Fred IoT Security Assignment (Rows 1–30)

Circuit	Locked File	Key Size	SAT Attack Runtime (s)	Iterations	Key Correct
c3540.bench	locked_circuits/c3540_RLL_K16_6.	16	0.515	7	YES
c3540.bench	locked_circuits/c3540_RLL_K16_0.	16	0.747	10	YES
c3540.bench	locked_circuits/c3540_RLL_K16_7.	16	0.714	8	YES
c3540.bench	locked_circuits/c3540_RLL_K16_2.	16	0.784	8	YES
c3540.bench	locked_circuits/c3540_RLL_K16_4.	16	0.809	9	YES
c3540.bench	locked_circuits/c3540_RLL_K16_3.	16	0.907	11	YES
c3540.bench	locked_circuits/c3540_RLL_K16_5.	16	1.039	7	YES
c3540.bench	locked_circuits/c3540_RLL_K16_1.	16	1.137	7	YES
c3540.bench	locked_circuits/c3540_RLL_K16_8.	16	0.783	9	YES
c3540.bench	locked_circuits/c3540_RLL_K16_9.	16	0.634	8	YES
c3540.bench	locked_circuits/c3540_RLL_K32_0.	32	0.608	8	YES
c3540.bench	locked_circuits/c3540_RLL_K32_1.	32	0.927	12	YES
c3540.bench	locked_circuits/c3540_RLL_K32_2.	32	1.177	11	YES
c3540.bench	locked_circuits/c3540_RLL_K32_4.	32	0.966	13	YES
c3540.bench	locked_circuits/c3540_RLL_K32_3.	32	1.012	12	YES
c3540.bench	locked_circuits/c3540_RLL_K32_5.	32	0.995	14	YES
c3540.bench	locked_circuits/c3540_RLL_K32_7.	32	0.651	10	YES
c880.bench	locked_circuits/c880_RLL_K16_2.b	16	0.138	4	YES
c880.bench	locked_circuits/c880_RLL_K16_0.b	16	0.261	4	YES
c880.bench	locked_circuits/c880_RLL_K16_1.b	16	0.334	4	YES
c880.bench	locked_circuits/c880_RLL_K16_3.b	16	0.141	5	YES
c3540.bench	locked_circuits/c3540_RLL_K32_8.	32	0.826	12	YES
c880.bench	locked_circuits/c880_RLL_K16_4.b	16	0.139	6	YES
c880.bench	locked_circuits/c880_RLL_K16_5.b	16	0.132	3	YES
c880.bench	locked_circuits/c880_RLL_K16_6.b	16	0.134	6	YES
c3540.bench	locked_circuits/c3540_RLL_K32_6.	32	1.206	8	YES
c3540.bench	locked_circuits/c3540_RLL_K32_9.	32	0.668	10	YES
c880.bench	locked_circuits/c880_RLL_K16_8.b	16	0.124	6	YES
c880.bench	locked_circuits/c880_RLL_K16_7.b	16	0.221	9	YES
c880.bench	locked_circuits/c880_RLL_K16_9.b	16	0.134	8	YES

Fred IoT Security Assignment (Rows 31–60)

