

NC State University
Department of Electrical and Computer Engineering
ECE 566: Spring 2024
Project 3

by

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Questions

Q1. How many instructions were added as a result of code replication and control flow checking, both separately and combined? Do not include the results from the Extra Credit optimization in this answer.

Number of Instructions added

Category	noCfgCheck_noCodeRep	noCfgCheck_CodeRep	CfgCheck_noCodeRep	CfgCheck_CodeRep
adpcm	0	818	135	1881
arm	0	582	288	3448
basicmath	0	1246	303	1314
bh	0	2798	1353	7779
bitcount	0	1575	268	3410
crc32	0	289	106	870
dijkstra	0	558	204	1200
em3d	0	1578	598	3627
fft	0	1336	364	3755
hanoi	0	156	61	412
kmp	0	1289	277	2516
l2lat	0	111	45	326
patricia	0	1003	435	2420
qsort	0	140	76	649
sha	0	1949	182	1259
smatrix	0	961	233	1805
sql	0	41633	117111	902928
susan	0	14424	3464	40198

Q2. How much slower is the program as a result of code replication and control flow checking, both separately and combined? Use the same stipulations as Question 1.

Data from timings.py

Category	noCfgCheck_noCodeRep	noCfgCheck_CodeRep	CfgCheck_noCodeRep	CfgCheck_CodeRep
adpcm	0.49	29.36	1.18	39.44
arm	0	0	0	0
basicmath	0.03	0.12	0.04	0.17
bh	0.4	1.65	0.83	6.83
bitcount	0.1	5.92	0.35	9.36
crc32	0.14	0.71	0.19	4.26
dijkstra	0.07	1.35	0.16	1.73
em3d	0.29	2.47	0.77	8.47
fft	0.03	0.08	0.03	0.17
hanoi	2.93	27.45	3.88	31.99
kmp	0.14	10.73	0.35	7.55
l2lat	0.02	0.06	0.04	0.25
patricia	0.05	0.17	0.05	0.1
qsort	0.04	0.03	0.01	0.04
sha	0.01	1.86	0.04	0.69
smatrix	2.06	59.99	5.67	40.38
sql	0.01	0	0	0
susan	0.46	9.43	1.59	60