1 Instances (CPO)

Table 1: Results for CFSnoWait (CPO) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
1 20 2 10 rep 1.txt	20	2	10	Solution	30.00	746	639.00	14.34
2 20 2 10 rep 2.txt	20	2	10	Optimal	20.66	670	670.00	0.00
3 20 2 10 rep 3.txt	20	2	10	Optimal	14.15	602	602.00	0.00
4 20 2 10 rep 4.txt	20	2	10	Solution	30.01	810	706.00	12.84
5 20 2 10 rep 5.txt	20	2	10	Solution	30.01	595	541.00	9.08
6 20 2 10 rep 6.txt	20	2	10	Solution	30.01	660	600.00	9.09
7 20 2 10 rep 7.txt	20	2	10	Solution	30.01	672	584.00	13.10
8 20 2 10 rep 8.txt	20	2	10	Solution	30.01	971	782.00	19.46
9 20 2 10 rep 9.txt	20	2	10	Optimal	16.28	608	608.00	0.00
10 20 2 10 rep 10.txt	20	2	10	Solution	30.01	799	657.00	17.77
11 20 2 20 rep 1.txt	20	2	20	Optimal	14.84	338	338.00	0.00
12 20 2 20 rep 2.txt	20	2	20	Optimal	12.46	327	327.00	0.00
13 20 2 20 rep 3.txt	20	2	20	Solution	30.01	300	284.00	5.33
14 20 2 20 rep 4.txt	20	2	20	Optimal	5.29	305	305.00	0.00
15 20 2 20 rep 5.txt	20	2	20	Optimal	2.66	343	343.00	0.00
16 20 2 20 rep 6.txt	20	2	20	Optimal	2.76	344	344.00	0.00
17 20 2 20 rep 7.txt	20	2	20	Optimal	3.37	365	365.00	0.00
18 20 2 20 rep 8.txt	20	2	20	Optimal	16.15	353	353.00	0.00
19 20 2 20 rep 9.txt	20	2	20	Optimal	1.79	301	301.00	0.00
20 20 2 20 rep 10.txt	20	2	20	Optimal	21.68	372	372.00	0.00
21 20 2 30 rep 1.txt	20	2	30	Optimal	0.03	185	185.00	0.00
22 20 2 30 rep 2.txt	20	2	30	Optimal	0.01	164	164.00	0.00
23 20 2 30 rep 3.txt	20	2	30	Optimal	0.18	231	231.00	0.00
24 20 2 30 rep 4.txt	20	2	30	Optimal	1.12	255	255.00	0.00
25 20 2 30 rep 5.txt	20	2	30	Optimal	0.64	239	239.00	0.00
26 20 2 30 rep 6.txt	20	2	30	Optimal	0.48	254	254.00	0.00
27 20 2 30 rep 7.txt	20	2	30	Optimal	4.98	212	212.00	0.00
28 20 2 30 rep 8.txt	20	2	30	Optimal	0.38	230	230.00	0.00
29 20 2 30 rep 9.txt	20	2	30	Optimal	2.25	235	235.00	0.00
30 20 2 30 rep 10.txt	20	2	30	Optimal	16.92	337	337.00	0.00
31 20 2 50 rep 1.txt	20	2	50	Optimal	0.01	191	191.00	0.00
32 20 2 50 rep 2.txt	20	2	50	Optimal	0.01	172	172.00	0.00
33 20 2 50 rep 3.txt	20	2	50	Optimal	0.11	173	173.00	0.00
34 20 2 50 rep 4.txt	20	2	50	Optimal	0.01	184	184.00	0.00
35 20 2 50 rep 5.txt	20	2	50	Optimal	0.02	179	179.00	0.00
36 20 2 50 rep 6.txt	20	2	50	Optimal	0.20	220	220.00	0.00
37 20 2 50 rep 7.txt	20	2	50	Optimal	0.02	170	170.00	0.00
38 20 2 50 rep 8.txt	20	2	50	Optimal	0.02	192	192.00	0.00
39 20 2 50 rep 9.txt	20	2	50	Optimal	0.05	204	204.00	0.00
40 20 2 50 rep 10.txt	20	2	50	Optimal	0.24	218	218.00	0.00
41 20 3 10 rep 1.txt	20	3	10	Solution	30.01	760	688.00	9.47
42 20 3 10 rep 2.txt	20	3	10	Solution	30.02	866	673.00	22.29

Table 1: Results for CFSnoWait (CPO) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
43 20 3 10 rep 3.txt	20	3	10	Solution	30.03	753	598.00	20.58
44 20 3 10 rep 4.txt	20	3	10	Solution	30.01	1104	847.00	23.28
45 20 3 10 rep 5.txt	20	3	10	Solution	30.01	832	688.00	17.31
46 20 3 10 rep 6.txt	20	3	10	Solution	30.03	918	756.00	17.65
47 20 3 10 rep 7.txt	20	3	10	Solution	30.01	981	785.00	19.98
48 20 3 10 rep 8.txt	20	3	10	Solution	30.01	880	677.00	23.07
49 20 3 10 rep 9.txt	20	3	10	Optimal	22.94	893	893.00	0.00
50 20 3 10 rep 10.txt	20	3	10	Solution	30.01	1087	811.00	25.39
51 20 3 20 rep 1.txt	20	3	20	Solution	30.01	455	440.00	3.30
52 20 3 20 rep 2.txt	20	3	20	Optimal	16.69	403	403.00	0.00
53 20 3 20 rep 3.txt	20	3	20	Optimal	13.09	395	395.00	0.00
54 20 3 20 rep 4.txt	20	3	20	Optimal	2.12	393	393.00	0.00
55 20 3 20 rep 5.txt	20	3	20	Solution	30.02	425	384.00	9.65
56 20 3 20 rep 6.txt	20	3	20	Optimal	3.36	357	357.00	0.00
57 20 3 20 rep 7.txt	20	3	20	Optimal	7.97	449	449.00	0.00
58 20 3 20 rep 8.txt	20	3	20	Optimal	11.48	351	351.00	0.00
59 20 3 20 rep 9.txt	20	3	20	Solution	30.01	375	350.00	6.67
60 20 3 20 rep 10.txt	20	3	20	Optimal	2.73	381	381.00	0.00
61 20 3 30 rep 1.txt	20	3	30	Optimal	8.88	345	345.00	0.00
62 20 3 30 rep 2.txt	20	3	30	Optimal	0.50	244	244.00	0.00
63 20 3 30 rep 3.txt	20	3	30	Optimal	0.17	279	279.00	0.00
64 20 3 30 rep 4.txt	20	3	30	Optimal	1.58	304	304.00	0.00
65 20 3 30 rep 5.txt	20	3	30	Optimal	0.55	268	268.00	0.00
66 20 3 30 rep 6.txt	20	3	30	Optimal	0.22	261	261.00	0.00
67 20 3 30 rep 7.txt	20	3	30	Optimal	8.07	377	377.00	0.00
68 20 3 30 rep 8.txt	20	3	30	Optimal	0.38	289	289.00	0.00
69 20 3 30 rep 9.txt	20	3	30	Optimal	0.36	245	245.00	0.00
70 20 3 30 rep 10.txt	20	3	30	Optimal	0.23	233	233.00	0.00
71 20 3 50 rep 1.txt	20	3	50	Optimal	0.02	259	259.00	0.00
72 20 3 50 rep 2.txt	20	3	50	Optimal	0.02	233	233.00	0.00
73 20 3 50 rep 3.txt	20	3	50	Optimal	0.02	234	234.00	0.00
74 20 3 50 rep 4.txt	20	3	50	Optimal	0.02	270	270.00	0.00
75 20 3 50 rep 5.txt	20	3	50	Optimal	0.02	247	247.00	0.00
76 20 3 50 rep 6.txt	20	3	50	Optimal	0.09	245	245.00	0.00
77 20 3 50 rep 7.txt	20	3	50	Optimal	0.10	217	217.00	0.00
78 20 3 50 rep 8.txt	20	3	50	Optimal	0.04	232	232.00	0.00
79 20 3 50 rep 9.txt	20	3	50	Optimal	0.09	242	242.00	0.00
80 20 3 50 rep 10.txt	20	3	50	Optimal	0.02	223	223.00	0.00
81 20 5 10 rep 1.txt	20	5	10	Solution	30.02	901	589.00	34.63
82 20 5 10 rep 2.txt	20	5	10	Solution	30.02	1131	802.00	29.09
