Online Supplement for "Algorithms for Hybrid MILP/CP Models for a Class of Optimization Problems"

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Data for Scheduling Problems

Table 1: Data for Problem 1

Order (i)	r_i	d_i	Cost on Machine 1	2
1	2	16	10	6
2	3	13	8	5
3	4	21	12	7

Order (i)	Machine	Durations (p_{im}) Set 1	Set 2
1	1	10	5
	2	14	7
2	1	6	3
	2	8	4
3	1	11	5
	2	16	7

Table 2: Data for Problem 2

Order (i)	r_i	d_i	Cost on Machine		
			1	2	3
1	2	16	10	6	8
2	3	13	8	5	6
3	4	21	12	7	10
4	5	28	10	6	8
5	10	24	8	5	7
6	1	28	12	7	10
7	2	23	12	7	10

Order (i)	Machine	Durations (p_{im})	
		Set 1	Set 2
1	1	10	5
	2	14	7
	3	12	6
2	1	6	3
	2	8	4
	3	7	3
3	1	11	2
	2	16	4
	3	13	3
4	1	6	3
	2	12	6
	3	8	4
5	1	10	2
	2	16	4
	3	12	3
6	1	7	1
	2	12	3
	3	10	2
7	1	10	1
	2	8	2
	3	10	1

Table 3: Data for Problem 3

Order (i)	r_i	d_i	Cost on Machine		
			1	2	3
1	2	36	10	6	8
2	3	33	8	5	6
3	4	31	12	7	10
4	5	38	10	6	8
5	10	34	8	5	7
6	1	38	12	7	10
7	2	33	12	10	11
8	4	25	9	5	7
9	10	38	10	6	8
10	1	39	8	5	7
11	5	30	15	9	12
12	2	20	13	7	10

Order (i)	Machine	Durations (p_{im})	
		Set 1	Set 2
1	1	10	5
	2	14	7
	3	12	6
2	1	6	3
	2	8	4
	3	7	3
3	1	11	2
	2	16	4
	3	13	3
4	1	6	3
	2	12	6
	3	8	4
5	1	10	2
	2	16	4
	3	12	3
6	1	7	1
	2	12	3
	3	10	2

Order (i)	Machine	Durations (p_{im})	
		Set 1	Set 2
7	1	10	1
	2	13	2
	3	10	1
8	1	4	2
	2	10	5
	3	8	4
9	1	2	4
	2	4	6
	3	3	6
10	1	7	3
	2	14	5
	3	11	2
11	1	8	2
	2	16	3
	3	12	2
12	1	3	2
	2	6	6
	3	5	4

Table 4: Data for Problem 4 - I

Order (i)	r_i	d_i	Cost on Machine				
			1	2	3	4	5
1	2	33	10	6	8	9	9
2	3	34	8	5	6	7	7
3	4	31	12	7	10	11	10
4	5	33	10	6	8	9	8
5	10	34	8	5	6	7	7
6	1	34	12	7	10	11	10
7	2	33	12	10	11	12	11
8	4	25	9	5	7	9	8
9	10	38	10	6	8	9	8
10	1	37	8	5	6	7	6
11	5	30	15	9	12	14	13
12	2	20	13	7	10	12	11
13	4	32	9	5	6	8	7
14	6	20	10	6	8	10	9
15	2	25	8	5	6	7	7

Table 5: Data for Problem 4 - II

Order (i)	Machine	Durations (p_{im}) Set 1	Set 2	Order (i)	Machine	Durations (p_{im}) Set 1	Set 2
1	1	10	5	9	1	2	4
	2	14	7		2	4	6
	3	12	6		3	3	6
	4	11	5		4	2	5
	5	13	6		5	3	5
2	1	6	3	10	1	7	2
	2	8	4		2	14	5
	3	7	3		3	11	3
	4	6	3		4	8	2
	5	7	4		5	10	3
3	1	11	2	11	1	8	2
	2	16	4		2	16	3
	3	13	3		3	12	2
	4	11	2		4	10	2
	5	12	3		5	11	2
4	1	6	3	12	1	3	2
	2	12	6		2	6	6
	3	8	4		3	5	4
	4	7	3		4	4	3
	5	8	4		5	5	3
5	1	10	2	13	1	4	1
	2	16	4		2	10	3
	3	12	3		3	7	3
	4	12	2		4	5	2
	5	13	2		5	6	2
6	1	7	1	14	1	2	2
	2	12	3		2	4	5
	3	10	2		3	4	5
	4	8	2		4	3	2
	5	9	2		5	3	3
7	1	10	1	15	1	7	4
	2	13	2		2	14	7
	3	10	1		3	13	6
	4	11	1		4	10	4
	5	12	1		5	11	5
8	1	4	2				
	2	10	5				
	3	8	4				
	4	5	3				
	5	6	3				

Table 6: Data for Problem 5 - I

| Order (i) | r_i | d_i | Cost on Machine | | | | |
			1	2	3	4	5
1	2	33	10	6	8	9	9
2	3	34	8	5	6	7	7
3	4	31	12	7	10	11	10
4	5	33	10	6	8	9	8
5	10	34	8	5	6	7	7
6	1	34	12	7	10	11	10
7	2	33	12	10	11	12	11
8	4	25	9	5	7	9	8
9	10	38	10	6	8	9	8
10	1	37	8	5	6	7	6
11	5	30	15	9	12	14	13
12	2	20	13	7	10	12	11
13	4	32	9	5	6	8	7
14	6	20	10	6	8	10	9
15	2	25	8	5	6	7	7
16	3	34	9	5	7	9	8
17	3	37	10	6	8	9	8
18	7	38	8	5	6	7	6
19	6	32	15	9	12	14	13
20	0	30	13	7	10	12	11

Table 7: Data for Problem 5 - II

Order (i)	Machine	Durations (p_{im}) Set 1	Set 2	Order (i)	Machine	Durations (p_{im}) Set 1	Set 2
1	1	10	5	11	1	8	2
	2	14	7		2	16	3
	3	12	6		3	12	2
	4	11	5		4	10	2
	5	13	6		5	11	2
2	1	6	3	12	1	3	2
	2	8	4		2	6	6
	3	7	3		3	5	4
	4	6	3		4	4	3
	5	7	4		5	5	3
3	1	11	2	13	1	4	1
	2	16	4		2	10	3
	3	13	3		3	7	3
	4	11	2		4	5	2
	5	12	3		5	6	2
4	1	6	3	14	1	2	2
	2	12	6		2	4	5
	3	8	4		3	4	5
	4	7	3		4	3	2
	5	8	4		5	3	3
5	1	10	2	15	1	7	4
	2	16	4		2	14	7
	3	12	3		3	13	6
	4	12	2		4	10	4
	5	13	2		5	11	5
6	1	7	1	16	1	3	2
	2	12	3		2	8	4
	3	10	2		3	7	3
	4	8	2		4	5	2
	5	9	2		5	6	3
7	1	10	1	17	1	6	3
	2	13	2		2	12	6
	3	10	1		3	10	4
	4	11	1		4	7	3
	5	12	1		5	8	4
8	1	4	2	18	1	2	2
	2	10	5		2	8	4
	3	8	4		3	6	3
	4	5	3		4	13	2
	5	6	3		5	4	2
9	1	2	4	19	1	4	1
	2	4	6		2	7	3
	3	3	6		3	6	2
	4	2	5		4	5	2
	5	3	5		5	5	2
10	1	7	2	20	1	5	1
	2	14	5		2	7	2
	3	11	3		3	7	1
	4	8	2		4	6	1
	5	10	3		5	6	1