PA1: Debrief

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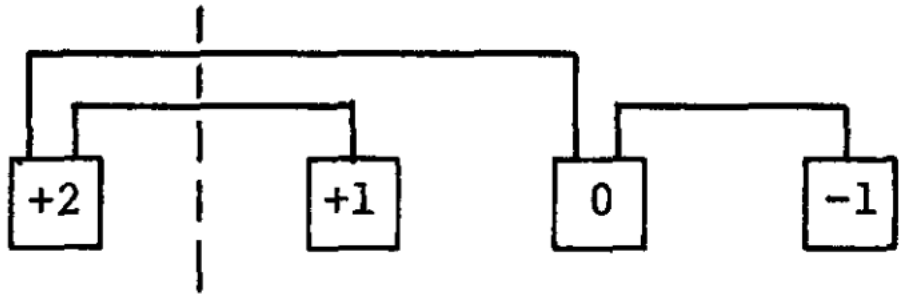
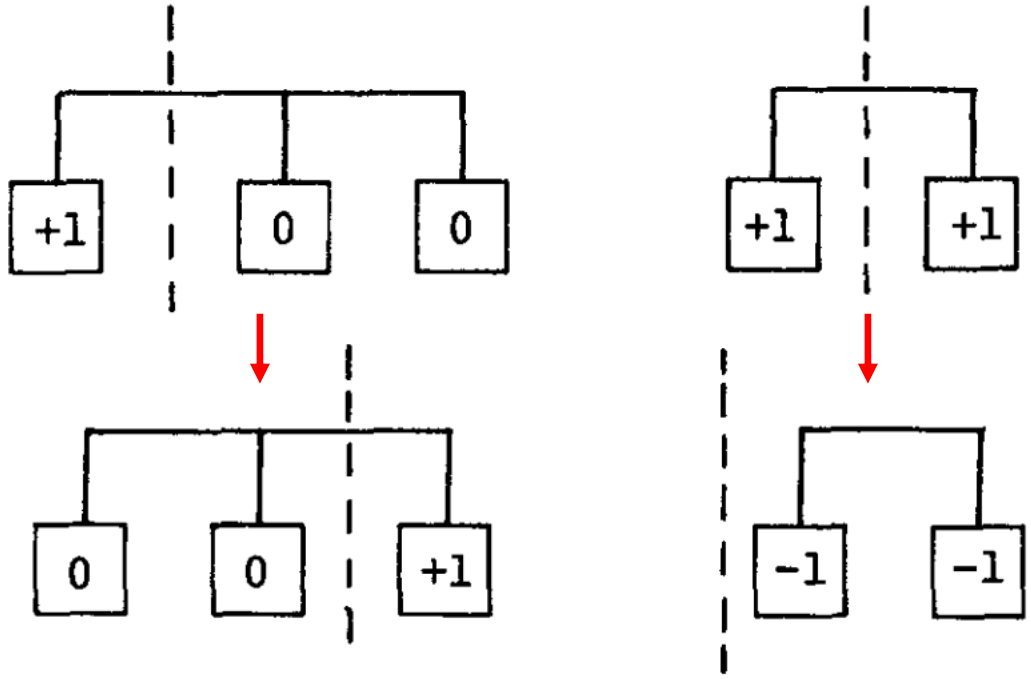
Recap: Programming Assignment (PA) #1

- 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

	7218	0934	2423	2280	4130	5418	6858	6826	5427	2289	8044
cut	1.031825999				1.2781542	1.494492863	1.325358873	1.166008864	1.284395472	1	1.008832074
runtime	3.826661164				1.179116797	0.2554684276	1.120511762	1.621956253	0.3140734626	1	1.723070574
mem	6.21187384				1.527643785	2.713914657	1.563265306	3.768831169	2.00742115	1	1.564897959
Score	2.906286117				1.298340896	1.366669891	1.311486026	1.823357541	1.139265953	1	1.334316801

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	1.031825999				1.2781542	1.494492863	1.325358873	1.166008864	1.284395472	1	1.008832074
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mem	6.21187384				1.527643785	2.713914657	1.563265306	3.768831169	2.00742115	1	1.564897959
Score	2.906286117				1.298340896	1.366669891	1.311486026	1.823357541	1.139265953	1	1.334316801
Place	8				**3**	6	4	7	**2**	**1**	5