83 20 5 10 rep 3.txt	20	5	10	Solution	30.01	1030	744.00	27.77
84 20 5 10 rep 4.txt	20	5	10	Solution	30.01	1008	694.00	31.15
85 20 5 10 rep 5.txt	20	5	10	Solution	30.03	975	703.00	27.90
86 20 5 10 rep 6.txt	20	5	10	Solution	30.01	1234	875.00	29.09
87 20 5 10 rep 7.txt	20	5	10	Solution	30.02	919	708.00	22.96

Table 1: Results for CFSnoWait (CPO) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
88 20 5 10 rep 8.txt	20	5	10	Solution	30.01	1102	790.00	28.31
89 20 5 10 rep 9.txt	20	5	10	Solution	30.02	1043	803.00	23.01
90 20 5 10 rep 10.txt	20	5	10	Solution	30.02	1119	901.00	19.48
91 20 5 20 rep 1.txt	20	5	20	Solution	30.03	519	443.00	14.64
92 20 5 20 rep 2.txt	20	5	20	Solution	30.03	525	492.00	6.29
93 20 5 20 rep 3.txt	20	5	20	Solution	30.02	554	480.00	13.36
94 20 5 20 rep 4.txt	20	5	20	Optimal	6.17	472	472.00	0.00
95 20 5 20 rep 5.txt	20	5	20	Solution	30.01	590	512.00	13.22
96 20 5 20 rep 6.txt	20	5	20	Optimal	13.15	519	519.00	0.00
97 20 5 20 rep 7.txt	20	5	20	Solution	30.02	593	520.00	12.31
98 20 5 20 rep 8.txt	20	5	20	Solution	30.03	512	459.00	10.35
99 20 5 20 rep 9.txt	20	5	20	Solution	30.01	484	437.00	9.71
100 20 5 20 rep 10.txt	20	5	20	Solution	30.10	516	465.00	9.88
101 20 5 30 rep 1.txt	20	5	30	Optimal	0.43	378	378.00	0.00
102 20 5 30 rep 2.txt	20	5	30	Solution	30.02	409	368.00	10.02
103 20 5 30 rep 3.txt	20	5	30	Optimal	0.42	379	379.00	0.00
104 20 5 30 rep 4.txt	20	5	30	Optimal	1.35	405	405.00	0.00
105 20 5 30 rep 5.txt	20	5	30	Optimal	4.34	417	417.00	0.00
106 20 5 30 rep 6.txt	20	5	30	Optimal	0.05	388	388.00	0.00
107 20 5 30 rep 7.txt	20	5	30	Optimal	0.08	424	424.00	0.00
108 20 5 30 rep 8.txt	20	5	30	Optimal	0.02	407	407.00	0.00
109 20 5 30 rep 9.txt	20	5	30	Optimal	0.49	360	360.00	0.00
110 20 5 30 rep 10.txt	20	5	30	Optimal	0.05	427	427.00	0.00
111 20 5 50 rep 1.txt	20	5	50	Optimal	0.02	408	408.00	0.00
112 20 5 50 rep 2.txt	20	5	50	Optimal	0.02	418	418.00	0.00
113 20 5 50 rep 3.txt	20	5	50	Optimal	0.02	357	357.00	0.00
114 20 5 50 rep 4.txt	20	5	50	Optimal	0.02	428	428.00	0.00
115 20 5 50 rep 5.txt	20	5	50	Optimal	0.02	373	373.00	0.00
116 20 5 50 rep 6.txt	20	5	50	Optimal	0.02	365	365.00	0.00
117 20 5 50 rep 7.txt	20	5	50	Optimal	0.02	387	387.00	0.00
118 20 5 50 rep 8.txt	20	5	50	Optimal	0.02	348	348.00	0.00
119 20 5 50 rep 9.txt	20	5	50	Optimal	0.02	405	405.00	0.00
120 20 5 50 rep 10.txt	20	5	50	Optimal	0.02	417	417.00	0.00
121 20 10 10 rep 1.txt	20	10	10	Solution	30.02	1595	1000.00	37.30
122 20 10 10 rep 2.txt	20	10	10	Solution	30.01	1746	996.00	42.96
123 20 10 10 rep 3.txt	20	10	10	Solution	30.01	1646	1064.00	35.36
124 20 10 10 rep 4.txt	20	10	10	Solution	30.02	1600	992.00	38.00
125 20 10 10 rep 5.txt	20	10	10	Solution	30.01	1703	1066.00	37.40
126 20 10 10 rep 6.txt	20	10	10	Solution	30.01	1634	1022.00	37.45
127 20 10 10 rep 7.txt	20	10	10	Solution	30.02	1536	984.00	35.94
128 20 10 10 rep 8.txt	20	10	10	Solution	30.02	1819	1121.00	38.37
129 20 10 10 rep 9.txt	20	10	10	Solution	30.03	1581	1023.00	35.29
130 20 10 10 rep 10.txt	20	10	10	Solution	30.01	1684	1036.00	38.48
131 20 10 20 rep 1.txt	20	10	20	Solution	30.03	791	724.00	8.47
132 20 10 20 rep 2.txt	20	10	20	Solution	30.01	828	721.00	12.92

Table 1: Results for CFSnoWait (CPO) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
133 20 10 20 rep 3.txt	20	10	20	Solution	30.01	807	705.00	12.64
134 20 10 20 rep 4.txt	20	10	20	Solution	30.01	843	674.00	20.05
135 20 10 20 rep 5.txt	20	10	20	Solution	30.01	900	773.00	14.11
136 20 10 20 rep 6.txt	20	10	20	Solution	30.02	893	740.00	17.13
137 20 10 20 rep 7.txt	20	10	20	Solution	30.03	875	755.00	13.71
138 20 10 20 rep 8.txt	20	10	20	Solution	30.02	805	667.00	17.14
139 20 10 20 rep 9.txt	20	10	20	Solution	30.01	899	750.00	16.57
140 20 10 20 rep 10.txt	20	10	20	Solution	30.02	819	759.00	7.33
141 20 10 30 rep 1.txt	20	10	30	Optimal	5.49	720	720.00	0.00
142 20 10 30 rep 2.txt	20	10	30	Optimal	0.03	720	720.00	0.00
143 20 10 30 rep 3.txt	20	10	30	Optimal	0.04	682	682.00	0.00
144 20 10 30 rep 4.txt	20	10	30	Optimal	2.80	651	651.00	0.00
145 20 10 30 rep 5.txt	20	10	30	Optimal	4.31	706	706.00	0.00
146 20 10 30 rep 6.txt	20	10	30	Optimal	8.98	627	627.00	0.00
147 20 10 30 rep 7.txt	20	10	30	Solution	30.03	667	633.00	5.10
148 20 10 30 rep 8.txt	20	10	30	Optimal	0.07	631	631.00	0.00
149 20 10 30 rep 9.txt	20	10	30	Optimal	3.54	696	696.00	0.00
150 20 10 30 rep 10.txt	20	10	30	Optimal	5.28	696	696.00	0.00
151 20 10 50 rep 1.txt	20	10	50	Optimal	0.02	711	711.00	0.00
152 20 10 50 rep 2.txt	20	10	50	Optimal	0.02	621	621.00	0.00
153 20 10 50 rep 3.txt	20	10	50	Optimal	0.02	669	669.00	0.00
154 20 10 50 rep 4.txt	20	10	50	Optimal	0.02	740	740.00	0.00
155 20 10 50 rep 5.txt	20	10	50	Optimal	0.02	686	686.00	0.00
156 20 10 50 rep 6.txt	20	10	50	Optimal	0.02	715	715.00	0.00
157 20 10 50 rep 7.txt	20	10	50	Optimal	0.02	612	612.00	0.00
158 20 10 50 rep 8.txt	20	10	50	Optimal	0.02	628	628.00	0.00
159 20 10 50 rep 9.txt	20	10	50	Optimal	0.02	744	744.00	0.00
160 20 10 50 rep 10.txt	20	10	50	Optimal	0.02	707	707.00	0.00
161 30 2 10 rep 1.txt	30	2	10	Solution	30.01	1257	1072.00	14.72
