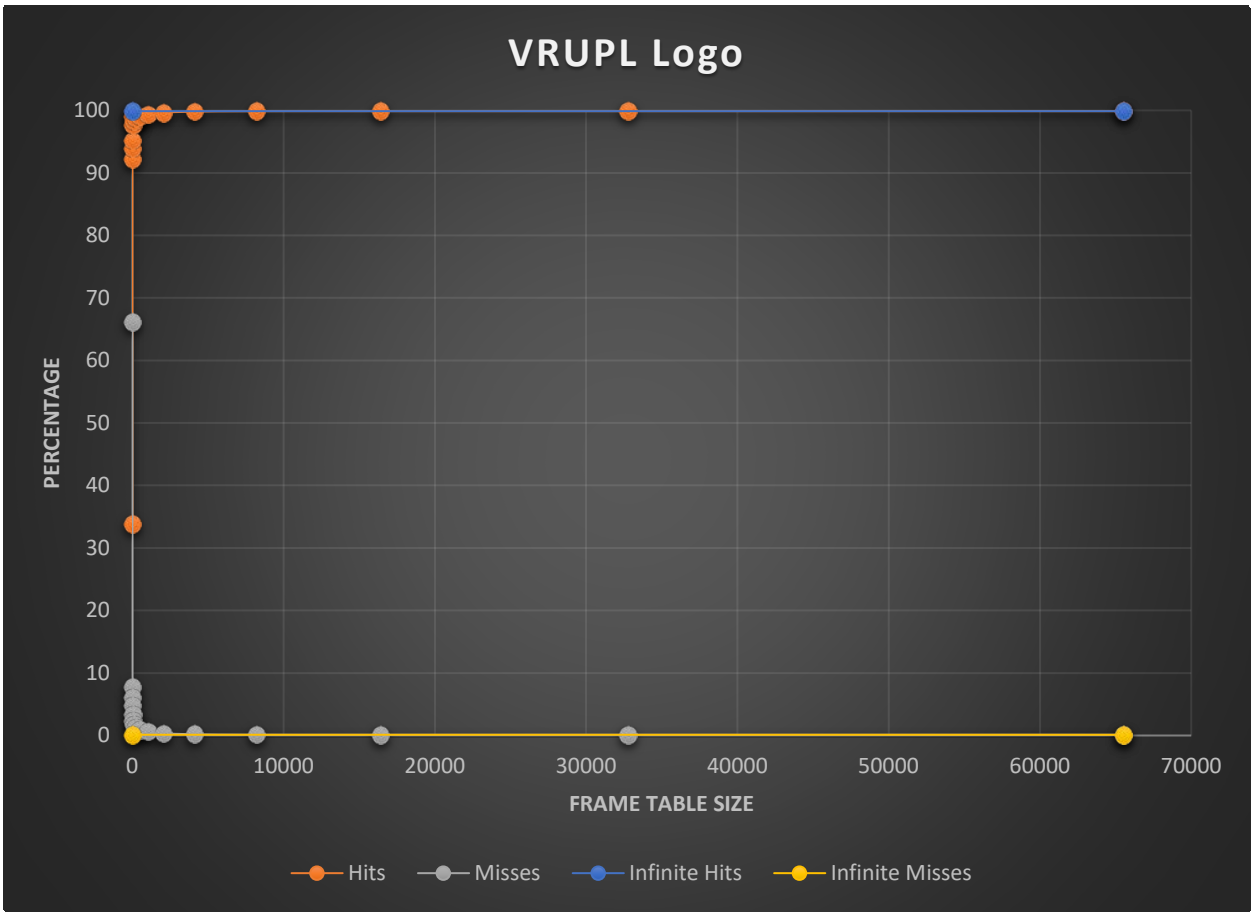
CS 361 – Memory Page Simulator Results



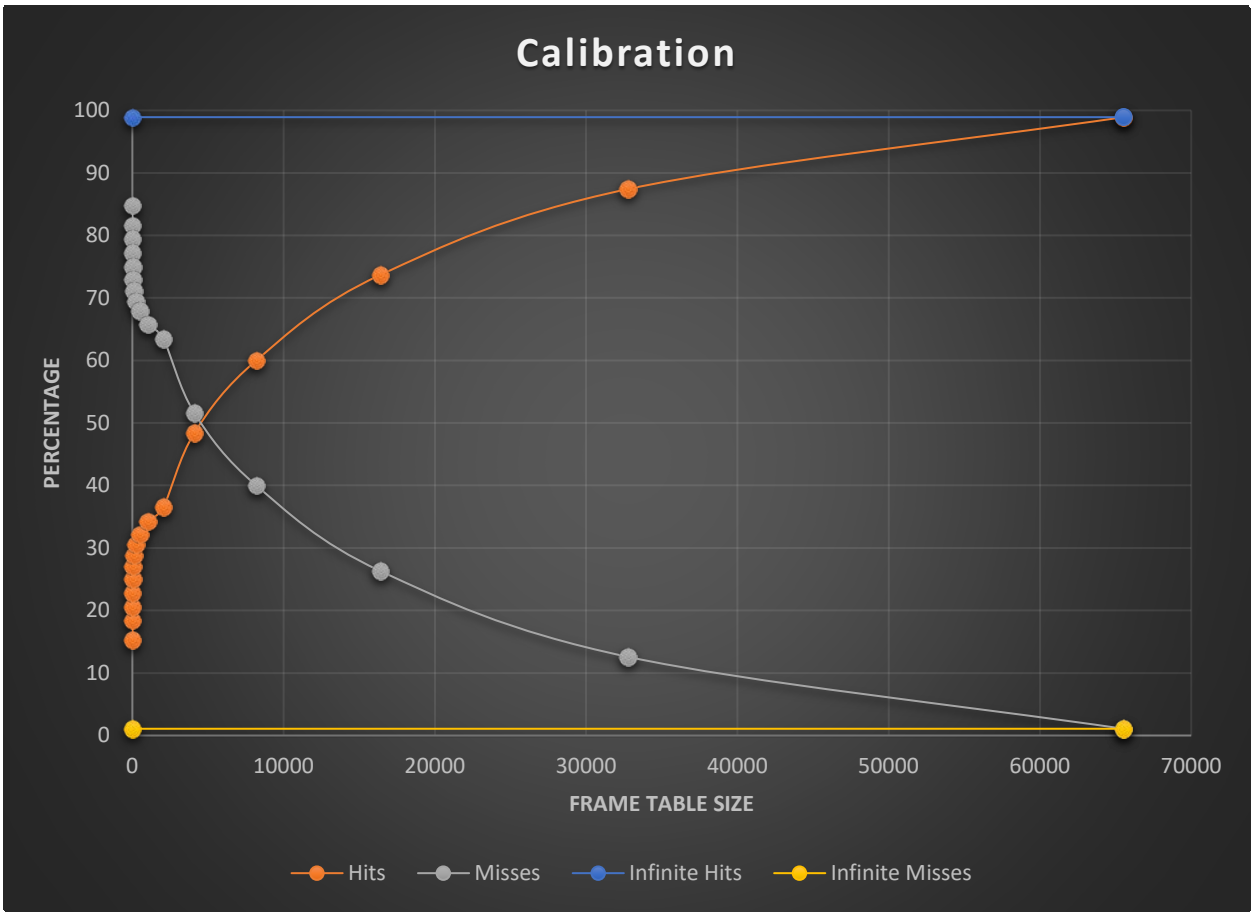
As for all results, more frames in the table means a higher percentage of page hits and each simulation ends with 256*256 (65536) frames in the frames table (infinite memory). Since Chevalier has a lot of colors, the results are much more distributed since there is a low level of locality.



