PA1: Debrief

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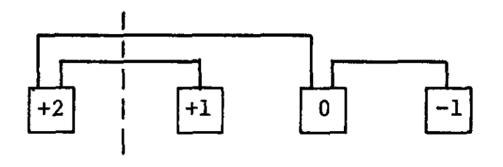
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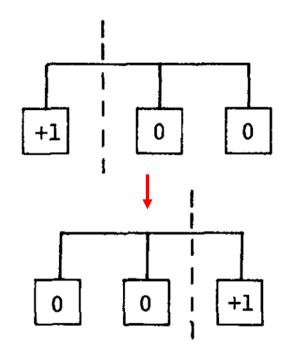


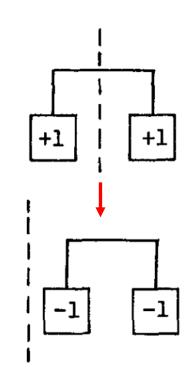
Recap: Programming Assignment (PA) #1

- Implement a FM partitioning algorithm
- Fiduccia and Mattheyses, "A linear time heuristic for improving network partitions," *ACM DAC*, 1982



Cell gains based on "net"





Evaluation

- Evaluated on a Linux Ubuntu Server
 - Intel 6138 CPU @ 2GHz
 - 256 GB RAM
- A total of six real circuits
 - Input0, input1, input2, input3, input4, input5
- Command (each program is given 300 seconds only)
 - timeout 300 time ./a.out input output

Cut Size

	7218	0934	2423	2280	4130	5418	6858	6826	5427	2289	8044
input0	10085	-	-	72536	16669	43115	31966	-	30928	3285	5050
input1	1257	2761	1518	2729	1513	1646	1464	1489	1459	1232	1253
input2	2202	4648	2992	5291	2741	2942	2749	2637	2570	2209	2210
input3	27819	-	-	56837	29536	35169	32057	31792	33197	27733	27684
input4	44931	-	-	104460	58835	61932	55453	54586	52522	44967	44875
input5	143505	-	-	-	175365	188036	171483	169179	165373	143285	143606

Runtime (Seconds)

	7218	0934	2423	2280	4130	5418	6858	6826	5427	2289	8044
input0	45.73	-	-	18.11	49.07	2.97	41.5	-	2.93	2.3	13.7
input1	0.23	0.12	1.82	0.03	0.02	0.02	0.08	0.12	0.02	0.03	0.05
input2	0.35	2.56	3.98	0.12	0.04	0.06	0.15	0.18	0.07	0.06	0.11
input3	19.31	-	-	11.05	0.6	1.13	1.27	3.14	1.18	3.63	2.21
input4	22.02	-	-	65.19	1.67	2.11	2.9	10.16	2.71	7.04	8.03
input5	97.8	-	-	-	5.74	6.09	8.4	65.0	8.53	35.4	59.4

Memory (MB)

	7218	0934	2423	2280	4130	5418	6858	6826	5427	2289	8044
input0	364	-	-	46.7	88.4	176	82.7	-	113	55.8	82.4
input1	11	7.5	8	4.8	5.6	6.6	5.7	6.9	6.9	4.4	5.54
input2	18	11.5	12.2	5.7	7.5	9.3	7.9	9.7	8.5	5.7	7.6
input3	155	-	-	22.4	39.2	65.8	40	74.3	51.0	25.6	40.2
input4	300	-	-	43.5	75.4	128.1	79	177.6	98.9	50.6	79.3
input5	500.1	-	-	-	195.6	345.6	206	747.2	262.7	127.4	206.7

Final Results

- Normalized all scores to [0, 1] wrt column of "2289"
 - Final score = 0.5 * cutsize + 0.3 * runtime + 0.2 * mem

				4130	5418	6858	6826	5427	2289	8044
03182				1.27815	1.49449	1.32535	1.16600	1.2843		1.0088320
5999				42	2863	8873	8864	95472	1	74
3.82666				1.17911	0.25546	1.12051	1.62195	0.3140		1.7230705
1164				6797	84276	1762	6253	734626	1	74
5.21187				1.52764	2.71391	1.56326	3.76883	2.0074		1.5648979
384				3785	4657	5306	1169	2115	1	59
2.90628				1.29834	1.36666	1.31148	1.82335	1.1392		1.3343168
6117				0896	9891	6026	7541	65953	1	01
3.6 5.7	5999 82666 1164 21187 384 90628	5999 82666 1164 21187 384 90628	5999 82666 1164 21187 384	5999 82666 1164 21187 384	5999 42 82666 1.17911 1164 6797 21187 1.52764 384 3785 90628 1.29834	5999 42 2863 82666 1.17911 0.25546 1164 6797 84276 21187 1.52764 2.71391 384 3785 4657 90628 1.29834 1.36666	5999 42 2863 8873 82666 1.17911 0.25546 1.12051 1164 6797 84276 1762 21187 1.52764 2.71391 1.56326 384 3785 4657 5306 90628 1.29834 1.36666 1.31148	5999 42 2863 8873 8864 82666 1.17911 0.25546 1.12051 1.62195 1164 6797 84276 1762 6253 21187 1.52764 2.71391 1.56326 3.76883 384 3785 4657 5306 1169 90628 1.29834 1.36666 1.31148 1.82335	5999 42 2863 8873 8864 95472 82666 1.17911 0.25546 1.12051 1.62195 0.3140 1164 6797 84276 1762 6253 734626 21187 1.52764 2.71391 1.56326 3.76883 2.0074 384 3785 4657 5306 1169 2115 90628 1.29834 1.36666 1.31148 1.82335 1.1392	5999 42 2863 8873 8864 95472 1 82666 1.17911 0.25546 1.12051 1.62195 0.3140 1164 6797 84276 1762 6253 734626 1 21187 1.52764 2.71391 1.56326 3.76883 2.0074 384 3785 4657 5306 1169 2115 1 90628 1.29834 1.36666 1.31148 1.82335 1.1392

Final Results – Ranking

- Normalized all scores to [0, 1] wrt column of "2289"
 - Final score = 0.5 * cutsize + 0.3 * runtime + 0.2 * mem

	7218	0934	2423	2280	4130	5418	6858	6826	5427	2289	8044
cut	1.03182				1.27815	1.49449	1.32535	1.16600	1.2843		1.0088320
	5999				42	2863	8873	8864	95472	1	74
runtime	3.82666				1.17911	0.25546	1.12051	1.62195	0.3140		1.7230705
	1164				6797	84276	1762	6253	734626	1	74
mem	6.21187				1.52764	2.71391	1.56326	3.76883	2.0074		1.5648979
	384				3785	4657	5306	1169	2115	1	59
Score	2.90628				1.29834	1.36666	1.31148	1.82335	1.1392		1.3343168
	6117				0896	9891	6026	7541	65953	1	01
Place	8				3	6	4	7	2	1	5