162 30 2 10 rep 2.txt	30	2	10	Solution	30.02	866	804.00	7.16
163 30 2 10 rep 3.txt	30	2	10	Solution	30.01	909	832.00	8.47
164 30 2 10 rep 4.txt	30	2	10	Solution	30.00	1119	1006.00	10.10
165 30 2 10 rep 5.txt	30	2	10	Solution	30.01	1215	1029.00	15.31
166 30 2 10 rep 6.txt	30	2	10	Solution	30.01	931	832.00	10.63
167 30 2 10 rep 7.txt	30	2	10	Solution	30.01	781	704.00	9.86
168 30 2 10 rep 8.txt	30	2	10	Solution	30.02	894	852.00	4.70
169 30 2 10 rep 9.txt	30	2	10	Solution	30.01	1027	895.00	12.85
170 30 2 10 rep 10.txt	30	2	10	Solution	30.02	1202	1093.00	9.07
171 30 2 20 rep 1.txt	30	2	20	Solution	30.01	448	415.00	7.37
172 30 2 20 rep 2.txt	30	2	20	Solution	30.01	533	503.00	5.63
173 30 2 20 rep 3.txt	30	2	20	Solution	30.03	416	396.00	4.81
174 30 2 20 rep 4.txt	30	2	20	Solution	30.00	428	418.00	2.34
175 30 2 20 rep 5.txt	30	2	20	Solution	30.01	483	439.00	9.11
176 30 2 20 rep 6.txt	30	2	20	Solution	30.03	452	427.00	5.53
177 30 2 20 rep 7.txt	30	2	20	Solution	30.01	493	483.00	2.03

Table 1: Results for CFSnoWait (CPO) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
178 30 2 20 rep 8.txt	30	2	20	Solution	30.03	412	378.00	8.25
179 30 2 20 rep 9.txt	30	2	20	Solution	30.04	457	424.00	7.22
180 30 2 20 rep 10.txt	30	2	20	Solution	30.01	575	520.00	9.57
181 30 2 30 rep 1.txt	30	2	30	Solution	30.01	322	309.00	4.04
182 30 2 30 rep 2.txt	30	2	30	Solution	30.04	234	228.00	2.56
183 30 2 30 rep 3.txt	30	2	30	Solution	30.03	341	327.00	4.11
184 30 2 30 rep 4.txt	30	2	30	Solution	30.01	340	324.00	4.71
185 30 2 30 rep 5.txt	30	2	30	Solution	30.03	297	284.00	4.38
186 30 2 30 rep 6.txt	30	2	30	Solution	30.02	346	332.00	4.05
187 30 2 30 rep 7.txt	30	2	30	Solution	30.03	389	365.00	6.17
188 30 2 30 rep 8.txt	30	2	30	Solution	30.02	352	345.00	1.99
189 30 2 30 rep 9.txt	30	2	30	Solution	30.01	400	392.00	2.00
190 30 2 30 rep 10.txt	30	2	30	Solution	30.02	325	304.00	6.46
191 30 2 50 rep 1.txt	30	2	50	Solution	30.01	206	199.00	3.40
192 30 2 50 rep 2.txt	30	2	50	Optimal	0.85	197	197.00	0.00
193 30 2 50 rep 3.txt	30	2	50	Solution	30.01	205	201.00	1.95
194 30 2 50 rep 4.txt	30	2	50	Optimal	3.35	202	202.00	0.00
195 30 2 50 rep 5.txt	30	2	50	Optimal	0.21	197	197.00	0.00
196 30 2 50 rep 6.txt	30	2	50	Solution	30.02	220	216.00	1.82
197 30 2 50 rep 7.txt	30	2	50	Solution	30.03	244	238.00	2.46
198 30 2 50 rep 8.txt	30	2	50	Optimal	0.02	176	176.00	0.00
199 30 2 50 rep 9.txt	30	2	50	Optimal	0.77	174	174.00	0.00
200 30 2 50 rep 10.txt	30	2	50	Optimal	2.81	230	230.00	0.00
201 30 3 10 rep 1.txt	30	3	10	Solution	30.01	1139	909.00	20.19
202 30 3 10 rep 2.txt	30	3	10	Solution	30.01	1218	966.00	20.69
203 30 3 10 rep 3.txt	30	3	10	Solution	30.03	1290	1078.00	16.43
204 30 3 10 rep 4.txt	30	3	10	Solution	30.01	1017	847.00	16.72
205 30 3 10 rep 5.txt	30	3	10	Solution	30.01	1281	1015.00	20.77
206 30 3 10 rep 6.txt	30	3	10	Solution	30.02	1144	861.00	24.74
207 30 3 10 rep 7.txt	30	3	10	Solution	30.01	1002	854.00	14.77
208 30 3 10 rep 8.txt	30	3	10	Solution	30.02	1015	787.00	22.46
209 30 3 10 rep 9.txt	30	3	10	Solution	30.01	1188	989.00	16.75
210 30 3 10 rep 10.txt	30	3	10	Solution	30.01	1214	938.00	22.73
211 30 3 20 rep 1.txt	30	3	20	Solution	30.01	560	511.00	8.75
212 30 3 20 rep 2.txt	30	3	20	Solution	30.01	614	586.00	4.56
213 30 3 20 rep 3.txt	30	3	20	Solution	30.00	510	446.00	12.55
214 30 3 20 rep 4.txt	30	3	20	Solution	30.03	651	572.00	12.14
215 30 3 20 rep 5.txt	30	3	20	Solution	30.03	600	522.00	13.00
216 30 3 20 rep 6.txt	30	3	20	Solution	30.02	620	567.00	8.55
217 30 3 20 rep 7.txt	30	3	20	Solution	30.02	689	607.00	11.90
218 30 3 20 rep 8.txt	30	3	20	Solution	30.02	609	534.00	12.32
219 30 3 20 rep 9.txt	30	3	20	Solution	30.01	579	507.00	12.44
220 30 3 20 rep 10.txt	30	3	20	Solution	30.01	546	495.00	9.34
221 30 3 30 rep 1.txt	30	3	30	Solution	30.01	380	365.00	3.95
222 30 3 30 rep 2.txt	30	3	30	Solution	30.01	363	326.00	10.19

Table 1: Results for CFSnoWait (CPO) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
223 30 3 30 rep 3.txt	30	3	30	Solution	30.01	449	420.00	6.46
224 30 3 30 rep 4.txt	30	3	30	Solution	30.01	405	363.00	10.37
225 30 3 30 rep 5.txt	30	3	30	Solution	30.02	323	301.00	6.81
226 30 3 30 rep 6.txt	30	3	30	Solution	30.01	379	359.00	5.28
227 30 3 30 rep 7.txt	30	3	30	Solution	30.01	401	387.00	3.49
228 30 3 30 rep 8.txt	30	3	30	Solution	30.01	385	352.00	8.57
229 30 3 30 rep 9.txt	30	3	30	Solution	30.04	372	346.00	6.99
230 30 3 30 rep 10.txt	30	3	30	Solution	30.04	355	316.00	10.99
231 30 3 50 rep 1.txt	30	3	50	Optimal	5.78	262	262.00	0.00
232 30 3 50 rep 2.txt	30	3	50	Optimal	0.34	241	241.00	0.00
233 30 3 50 rep 3.txt	30	3	50	Solution	30.03	261	257.00	1.53
234 30 3 50 rep 4.txt	30	3	50	Optimal	24.89	270	270.00	0.00
235 30 3 50 rep 5.txt	30	3	50	Optimal	0.02	256	256.00	0.00
236 30 3 50 rep 6.txt	30	3	50	Optimal	0.05	260	260.00	0.00
237 30 3 50 rep 7.txt	30	3	50	Optimal	2.39	268	268.00	0.00
238 30 3 50 rep 8.txt	30	3	50	Optimal	0.68	265	265.00	0.00
239 30 3 50 rep 9.txt	30	3	50	Optimal	4.07	236	236.00	0.00
240 30 3 50 rep 10.txt	30	3	50	Optimal	0.08	263	263.00	0.00