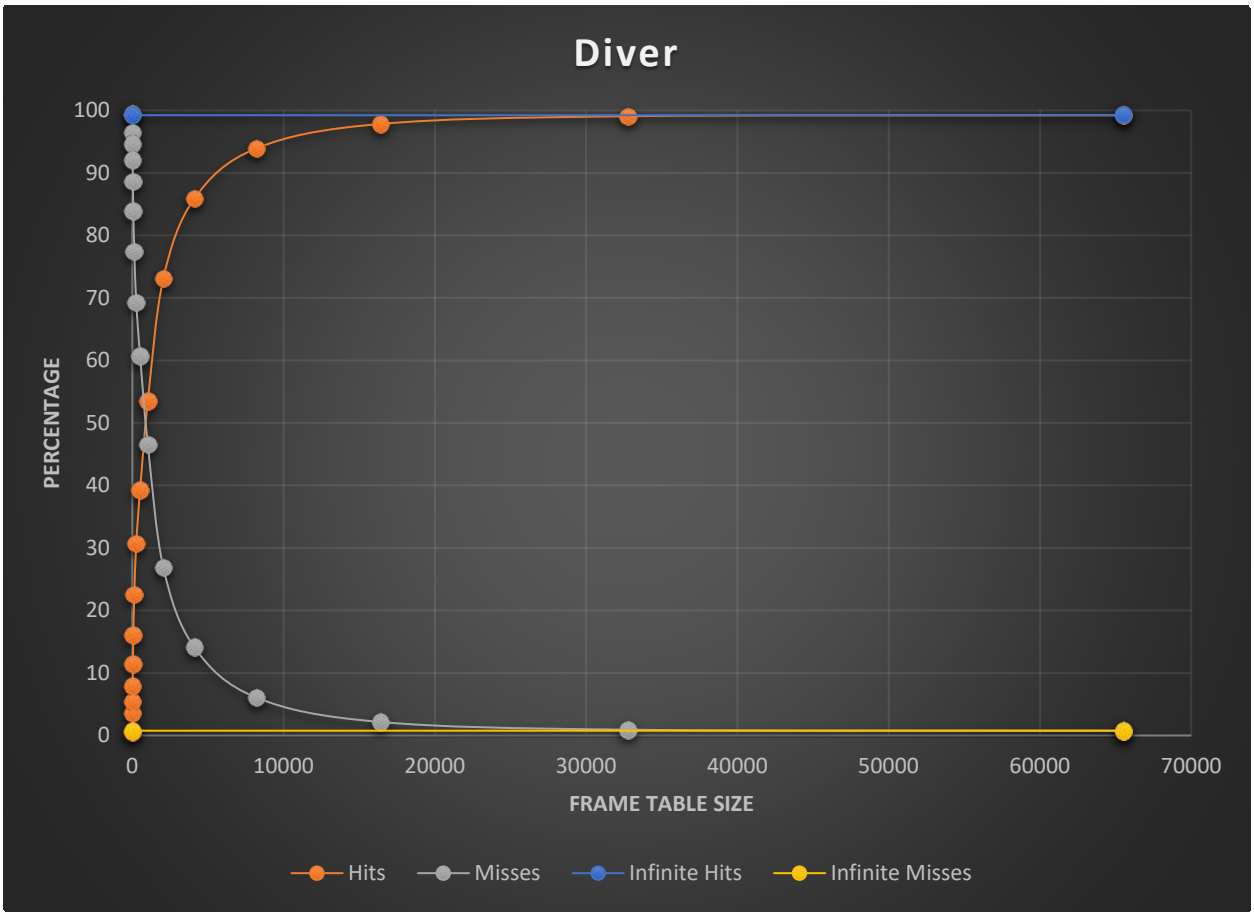
Escher has some locality since every other access will have the same pid and page number since it's a black and white image and every pixel will have the same values for each r,g,b. Since it has this, it approaches infinite memory faster than Chevalier.



Since the logo only has 4 colors, it exhibits the most locality of all the results and reaches the infinite memory case very quickly.



For the calibration photo, it makes since that it would most closely resemble the Chevalier since it has a wide variety of colors. It's also interesting how for the infinite memory simulation, the number of misses almost equals 256*256, showing that almost every pixel value is used.



The diver image has some locality since it contains a lot of blue pixels. So it reaches a high hit rate quickly.