Circuit	Locked File	Key Size	SAT Attack Runtime (s)	Iterations	Key Correct
c880.bench	locked_circuits/c880_RLL_K32_0.b	32	0.181	11	YES
c880.bench	locked_circuits/c880_RLL_K32_1.b	32	0.119	7	YES
c880.bench	locked_circuits/c880_RLL_K32_2.b	32	0.115	8	YES
c880.bench	locked_circuits/c880_RLL_K32_3.b	32	0.236	10	YES
c880.bench	locked_circuits/c880_RLL_K32_4.b	32	0.173	9	YES
c880.bench	locked_circuits/c880_RLL_K32_5.b	32	0.263	6	YES
c880.bench	locked_circuits/c880_RLL_K32_6.b	32	0.195	9	YES
c880.bench	locked_circuits/c880_RLL_K32_8.b	32	0.125	7	YES
c880.bench	locked_circuits/c880_RLL_K32_7.b	32	0.171	8	YES
c432.bench	locked_circuits/c432_RLL_K16_0.b	16	0.064	5	YES
c432.bench	locked_circuits/c432_RLL_K16_1.b	16	0.069	5	YES
c432.bench	locked_circuits/c432_RLL_K16_3.b	16	0.055	2	YES
c880.bench	locked_circuits/c880_RLL_K32_9.b	32	0.245	11	YES
c432.bench	locked_circuits/c432_RLL_K16_4.b	16	0.1	5	YES
c432.bench	locked_circuits/c432_RLL_K16_2.b	16	0.128	7	YES
c432.bench	locked_circuits/c432_RLL_K16_7.b	16	0.042	5	YES
c432.bench	locked_circuits/c432_RLL_K16_6.b	16	0.084	5	YES
c432.bench	locked_circuits/c432_RLL_K16_5.b	16	0.11	2	YES
c432.bench	locked_circuits/c432_RLL_K16_9.b	16	0.031	3	YES
c432.bench	locked_circuits/c432_RLL_K16_8.b	16	0.113	4	YES
c432.bench	locked_circuits/c432_RLL_K32_0.b	32	0.168	6	YES
c432.bench	locked_circuits/c432_RLL_K32_1.b	32	0.155	9	YES
c432.bench	locked_circuits/c432_RLL_K32_4.b	32	0.122	7	YES
c432.bench	locked_circuits/c432_RLL_K32_2.b	32	0.125	7	YES
c432.bench	locked_circuits/c432_RLL_K32_3.b	32	0.153	10	YES
c432.bench	locked_circuits/c432_RLL_K32_7.b	32	0.128	5	YES
c432.bench	locked_circuits/c432_RLL_K32_6.b	32	0.167	9	YES
c432.bench	locked_circuits/c432_RLL_K32_5.b	32	0.193	5	YES
c432.bench	locked_circuits/c432_RLL_K32_8.b	32	0.169	8	YES
c432.bench	locked_circuits/c432_RLL_K32_9.b	32	0.166	8	YES

Fred IoT Security Assignment (Rows 61–90)

Circuit	Locked File	Key Size	SAT Attack Runtime (s)	Iterations	Key Correct
b20_C.bench	locked_circuits/b20_C_RLL_K128_2	128	66.247	39	YES
b20_C.bench	locked_circuits/b20_C_RLL_K128_6	128	53.639	31	YES
b20_C.bench	locked_circuits/b20_C_RLL_K128_0	128	73.759	34	YES
b20_C.bench	locked_circuits/b20_C_RLL_K128_7	128	74.407	39	YES
b20_C.bench	locked_circuits/b20_C_RLL_K128_5	128	62.493	22	YES
b20_C.bench	locked_circuits/b20_C_RLL_K128_3	128	64.988	28	YES
b20_C.bench	locked_circuits/b20_C_RLL_K128_4	128	72.753	31	YES
b20_C.bench	locked_circuits/b20_C_RLL_K128_1	128	67.238	30	YES
b20_C.bench	locked_circuits/b20_C_RLL_K256_2	256	78.771	57	YES
b20_C.bench	locked_circuits/b20_C_RLL_K128_8	128	68.824	37	YES
b20_C.bench	locked_circuits/b20_C_RLL_K256_0	256	85.617	64	YES
b20_C.bench	locked_circuits/b20_C_RLL_K256_3	256	82.141	60	YES
b20_C.bench	locked_circuits/b20_C_RLL_K128_9	128	63.482	40	YES
b20_C.bench	locked_circuits/b20_C_RLL_K256_1	256	76.072	38	YES
b20_C.bench	locked_circuits/b20_C_RLL_K256_4	256	65.032	57	YES
b20_C.bench	locked_circuits/b20_C_RLL_K256_5	256	88.009	49	YES
b20_C.bench	locked_circuits/b20_C_RLL_K256_6	256	76.231	72	YES
b21_C.bench	locked_circuits/b21_C_RLL_K128_0	128	67.516	32	YES
b20_C.bench	locked_circuits/b20_C_RLL_K256_9	256	80.71	50	YES
b21_C.bench	locked_circuits/b21_C_RLL_K128_1	128	66.227	29	YES
b20_C.bench	locked_circuits/b20_C_RLL_K256_8	256	88.235	55	YES
b20_C.bench	locked_circuits/b20_C_RLL_K256_7	256	73.172	57	YES
b21_C.bench	locked_circuits/b21_C_RLL_K128_2	128	75.885	45	YES
b21_C.bench	locked_circuits/b21_C_RLL_K128_3	128	77.443	40	YES
b21_C.bench	locked_circuits/b21_C_RLL_K128_4	128	74.181	32	YES
b21_C.bench	locked_circuits/b21_C_RLL_K128_6	128	67.199	35	YES
b21_C.bench	locked_circuits/b21_C_RLL_K128_5	128	79.034	46	YES
b21_C.bench	locked_circuits/b21_C_RLL_K128_7	128	70.549	37	YES
b21_C.bench	locked_circuits/b21_C_RLL_K128_9	128	62.587	28	YES
b21_C.bench	locked_circuits/b21_C_RLL_K128_8	128	78.51	32	YES