241 30 5 10 rep 1.txt	30	5	10	Solution	30.01	1463	1080.00	26.18
242 30 5 10 rep 2.txt	30	5	10	Solution	30.00	1447	925.00	36.07
243 30 5 10 rep 3.txt	30	5	10	Solution	30.01	1447	1047.00	27.64
244 30 5 10 rep 4.txt	30	5	10	Solution	30.02	1423	998.00	29.87
245 30 5 10 rep 5.txt	30	5	10	Solution	30.01	1456	992.00	31.87
246 30 5 10 rep 6.txt	30	5	10	Solution	30.01	1579	1170.00	25.90
247 30 5 10 rep 7.txt	30	5	10	Solution	30.02	1492	1020.00	31.64
248 30 5 10 rep 8.txt	30	5	10	Solution	30.03	1238	908.00	26.66
249 30 5 10 rep 9.txt	30	5	10	Solution	30.01	1486	965.00	35.06
250 30 5 10 rep 10.txt	30	5	10	Solution	30.01	1520	1133.00	25.46
251 30 5 20 rep 1.txt	30	5	20	Solution	30.01	744	625.00	15.99
252 30 5 20 rep 2.txt	30	5	20	Solution	30.01	714	658.00	7.84
253 30 5 20 rep 3.txt	30	5	20	Solution	30.01	711	574.00	19.27
254 30 5 20 rep 4.txt	30	5	20	Solution	30.03	703	610.00	13.23
255 30 5 20 rep 5.txt	30	5	20	Solution	30.02	673	552.00	17.98
256 30 5 20 rep 6.txt	30	5	20	Solution	30.02	656	566.00	13.72
257 30 5 20 rep 7.txt	30	5	20	Solution	30.02	788	600.00	23.86
258 30 5 20 rep 8.txt	30	5	20	Solution	30.02	675	568.00	15.85
259 30 5 20 rep 9.txt	30	5	20	Solution	30.01	769	618.00	19.64
260 30 5 20 rep 10.txt	30	5	20	Solution	30.01	782	641.00	18.03
261 30 5 30 rep 1.txt	30	5	30	Solution	30.02	451	415.00	7.98
262 30 5 30 rep 2.txt	30	5	30	Solution	30.04	471	426.00	9.55
263 30 5 30 rep 3.txt	30	5	30	Solution	30.01	485	441.00	9.07
264 30 5 30 rep 4.txt	30	5	30	Solution	30.01	451	441.00	2.22
265 30 5 30 rep 5.txt	30	5	30	Solution	30.03	465	426.00	8.39
266 30 5 30 rep 6.txt	30	5	30	Solution	30.02	511	446.00	12.72
267 30 5 30 rep 7.txt	30	5	30	Solution	30.01	486	443.00	8.85

Table 1: Results for CFSnoWait (CPO) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
268 30 5 30 rep 8.txt	30	5	30	Solution	30.02	547	485.00	11.33
269 30 5 30 rep 9.txt	30	5	30	Solution	30.01	508	456.00	10.24
270 30 5 30 rep 10.txt	30	5	30	Solution	30.02	530	490.00	7.55
271 30 5 50 rep 1.txt	30	5	50	Solution	30.03	399	388.00	2.76
272 30 5 50 rep 2.txt	30	5	50	Optimal	0.08	367	367.00	0.00
273 30 5 50 rep 3.txt	30	5	50	Optimal	0.04	397	397.00	0.00
274 30 5 50 rep 4.txt	30	5	50	Optimal	0.09	411	411.00	0.00
275 30 5 50 rep 5.txt	30	5	50	Optimal	0.05	399	399.00	0.00
276 30 5 50 rep 6.txt	30	5	50	Optimal	0.04	392	392.00	0.00
277 30 5 50 rep 7.txt	30	5	50	Optimal	0.02	406	406.00	0.00
278 30 5 50 rep 8.txt	30	5	50	Solution	30.04	404	393.00	2.72
279 30 5 50 rep 9.txt	30	5	50	Optimal	0.02	352	352.00	0.00
280 30 5 50 rep 10.txt	30	5	50	Optimal	0.16	399	399.00	0.00
281 30 10 10 rep 1.txt	30	10	10	Solution	30.01	2315	1323.00	42.85
282 30 10 10 rep 2.txt	30	10	10	Solution	30.02	2368	1273.00	46.24
283 30 10 10 rep 3.txt	30	10	10	Solution	30.02	2055	1212.00	41.02
284 30 10 10 rep 4.txt	30	10	10	Solution	30.03	2088	1199.00	42.58
285 30 10 10 rep 5.txt	30	10	10	Solution	30.02	2223	1269.00	42.91
286 30 10 10 rep 6.txt	30	10	10	Solution	30.02	2336	1300.00	44.35
287 30 10 10 rep 7.txt	30	10	10	Solution	30.04	2218	1213.00	45.31
288 30 10 10 rep 8.txt	30	10	10	Solution	30.03	2116	1242.00	41.30
289 30 10 10 rep 9.txt	30	10	10	Solution	30.02	2199	1353.00	38.47
290 30 10 10 rep 10.txt	30	10	10	Solution	30.01	2305	1255.00	45.55
291 30 10 20 rep 1.txt	30	10	20	Solution	30.01	1063	769.00	27.66
292 30 10 20 rep 2.txt	30	10	20	Solution	30.02	1066	845.00	20.73
293 30 10 20 rep 3.txt	30	10	20	Solution	30.01	996	774.00	22.29
294 30 10 20 rep 4.txt	30	10	20	Solution	30.02	992	736.00	25.81
295 30 10 20 rep 5.txt	30	10	20	Solution	30.04	1109	821.00	25.97
296 30 10 20 rep 6.txt	30	10	20	Solution	30.02	1075	860.00	20.00
297 30 10 20 rep 7.txt	30	10	20	Solution	30.02	1010	799.00	20.89
298 30 10 20 rep 8.txt	30	10	20	Solution	30.02	1060	847.00	20.09
299 30 10 20 rep 9.txt	30	10	20	Solution	30.02	1002	750.00	25.15
300 30 10 20 rep 10.txt	30	10	20	Solution	30.01	1008	792.00	21.43
301 30 10 30 rep 1.txt	30	10	30	Solution	30.01	788	712.00	9.64
302 30 10 30 rep 2.txt	30	10	30	Solution	30.04	810	710.00	12.35
303 30 10 30 rep 3.txt	30	10	30	Solution	30.01	780	678.00	13.08
304 30 10 30 rep 4.txt	30	10	30	Solution	30.03	727	685.00	5.78
305 30 10 30 rep 5.txt	30	10	30	Solution	30.03	794	777.00	2.14
306 30 10 30 rep 6.txt	30	10	30	Solution	30.03	803	717.00	10.71
307 30 10 30 rep 7.txt	30	10	30	Solution	30.01	785	674.00	14.14
308 30 10 30 rep 8.txt	30	10	30	Solution	30.03	781	671.00	14.08
309 30 10 30 rep 9.txt	30	10	30	Solution	30.01	789	679.00	13.94
310 30 10 30 rep 10.txt	30	10	30	Solution	30.04	751	695.00	7.46
311 30 10 50 rep 1.txt	30	10	50	Optimal	0.03	760	760.00	0.00
312 30 10 50 rep 2.txt	30	10	50	Optimal	0.04	694	694.00	0.00

Table 1: Results for CFSnoWait (CPO) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
313 30 10 50 rep 3.txt	30	10	50	Optimal	0.02	762	762.00	0.00
314 30 10 50 rep 4.txt	30	10	50	Optimal	0.12	671	671.00	0.00
315 30 10 50 rep 5.txt	30	10	50	Optimal	0.04	747	747.00	0.00
316 30 10 50 rep 6.txt	30	10	50	Optimal	15.12	669	669.00	0.00
317 30 10 50 rep 7.txt	30	10	50	Optimal	0.26	659	659.00	0.00