Chevalier_473.raw

FileSize	2105280
Accesses	1052640

Infinite		% Hit	% Miss
Hits	989503	94	6
Misses	63137		

Frame Table Size	Page Hits	Page Misses	% Hit	% Miss
2	656	1051984	0.06	99.94
4	29848	1022792	2.84	97.16
8	42460	1010180	4.03	95.97
16	56147	996493	5.33	94.67
32	70410	982230	6.69	93.31
64	86239	966401	8.19	91.81
128	102161	950479	9.71	90.29
256	120609	932031	11.46	88.54
512	146995	905645	13.96	86.04
1024	189412	863228	17.99	82.01
2048	296729	755911	28.19	71.81
4096	403562	649078	38.34	61.66
8192	538820	513820	51.19	48.81
16384	701930	350710	66.68	33.32
32768	869723	182917	82.62	17.38
65536	989503	63137	94	6

Escher.raw

FileSize	1825740
Accesses	912870

Infinite

Hits	855779	%Hit	93.75
Misses	57091	%Miss	6.25

Frame Table Size	Page Hits	Page Misses	% Hit	% Miss
2	21394	891476	2.34	97.66
4	34714	878156	3.8	96.2
8	53581	859289	5.87	94.13
16	81882	830988	8.97	91.03
32	122497	790373	13.42	86.58
64	180971	731899	19.82	80.18
128	265005	647865	29.03	70.97
256	371934	540936	40.74	59.26
512	481675	431195	52.76	47.24
1024	572186	340684	62.68	37.32
2048	628755	284115	68.88	31.12
4096	671590	241280	73.57	26.43
8192	710524	202346	77.83	22.17
16384	759562	153308	83.21	16.79
32768	815263	97607	89.31	10.69
65536	855779	57091	93.75	6.25

VRUPL_Logo.raw

File Size	15222627
Accesses	7611313

Infinite

Hits	7602373
Misses	8940
%hit	99.88
%miss	0.12

Frame Table Size	Page Hits	Page Misses	% Hit	% Miss
2	2577485	5033828	33.86	66.14
4	7018294	593019	92.21	7.79
8	7150404	460909	93.94	6.06
16	7247865	363448	95.22	4.78
32	7533601	257712	98.98	3.39
64	7432615	178698	97.65	2.35
128	7482386	128927	98.31	1.69
256	7515638	95675	98.74	1.26
512	7540399	70914	99.07	0.93
1024	7562988	48325	99.37	0.63
2048	7583167	28146	99.63	0.37
4096	7595930	15383	99.8	0.2
8192	7601546	9767	99.87	0.13
16384	7602373	8940	99.88	0.12
32768	7602373	8940	99.88	0.12
65536	7602373	8940	99.88	0.12

calibration.raw

File Size	12054528
Accesses	6027264

Infinite

Hits	5961898
Misses	65366
%hit	98.92
%miss	1.08

Frame Table Size	Page Hits	Page Misses	% Hit	% Miss
2	918493	5108771	15.24	84.76
4	1108578	4918686	18.39	81.61
8	1238843	4788421	20.55	79.45
16	1375391	4651873	22.82	77.18
32	1510768	4516496	25.07	74.93
64	1630045	4397219	27.04	72.96
128	1737798	4289466	28.83	71.17
256	1840206	4187058	30.53	69.47
512	1937006	4090258	32.14	67.86
1024	2062405	3964859	34.22	65.78
2048	2202153	3825111	36.54	63.46
4096	2916745	3110519	48.39	51.61
8192	3616125	2411139	60	40
16384	4439997	1587267	73.67	26.33
32768	5269119	758145	87.42	12.58
65536	5961898	65366	98.92	1.08

diver.raw

File Size	9437184
Accesses	4718592

Infinite

Hits	4682440
Misses	36152
%hit	99.23
%miss	0.77

Frame Table Size	Page Hits	Page Misses	% Hit	% Miss
2	24513	4694079	0.52	99.48
4	169053	4549539	3.58	96.42
8	255717	4462875	5.42	94.58
16	375245	4343347	7.95	92.05
32	538542	4180050	11.41	88.59
64	757660	3960932	16.06	83.94
128	1065407	3653185	22.58	77.42
256	1449423	3269169	30.72	69.28
512	1854523	2864069	39.3	60.7
1024	2523827	2194765	53.49	46.51
2048	3450255	1268337	73.12	26.88
4096	4051647	666945	85.87	14.13
8192	4431705	286887	93.92	6.08
16384	4616358	102234	97.83	2.17
32768	4674701	43891	99.07	0.93
65536	4682440	36152	99.23	0.77