Fred IoT Security Assignment (Rows 91–120)

Circuit	Locked File	Key Size	SAT Attack Runtime (s)	Iterations	Key Correct
b21_C.bench	locked_circuits/b21_C_RLL_K256_0	256	73.782	66	YES
b21_C.bench	locked_circuits/b21_C_RLL_K256_1	256	80.785	61	YES
b21_C.bench	locked_circuits/b21_C_RLL_K256_3	256	69.647	56	YES
b21_C.bench	locked_circuits/b21_C_RLL_K256_5	256	91.576	56	YES
b21_C.bench	locked_circuits/b21_C_RLL_K256_2	256	71.415	52	YES
b21_C.bench	locked_circuits/b21_C_RLL_K256_4	256	76.259	50	YES
b21_C.bench	locked_circuits/b21_C_RLL_K256_6	256	75.128	60	YES
b21_C.bench	locked_circuits/b21_C_RLL_K256_7	256	87.17	53	YES
b21_C.bench	locked_circuits/b21_C_RLL_K256_8	256	82.918	57	YES
b21_C.bench	locked_circuits/b21_C_RLL_K256_9	256	87.237	54	YES
b17_C.bench	locked_circuits/b17_C_RLL_K128_3	128	248.391	27	YES
b17_C.bench	locked_circuits/b17_C_RLL_K128_1	128	245.056	31	YES
b17_C.bench	locked_circuits/b17_C_RLL_K128_2	128	250.839	29	YES
b17_C.bench	locked_circuits/b17_C_RLL_K128_4	128	261.804	26	YES
b17_C.bench	locked_circuits/b17_C_RLL_K128_0	128	301.221	31	YES
b17_C.bench	locked_circuits/b17_C_RLL_K128_5	128	283.562	33	YES
b17_C.bench	locked_circuits/b17_C_RLL_K128_6	128	248.064	27	YES
b17_C.bench	locked_circuits/b17_C_RLL_K128_7	128	280.363	34	YES
b17_C.bench	locked_circuits/b17_C_RLL_K256_0	256	301.78	63	YES
b17_C.bench	locked_circuits/b17_C_RLL_K128_8	128	301.219	37	YES
b17_C.bench	locked_circuits/b17_C_RLL_K128_9	128	309.826	36	YES
b17_C.bench	locked_circuits/b17_C_RLL_K256_4	256	287.179	46	YES
b17_C.bench	locked_circuits/b17_C_RLL_K256_3	256	297.173	51	YES
c1355.bench	locked_circuits/c1355_RLL_K16_0.	16	0.539	18	YES
c1355.bench	locked_circuits/c1355_RLL_K16_1.	16	0.223	4	YES
c1355.bench	locked_circuits/c1355_RLL_K16_2.	16	0.424	12	YES
c1355.bench	locked_circuits/c1355_RLL_K16_3.	16	0.586	16	YES
c1355.bench	locked_circuits/c1355_RLL_K16_4.	16	0.6	14	YES
c1355.bench	locked_circuits/c1355_RLL_K16_5.	16	0.535	12	YES
c1355.bench	locked_circuits/c1355_RLL_K16_6.	16	0.277	6	YES

Fred IoT Security Assignment (Rows 121–150)