318 30 10 50 rep 8.txt	30	10	50	Optimal	0.03	668	668.00	0.00
319 30 10 50 rep 9.txt	30	10	50	Optimal	0.07	658	658.00	0.00
320 30 10 50 rep 10.txt	30	10	50	Optimal	0.02	695	695.00	0.00
321 50 2 10 rep 1.txt	50	2	10	Solution	30.01	1681	1505.00	10.47
322 50 2 10 rep 2.txt	50	2	10	Solution	30.01	1617	1450.00	10.33
323 50 2 10 rep 3.txt	50	2	10	Solution	30.02	1711	1505.00	12.04
324 50 2 10 rep 4.txt	50	2	10	Solution	30.01	1838	1688.00	8.16
325 50 2 10 rep 5.txt	50	2	10	Solution	30.03	1739	1647.00	5.29
326 50 2 10 rep 6.txt	50	2	10	Solution	30.01	1387	1277.00	7.93
327 50 2 10 rep 7.txt	50	2	10	Solution	30.03	1747	1560.00	10.70
328 50 2 10 rep 8.txt	50	2	10	Solution	30.02	1634	1517.00	7.16
329 50 2 10 rep 9.txt	50	2	10	Solution	30.02	1451	1310.00	9.72
330 50 2 10 rep 10.txt	50	2	10	Solution	30.01	1549	1401.00	9.55
331 50 2 20 rep 1.txt	50	2	20	Solution	30.02	887	835.00	5.86
332 50 2 20 rep 2.txt	50	2	20	Solution	30.03	692	644.00	6.94
333 50 2 20 rep 3.txt	50	2	20	Solution	30.01	788	765.00	2.92
334 50 2 20 rep 4.txt	50	2	20	Solution	30.01	689	662.00	3.92
335 50 2 20 rep 5.txt	50	2	20	Solution	30.02	834	804.00	3.60
336 50 2 20 rep 6.txt	50	2	20	Solution	30.02	849	803.00	5.42
337 50 2 20 rep 7.txt	50	2	20	Solution	30.01	718	661.00	7.94
338 50 2 20 rep 8.txt	50	2	20	Solution	30.02	845	765.00	9.47
339 50 2 20 rep 9.txt	50	2	20	Solution	30.02	757	732.00	3.30
340 50 2 20 rep 10.txt	50	2	20	Solution	30.02	703	670.00	4.69
341 50 2 30 rep 1.txt	50	2	30	Solution	30.02	487	450.00	7.60
342 50 2 30 rep 2.txt	50	2	30	Solution	30.03	497	468.00	5.84
343 50 2 30 rep 3.txt	50	2	30	Solution	30.01	484	454.00	6.20
344 50 2 30 rep 4.txt	50	2	30	Solution	30.01	517	502.00	2.90
345 50 2 30 rep 5.txt	50	2	30	Solution	30.01	606	587.00	3.14
346 50 2 30 rep 6.txt	50	2	30	Solution	30.02	567	532.00	6.17
347 50 2 30 rep 7.txt	50	2	30	Solution	30.02	594	543.00	8.59
348 50 2 30 rep 8.txt	50	2	30	Solution	30.02	549	513.00	6.56
349 50 2 30 rep 9.txt	50	2	30	Solution	30.01	509	466.00	8.45
350 50 2 30 rep 10.txt	50	2	30	Solution	30.03	460	422.00	8.26
351 50 2 50 rep 1.txt	50	2	50	Solution	30.02	338	327.00	3.25
352 50 2 50 rep 2.txt	50	2	50	Solution	30.02	288	283.00	1.74
353 50 2 50 rep 3.txt	50	2	50	Solution	30.01	398	393.00	1.26
354 50 2 50 rep 4.txt	50	2	50	Solution	30.02	341	333.00	2.35
355 50 2 50 rep 5.txt	50	2	50	Solution	30.01	299	295.00	1.34
356 50 2 50 rep 6.txt	50	2	50	Solution	30.03	338	331.00	2.07
357 50 2 50 rep 7.txt	50	2	50	Solution	30.00	331	315.00	4.83

Table 1: Results for CFSnoWait (CPO) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
358 50 2 50 rep 8.txt	50	2	50	Solution	30.01	327	321.00	1.83
359 50 2 50 rep 9.txt	50	2	50	Solution	30.00	336	323.00	3.87
360 50 2 50 rep 10.txt	50	2	50	Solution	30.01	282	279.00	1.06
361 50 3 10 rep 1.txt	50	3	10	Solution	30.01	2073	1710.00	17.51
362 50 3 10 rep 2.txt	50	3	10	Solution	30.01	1834	1490.00	18.76
363 50 3 10 rep 3.txt	50	3	10	Solution	30.02	1747	1428.00	18.26
364 50 3 10 rep 4.txt	50	3	10	Solution	30.02	2083	1655.00	20.55
365 50 3 10 rep 5.txt	50	3	10	Solution	30.01	2103	1747.00	16.93
366 50 3 10 rep 6.txt	50	3	10	Solution	30.01	1903	1551.00	18.50
367 50 3 10 rep 7.txt	50	3	10	Solution	30.01	1704	1436.00	15.73
368 50 3 10 rep 8.txt	50	3	10	Solution	30.01	1909	1476.00	22.68
369 50 3 10 rep 9.txt	50	3	10	Solution	30.02	2077	1714.00	17.48
370 50 3 10 rep 10.txt	50	3	10	Solution	30.03	1714	1326.00	22.64
371 50 3 20 rep 1.txt	50	3	20	Solution	30.02	833	726.00	12.85
372 50 3 20 rep 2.txt	50	3	20	Solution	30.01	883	757.00	14.27
373 50 3 20 rep 3.txt	50	3	20	Solution	30.03	877	760.00	13.34
374 50 3 20 rep 4.txt	50	3	20	Solution	30.01	876	771.00	11.99
375 50 3 20 rep 5.txt	50	3	20	Solution	30.01	859	731.00	14.90
376 50 3 20 rep 6.txt	50	3	20	Solution	30.01	930	859.00	7.63
377 50 3 20 rep 7.txt	50	3	20	Solution	30.03	883	796.00	9.85
378 50 3 20 rep 8.txt	50	3	20	Solution	30.02	973	840.00	13.67
379 50 3 20 rep 9.txt	50	3	20	Solution	30.01	982	922.00	6.11
380 50 3 20 rep 10.txt	50	3	20	Solution	30.01	884	753.00	14.82
381 50 3 30 rep 1.txt	50	3	30	Solution	30.01	551	510.00	7.44
382 50 3 30 rep 2.txt	50	3	30	Solution	30.02	536	479.00	10.63
383 50 3 30 rep 3.txt	50	3	30	Solution	30.01	546	488.00	10.62
384 50 3 30 rep 4.txt	50	3	30	Solution	30.03	589	538.00	8.66
385 50 3 30 rep 5.txt	50	3	30	Solution	30.01	580	511.00	11.90
386 50 3 30 rep 6.txt	50	3	30	Solution	30.01	622	559.00	10.13
387 50 3 30 rep 7.txt	50	3	30	Solution	30.03	529	488.00	7.75
388 50 3 30 rep 8.txt	50	3	30	Solution	30.01	643	586.00	8.86
389 50 3 30 rep 9.txt	50	3	30	Solution	30.01	546	492.00	9.89
390 50 3 30 rep 10.txt	50	3	30	Solution	30.01	568	515.00	9.33
391 50 3 50 rep 1.txt	50	3	50	Solution	30.01	348	315.00	9.48
392 50 3 50 rep 2.txt	50	3	50	Solution	30.04	302	286.00	5.30
393 50 3 50 rep 3.txt	50	3	50	Solution	30.01	379	362.00	4.49
394 50 3 50 rep 4.txt	50	3	50	Solution	30.01	374	352.00	5.88
395 50 3 50 rep 5.txt	50	3	50	Solution	30.01	405	370.00	8.64
396 50 3 50 rep 6.txt	50	3	50	Solution	30.03	360	345.00	4.17
397 50 3 50 rep 7.txt	50	3	50	Solution	30.01	365	345.00	5.48
398 50 3 50 rep 8.txt	50	3	50	Solution	30.02	370	346.00	6.49
399 50 3 50 rep 9.txt	50	3	50	Solution	30.03	343	322.00	6.12
400 50 3 50 rep 10.txt	50	3	50	Solution	30.04	360	325.00	9.72
401 50 5 10 rep 1.txt	50	5	10	Solution	30.02	2562	1841.00	28.14
402 50 5 10 rep 2.txt	50	5	10	Solution	30.02	2115	1425.00	32.62

Table 1: Results for CFSnoWait (CPO) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
403 50 5 10 rep 3.txt	50	5	10	Solution	30.02	2311	1501.00	35.05
404 50 5 10 rep 4.txt	50	5	10	Solution	30.01	2412	1837.00	23.84
405 50 5 10 rep 5.txt	50	5	10	Solution	30.02	2252	1498.00	33.48
406 50 5 10 rep 6.txt	50	5	10	Solution	30.02	2469	1729.00	29.97
407 50 5 10 rep 7.txt	50	5	10	Solution	30.02	2567	1783.00	30.54
408 50 5 10 rep 8.txt	50	5	10	Solution	30.02	2568	1764.00	31.31
409 50 5 10 rep 9.txt	50	5	10	Solution	30.01	2411	1767.00	26.71
410 50 5 10 rep 10.txt	50	5	10	Solution	30.02	2511	1762.00	29.83
411 50 5 20 rep 1.txt	50	5	20	Solution	30.02	1064	820.00	22.93
412 50 5 20 rep 2.txt	50	5	20	Solution	30.02	1028	863.00	16.05
413 50 5 20 rep 3.txt	50	5	20	Solution	30.02	1039	792.00	23.77
414 50 5 20 rep 4.txt	50	5	20	Solution	30.02	1037	879.00	15.24
415 50 5 20 rep 5.txt	50	5	20	Solution	30.02	999	798.00	20.12
416 50 5 20 rep 6.txt	50	5	20	Solution	30.01	907	710.00	21.72
417 50 5 20 rep 7.txt	50	5	20	Solution	30.03	1100	849.00	22.82
418 50 5 20 rep 8.txt	50	5	20	Solution	30.01	1001	797.00	20.38
419 50 5 20 rep 9.txt	50	5	20	Solution	30.01	1039	823.00	20.79
420 50 5 20 rep 10.txt	50	5	20	Solution	30.03	1013	779.00	23.10
421 50 5 30 rep 1.txt	50	5	30	Solution	30.02	738	605.00	18.02
422 50 5 30 rep 2.txt	50	5	30	Solution	30.01	760	658.00	13.42
423 50 5 30 rep 3.txt	50	5	30	Solution	30.03	731	660.00	9.71
424 50 5 30 rep 4.txt	50	5	30	Solution	30.02	668	575.00	13.92
425 50 5 30 rep 5.txt	50	5	30	Solution	30.01	720	628.00	12.78
426 50 5 30 rep 6.txt	50	5	30	Solution	30.01	702	619.00	11.82
427 50 5 30 rep 7.txt	50	5	30	Solution	30.01	746	621.00	16.76
428 50 5 30 rep 8.txt	50	5	30	Solution	30.02	771	701.00	9.08
429 50 5 30 rep 9.txt	50	5	30	Solution	30.01	714	612.00	14.29
430 50 5 30 rep 10.txt	50	5	30	Solution	30.03	733	658.00	10.23
431 50 5 50 rep 1.txt	50	5	50	Solution	30.03	468	415.00	11.32
432 50 5 50 rep 2.txt	50	5	50	Solution	30.03	488	449.00	7.99
433 50 5 50 rep 3.txt	50	5	50	Solution	30.02	481	445.00	7.48
434 50 5 50 rep 4.txt	50	5	50	Solution	30.03	506	449.00	11.26
435 50 5 50 rep 5.txt	50	5	50	Solution	30.01	492	439.00	10.77
436 50 5 50 rep 6.txt	50	5	50	Solution	30.01	497	461.00	7.24
437 50 5 50 rep 7.txt	50	5	50	Solution	30.01	460	428.00	6.96
438 50 5 50 rep 8.txt	50	5	50	Solution	30.02	488	444.00	9.02
439 50 5 50 rep 9.txt	50	5	50	Solution	30.03	516	471.00	8.72
440 50 5 50 rep 10.txt	50	5	50	Solution	30.02	482	430.00	10.79
441 50 10 10 rep 1.txt	50	10	10	Solution	30.03	3543	1884.00	46.82
442 50 10 10 rep 2.txt	50	10	10	Solution	30.03	3271	1742.00	46.74
443 50 10 10 rep 3.txt	50	10	10	Solution	30.03	3683	1963.00	46.70
444 50 10 10 rep 4.txt	50	10	10	Solution	30.03	3751	2156.00	42.52
445 50 10 10 rep 5.txt	50	10	10	Solution	30.02	3371	1791.00	46.87
446 50 10 10 rep 6.txt	50	10	10	Solution	30.03	3475	2096.00	39.68
447 50 10 10 rep 7.txt	50	10	10	Solution	30.03	3444	1880.00	45.41

Table 1: Results for CFSnoWait (CPO) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
448 50 10 10 rep 8.txt	50	10	10	Solution	30.03	3512	1960.00	44.19
449 50 10 10 rep 9.txt	50	10	10	Solution	30.03	3396	1816.00	46.53
450 50 10 10 rep 10.txt	50	10	10	Solution	30.03	3547	1799.00	49.28
451 50 10 20 rep 1.txt	50	10	20	Solution	30.02	1587	1119.00	29.49
452 50 10 20 rep 2.txt	50	10	20	Solution	30.03	1526	1111.00	27.20
453 50 10 20 rep 3.txt	50	10	20	Solution	30.04	1515	1028.00	32.15
454 50 10 20 rep 4.txt	50	10	20	Solution	30.02	1605	1176.00	26.73
455 50 10 20 rep 5.txt	50	10	20	Solution	30.01	1491	1043.00	30.05
456 50 10 20 rep 6.txt	50	10	20	Solution	30.02	1496	1051.00	29.75
457 50 10 20 rep 7.txt	50	10	20	Solution	30.02	1554	1127.00	27.48
458 50 10 20 rep 8.txt	50	10	20	Solution	30.02	1553	1101.00	29.10
459 50 10 20 rep 9.txt	50	10	20	Solution	30.04	1537	1107.00	27.98
460 50 10 20 rep 10.txt	50	10	20	Solution	30.02	1598	1184.00	25.91
461 50 10 30 rep 1.txt	50	10	30	Solution	30.02	1114	862.00	22.62
462 50 10 30 rep 2.txt	50	10	30	Solution	30.03	993	879.00	11.48
463 50 10 30 rep 3.txt	50	10	30	Solution	30.03	1019	785.00	22.96
464 50 10 30 rep 4.txt	50	10	30	Solution	30.03	990	788.00	20.40
465 50 10 30 rep 5.txt	50	10	30	Solution	30.02	1018	887.00	12.87
466 50 10 30 rep 6.txt	50	10	30	Solution	30.03	1024	875.00	14.55
467 50 10 30 rep 7.txt	50	10	30	Solution	30.02	1103	871.00	21.03
468 50 10 30 rep 8.txt	50	10	30	Solution	30.03	1034	829.00	19.83
469 50 10 30 rep 9.txt	50	10	30	Solution	30.04	1114	851.00	23.61
470 50 10 30 rep 10.txt	50	10	30	Solution	30.02	1083	910.00	15.97
471 50 10 50 rep 1.txt	50	10	50	Optimal	8.60	727	727.00	0.00
472 50 10 50 rep 2.txt	50	10	50	Solution	30.02	718	695.00	3.20
473 50 10 50 rep 3.txt	50	10	50	Solution	30.04	700	654.00	6.57