Circuit	Locked File	Key Size	SAT Attack Runtime (s)	Iterations	Key Correct
b17_C.bench	locked_circuits/b17_C_RLL_K256_2	256	328.707	41	YES
c1355.bench	locked_circuits/c1355_RLL_K16_7.	16	0.412	13	YES
c1355.bench	locked_circuits/c1355_RLL_K16_8.	16	0.219	4	YES
c1355.bench	locked_circuits/c1355_RLL_K16_9.	16	0.423	12	YES
c1355.bench	locked_circuits/c1355_RLL_K32_1.	32	0.753	16	YES
c1355.bench	locked_circuits/c1355_RLL_K32_0.	32	1.457	25	YES
c1355.bench	locked_circuits/c1355_RLL_K32_2.	32	0.416	8	YES
c1355.bench	locked_circuits/c1355_RLL_K32_3.	32	1.18	19	YES
c1355.bench	locked_circuits/c1355_RLL_K32_4.	32	1.038	27	YES
c1355.bench	locked_circuits/c1355_RLL_K32_5.	32	0.676	13	YES
c1355.bench	locked_circuits/c1355_RLL_K32_6.	32	0.626	14	YES
c1355.bench	locked_circuits/c1355_RLL_K32_7.	32	0.819	12	YES
c1355.bench	locked_circuits/c1355_RLL_K32_9.	32	1.165	16	YES
c1355.bench	locked_circuits/c1355_RLL_K32_8.	32	2.658	34	YES
b17_C.bench	locked_circuits/b17_C_RLL_K256_5	256	273.073	47	YES
b17_C.bench	locked_circuits/b17_C_RLL_K256_1	256	348.874	58	YES
b15_C.bench	locked_circuits/b15_C_RLL_K128_0	128	43.738	25	YES
b15_C.bench	locked_circuits/b15_C_RLL_K128_1	128	46.376	28	YES
b15_C.bench	locked_circuits/b15_C_RLL_K128_3	128	31.615	27	YES
b15_C.bench	locked_circuits/b15_C_RLL_K128_2	128	48.311	28	YES
b15_C.bench	locked_circuits/b15_C_RLL_K128_4	128	43.462	24	YES
b15_C.bench	locked_circuits/b15_C_RLL_K128_5	128	44.448	27	YES
b15_C.bench	locked_circuits/b15_C_RLL_K128_7	128	37.454	24	YES
b15_C.bench	locked_circuits/b15_C_RLL_K128_6	128	47.172	19	YES
b15_C.bench	locked_circuits/b15_C_RLL_K128_8	128	43.752	25	YES
b15_C.bench	locked_circuits/b15_C_RLL_K128_9	128	49.95	20	YES
b15_C.bench	locked_circuits/b15_C_RLL_K256_0	256	44.596	43	YES
b15_C.bench	locked_circuits/b15_C_RLL_K256_1	256	49.421	44	YES
b15_C.bench	locked_circuits/b15_C_RLL_K256_2	256	53.672	35	YES
b15_C.bench	locked_circuits/b15_C_RLL_K256_3	256	48.248	28	YES

Fred IoT Security Assignment (Rows 151–180)