474 50 10 50 rep 4.txt	50	10	50	Solution	30.02	761	720.00	5.39
475 50 10 50 rep 5.txt	50	10	50	Solution	30.04	725	696.00	4.00
476 50 10 50 rep 6.txt	50	10	50	Solution	30.03	776	751.00	3.22
477 50 10 50 rep 7.txt	50	10	50	Solution	30.02	771	706.00	8.43
478 50 10 50 rep 8.txt	50	10	50	Solution	30.02	731	714.00	2.33
479 50 10 50 rep 9.txt	50	10	50	Optimal	1.69	767	767.00	0.00
480 50 10 50 rep 10.txt	50	10	50	Solution	30.02	718	661.00	7.94
481 100 2 10 rep 1.txt	100	2	10	Solution	30.02	2825	2485.00	12.04
482 100 2 10 rep 2.txt	100	2	10	Solution	30.02	3212	2890.00	10.02
483 100 2 10 rep 3.txt	100	2	10	Solution	30.03	2952	2712.00	8.13
484 100 2 10 rep 4.txt	100	2	10	Solution	30.03	2984	2747.00	7.94
485 100 2 10 rep 5.txt	100	2	10	Solution	30.03	3156	2877.00	8.84
486 100 2 10 rep 6.txt	100	2	10	Solution	30.02	3527	3139.00	11.00
487 100 2 10 rep 7.txt	100	2	10	Solution	30.01	3141	2838.00	9.65
488 100 2 10 rep 8.txt	100	2	10	Solution	30.03	3315	2942.00	11.25
489 100 2 10 rep 9.txt	100	2	10	Solution	30.02	3088	2826.00	8.48
490 100 2 10 rep 10.txt	100	2	10	Solution	30.01	3059	2886.00	5.66
491 100 2 20 rep 1.txt	100	2	20	Solution	30.02	1511	1401.00	7.28
492 100 2 20 rep 2.txt	100	2	20	Solution	30.03	1566	1497.00	4.41

Table 1: Results for CFSnoWait (CPO) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
493 100 2 20 rep 3.txt	100	2	20	Solution	30.02	1420	1289.00	9.23
494 100 2 20 rep 4.txt	100	2	20	Solution	30.02	1402	1284.00	8.42
495 100 2 20 rep 5.txt	100	2	20	Solution	30.01	1471	1378.00	6.32
496 100 2 20 rep 6.txt	100	2	20	Solution	30.01	1538	1439.00	6.44
497 100 2 20 rep 7.txt	100	2	20	Solution	30.01	1517	1405.00	7.38
498 100 2 20 rep 8.txt	100	2	20	Solution	30.02	1604	1481.00	7.67
499 100 2 20 rep 9.txt	100	2	20	Solution	30.01	1390	1320.00	5.04
500 100 2 20 rep 10.txt	100	2	20	Solution	30.03	1553	1419.00	8.63
501 100 2 30 rep 1.txt	100	2	30	Solution	30.01	988	916.00	7.29
502 100 2 30 rep 2.txt	100	2	30	Solution	30.01	911	857.00	5.93
503 100 2 30 rep 3.txt	100	2	30	Solution	30.01	1060	1012.00	4.53
504 100 2 30 rep 4.txt	100	2	30	Solution	30.02	1028	980.00	4.67
505 100 2 30 rep 5.txt	100	2	30	Solution	30.02	947	931.00	1.69
506 100 2 30 rep 6.txt	100	2	30	Solution	30.01	981	908.00	7.44
507 100 2 30 rep 7.txt	100	2	30	Solution	30.02	996	956.00	4.02
508 100 2 30 rep 8.txt	100	2	30	Solution	30.01	944	881.00	6.67
509 100 2 30 rep 9.txt	100	2	30	Solution	30.04	954	890.00	6.71
510 100 2 30 rep 10.txt	100	2	30	Solution	30.01	1051	994.00	5.42
511 100 2 50 rep 1.txt	100	2	50	Solution	30.04	671	646.00	3.73
512 100 2 50 rep 2.txt	100	2	50	Solution	30.01	592	560.00	5.41
513 100 2 50 rep 3.txt	100	2	50	Solution	30.02	584	564.00	3.42
514 100 2 50 rep 4.txt	100	2	50	Solution	30.01	625	609.00	2.56
515 100 2 50 rep 5.txt	100	2	50	Solution	30.01	583	566.00	2.92
516 100 2 50 rep 6.txt	100	2	50	Solution	30.04	696	685.00	1.58
517 100 2 50 rep 7.txt	100	2	50	Solution	30.04	599	577.00	3.67
518 100 2 50 rep 8.txt	100	2	50	Solution	30.01	627	613.00	2.23
519 100 2 50 rep 9.txt	100	2	50	Solution	30.01	604	581.00	3.81
520 100 2 50 rep 10.txt	100	2	50	Solution	30.03	553	540.00	2.35
521 100 3 10 rep 1.txt	100	3	10	Solution	30.02	3401	2720.00	20.02
522 100 3 10 rep 2.txt	100	3	10	Solution	30.02	3669	2932.00	20.09
523 100 3 10 rep 3.txt	100	3	10	Solution	30.02	4056	3404.00	16.07
524 100 3 10 rep 4.txt	100	3	10	Solution	30.03	3557	2681.00	24.63
525 100 3 10 rep 5.txt	100	3	10	Solution	30.02	3626	2824.00	22.12
526 100 3 10 rep 6.txt	100	3	10	Solution	30.03	3922	3164.00	19.33
527 100 3 10 rep 7.txt	100	3	10	Solution	30.03	3807	2925.00	23.17
528 100 3 10 rep 8.txt	100	3	10	Solution	30.03	3567	3046.00	14.61
529 100 3 10 rep 9.txt	100	3	10	Solution	30.03	3889	3044.00	21.73
530 100 3 10 rep 10.txt	100	3	10	Solution	30.02	3792	2991.00	21.12
531 100 3 20 rep 1.txt	100	3	20	Solution	30.03	1830	1490.00	18.58
532 100 3 20 rep 2.txt	100	3	20	Solution	30.02	1778	1517.00	14.68
533 100 3 20 rep 3.txt	100	3	20	Solution	30.02	1676	1398.00	16.59
534 100 3 20 rep 4.txt	100	3	20	Solution	30.03	1728	1513.00	12.44
535 100 3 20 rep 5.txt	100	3	20	Solution	30.03	1722	1503.00	12.72
536 100 3 20 rep 6.txt	100	3	20	Solution	30.02	1682	1551.00	7.79
537 100 3 20 rep 7.txt	100	3	20	Solution	30.03	1725	1540.00	10.72

Table 1: Results for CFSnoWait (CPO) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
538 100 3 20 rep 8.txt	100	3	20	Solution	30.02	1813	1532.00	15.50
539 100 3 20 rep 9.txt	100	3	20	Solution	30.02	1603	1361.00	15.10
540 100 3 20 rep 10.txt	100	3	20	Solution	30.01	1891	1675.00	11.42
541 100 3 30 rep 1.txt	100	3	30	Solution	30.04	1080	977.00	9.54
542 100 3 30 rep 2.txt	100	3	30	Solution	30.02	1120	992.00	11.43
543 100 3 30 rep 3.txt	100	3	30	Solution	30.03	1122	1048.00	6.60
544 100 3 30 rep 4.txt	100	3	30	Solution	30.03	1143	1014.00	11.29
545 100 3 30 rep 5.txt	100	3	30	Solution	30.04	1186	1071.00	9.70
546 100 3 30 rep 6.txt	100	3	30	Solution	30.01	1072	946.00	11.75
547 100 3 30 rep 7.txt	100	3	30	Solution	30.03	1097	1023.00	6.75