Circuit	Locked File	Key Size	SAT Attack Runtime (s)	Iterations	Key Correct
b15_C.bench	locked_circuits/b15_C_RLL_K256_4	256	42.008	35	YES
b15_C.bench	locked_circuits/b15_C_RLL_K256_5	256	50.085	35	YES
b15_C.bench	locked_circuits/b15_C_RLL_K256_6	256	47.253	34	YES
b15_C.bench	locked_circuits/b15_C_RLL_K256_7	256	49.543	30	YES
b15_C.bench	locked_circuits/b15_C_RLL_K256_8	256	43.104	37	YES
b15_C.bench	locked_circuits/b15_C_RLL_K256_9	256	43.505	40	YES
b14_C.bench	locked_circuits/b14_C_RLL_K128_1	128	40.398	26	YES
b14_C.bench	locked_circuits/b14_C_RLL_K128_0	128	24.378	28	YES
b17_C.bench	locked_circuits/b17_C_RLL_K256_8	256	296.179	53	YES
b14_C.bench	locked_circuits/b14_C_RLL_K128_2	128	37.812	31	YES
b17_C.bench	locked_circuits/b17_C_RLL_K256_6	256	299.992	51	YES
b17_C.bench	locked_circuits/b17_C_RLL_K256_7	256	296.216	48	YES
b14_C.bench	locked_circuits/b14_C_RLL_K128_3	128	40.735	26	YES
b14_C.bench	locked_circuits/b14_C_RLL_K128_6	128	19.268	16	YES
b14_C.bench	locked_circuits/b14_C_RLL_K128_4	128	36.652	17	YES
b14_C.bench	locked_circuits/b14_C_RLL_K128_7	128	37.777	27	YES
b17_C.bench	locked_circuits/b17_C_RLL_K256_9	256	316.037	39	YES
b14_C.bench	locked_circuits/b14_C_RLL_K256_0	256	27.2	33	YES
b14_C.bench	locked_circuits/b14_C_RLL_K128_9	128	35.392	19	YES
b14_C.bench	locked_circuits/b14_C_RLL_K128_5	128	33.213	23	YES
b14_C.bench	locked_circuits/b14_C_RLL_K128_8	128	34.752	30	YES
b14_C.bench	locked_circuits/b14_C_RLL_K256_1	256	46.452	41	YES
b14_C.bench	locked_circuits/b14_C_RLL_K256_2	256	24.501	32	YES
b14_C.bench	locked_circuits/b14_C_RLL_K256_6	256	34.418	49	YES
b14_C.bench	locked_circuits/b14_C_RLL_K256_8	256	26.43	39	YES
b14_C.bench	locked_circuits/b14_C_RLL_K256_4	256	34.982	45	YES
b14_C.bench	locked_circuits/b14_C_RLL_K256_3	256	46.093	46	YES
b14_C.bench	locked_circuits/b14_C_RLL_K256_5	256	45.079	51	YES
b14_C.bench	locked_circuits/b14_C_RLL_K256_7	256	40.038	48	YES
b14_C.bench	locked_circuits/b14_C_RLL_K256_9	256	41.892	59	YES

Fred IoT Security Assignment (Rows 181–200)

Circuit	Locked File	Key Size	SAT Attack Runtime (s)	Iterations	Key Correct
b22_C.bench	locked_circuits/b22_C_RLL_K128_2	128	125.711	28	YES
b22_C.bench	locked_circuits/b22_C_RLL_K128_4	128	133.444	23	YES
b22_C.bench	locked_circuits/b22_C_RLL_K128_3	128	139.1	38	YES
b22_C.bench	locked_circuits/b22_C_RLL_K128_0	128	138.704	33	YES
b22_C.bench	locked_circuits/b22_C_RLL_K128_5	128	132.373	40	YES
b22_C.bench	locked_circuits/b22_C_RLL_K128_1	128	127.52	39	YES
b22_C.bench	locked_circuits/b22_C_RLL_K128_6	128	157.906	31	YES
b22_C.bench	locked_circuits/b22_C_RLL_K128_7	128	138.653	38	YES
b22_C.bench	locked_circuits/b22_C_RLL_K128_9	128	148.272	40	YES
b22_C.bench	locked_circuits/b22_C_RLL_K128_8	128	158.883	42	YES
b22_C.bench	locked_circuits/b22_C_RLL_K256_1	256	173.912	59	YES
b22_C.bench	locked_circuits/b22_C_RLL_K256_2	256	172.338	56	YES
b22_C.bench	locked_circuits/b22_C_RLL_K256_0	256	162.52	71	YES
b22_C.bench	locked_circuits/b22_C_RLL_K256_3	256	169.313	57	YES
b22_C.bench	locked_circuits/b22_C_RLL_K256_4	256	168.713	62	YES
b22_C.bench	locked_circuits/b22_C_RLL_K256_5	256	187.568	62	YES
b22_C.bench	locked_circuits/b22_C_RLL_K256_6	256	79.357	55	YES
b22_C.bench	locked_circuits/b22_C_RLL_K256_7	256	77.061	59	YES
b22_C.bench	locked_circuits/b22_C_RLL_K256_8	256	81.247	70	YES
b22_C.bench	locked_circuits/b22_C_RLL_K256_9	256	77.495	64	YES