548 100 3 30 rep 8.txt	100	3	30	Solution	30.01	1125	969.00	13.87
549 100 3 30 rep 9.txt	100	3	30	Solution	30.02	1023	903.00	11.73
550 100 3 30 rep 10.txt	100	3	30	Solution	30.03	1194	1099.00	7.96
551 100 3 50 rep 1.txt	100	3	50	Solution	30.03	632	570.00	9.81
552 100 3 50 rep 2.txt	100	3	50	Solution	30.03	719	668.00	7.09
553 100 3 50 rep 3.txt	100	3	50	Solution	30.01	686	625.00	8.89
554 100 3 50 rep 4.txt	100	3	50	Solution	30.02	684	625.00	8.63
555 100 3 50 rep 5.txt	100	3	50	Solution	30.01	668	603.00	9.73
556 100 3 50 rep 6.txt	100	3	50	Solution	30.02	650	613.00	5.69
557 100 3 50 rep 7.txt	100	3	50	Solution	30.03	732	694.00	5.19
558 100 3 50 rep 8.txt	100	3	50	Solution	30.02	649	608.00	6.32
559 100 3 50 rep 9.txt	100	3	50	Solution	30.02	610	585.00	4.10
560 100 3 50 rep 10.txt	100	3	50	Solution	30.01	656	612.00	6.71
561 100 5 10 rep 1.txt	100	5	10	Solution	30.04	4448	2913.00	34.51
562 100 5 10 rep 2.txt	100	5	10	Solution	30.06	4627	2994.00	35.29
563 100 5 10 rep 3.txt	100	5	10	Solution	30.05	5039	3112.00	38.24
564 100 5 10 rep 4.txt	100	5	10	Solution	30.04	5018	3470.00	30.85
565 100 5 10 rep 5.txt	100	5	10	Solution	30.05	4583	3068.00	33.06
566 100 5 10 rep 6.txt	100	5	10	Solution	30.04	4373	3131.00	28.40
567 100 5 10 rep 7.txt	100	5	10	Solution	30.05	4931	3306.00	32.95
568 100 5 10 rep 8.txt	100	5	10	Solution	30.03	4991	3358.00	32.72
569 100 5 10 rep 9.txt	100	5	10	Solution	30.04	4562	3112.00	31.78
570 100 5 10 rep 10.txt	100	5	10	Solution	30.05	4767	3005.00	36.96
571 100 5 20 rep 1.txt	100	5	20	Solution	30.03	2010	1542.00	23.28
572 100 5 20 rep 2.txt	100	5	20	Solution	30.06	2104	1690.00	19.68
573 100 5 20 rep 3.txt	100	5	20	Solution	30.04	2086	1650.00	20.90
574 100 5 20 rep 4.txt	100	5	20	Solution	30.04	2023	1515.00	25.11
575 100 5 20 rep 5.txt	100	5	20	Solution	30.04	2069	1659.00	19.82
576 100 5 20 rep 6.txt	100	5	20	Solution	30.05	2041	1601.00	21.56
577 100 5 20 rep 7.txt	100	5	20	Solution	30.02	2024	1574.00	22.23
578 100 5 20 rep 8.txt	100	5	20	Solution	30.05	2092	1602.00	23.42
579 100 5 20 rep 9.txt	100	5	20	Solution	30.03	1976	1508.00	23.68
580 100 5 20 rep 10.txt	100	5	20	Solution	30.03	1953	1599.00	18.13
581 100 5 30 rep 1.txt	100	5	30	Solution	30.02	1204	989.00	17.86
582 100 5 30 rep 2.txt	100	5	30	Solution	30.06	1281	998.00	22.09

Table 1: Results for CFSnoWait (CPO) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
583 100 5 30 rep 3.txt	100	5	30	Solution	30.03	1274	994.00	21.98
584 100 5 30 rep 4.txt	100	5	30	Solution	30.05	1296	1106.00	14.66
585 100 5 30 rep 5.txt	100	5	30	Solution	30.03	1293	1050.00	18.79
586 100 5 30 rep 6.txt	100	5	30	Solution	30.02	1301	1067.00	17.99
587 100 5 30 rep 7.txt	100	5	30	Solution	30.04	1315	1081.00	17.79
588 100 5 30 rep 8.txt	100	5	30	Solution	30.04	1330	1063.00	20.08
589 100 5 30 rep 9.txt	100	5	30	Solution	30.03	1316	1097.00	16.64
590 100 5 30 rep 10.txt	100	5	30	Solution	30.04	1393	1166.00	16.30
591 100 5 50 rep 1.txt	100	5	50	Solution	30.07	813	742.00	8.73
592 100 5 50 rep 2.txt	100	5	50	Solution	30.07	773	661.00	14.49
593 100 5 50 rep 3.txt	100	5	50	Solution	30.02	856	724.00	15.42
594 100 5 50 rep 4.txt	100	5	50	Solution	30.03	826	695.00	15.86
595 100 5 50 rep 5.txt	100	5	50	Solution	30.06	835	687.00	17.72
596 100 5 50 rep 6.txt	100	5	50	Solution	30.06	831	765.00	7.94
597 100 5 50 rep 7.txt	100	5	50	Solution	30.03	799	700.00	12.39
598 100 5 50 rep 8.txt	100	5	50	Solution	30.05	816	716.00	12.25
599 100 5 50 rep 9.txt	100	5	50	Solution	30.05	782	716.00	8.44
600 100 5 50 rep 10.txt	100	5	50	Solution	30.01	782	697.00	10.87
601 100 10 10 rep 1.txt	100	10	10	Solution	30.12	6743	3440.00	48.98
602 100 10 10 rep 2.txt	100	10	10	Solution	30.10	6875	3511.00	48.93
603 100 10 10 rep 3.txt	100	10	10	Solution	30.13	6510	3186.00	51.06
604 100 10 10 rep 4.txt	100	10	10	Solution	30.13	6944	3469.00	50.04
605 100 10 10 rep 5.txt	100	10	10	Solution	30.11	6863	3634.00	47.05
606 100 10 10 rep 6.txt	100	10	10	Solution	30.10	6826	3483.00	48.97
607 100 10 10 rep 7.txt	100	10	10	Solution	30.11	6944	3418.00	50.78
608 100 10 10 rep 8.txt	100	10	10	Solution	30.12	6625	3175.00	52.08
609 100 10 10 rep 9.txt	100	10	10	Solution	30.15	6693	3261.00	51.28
610 100 10 10 rep 10.txt	100	10	10	Solution	30.10	6958	3380.00	51.42
611 100 10 20 rep 1.txt	100	10	20	Solution	30.04	2709	1748.00	35.47
612 100 10 20 rep 2.txt	100	10	20	Solution	30.14	2752	1740.00	36.77
613 100 10 20 rep 3.txt	100	10	20	Solution	30.06	2732	1740.00	36.31
614 100 10 20 rep 4.txt	100	10	20	Solution	30.05	2788	1818.00	34.79
615 100 10 20 rep 5.txt	100	10	20	Solution	30.05	2719	1903.00	30.01
616 100 10 20 rep 6.txt	100	10	20	Solution	30.05	2809	1883.00	32.97
617 100 10 20 rep 7.txt	100	10	20	Solution	30.08	2625	1725.00	34.29
618 100 10 20 rep 8.txt	100	10	20	Solution	30.06	2686	1766.00	34.25
619 100 10 20 rep 9.txt	100	10	20	Solution	30.06	2512	1690.00	32.72
620 100 10 20 rep 10.txt	100	10	20	Solution	30.07	2662	1795.00	32.57
621 100 10 30 rep 1.txt	100	10	30	Solution	30.03	1826	1338.00	26.73
622 100 10 30 rep 2.txt	100	10	30	Solution	30.04	1682	1279.00	23.96
623 100 10 30 rep 3.txt	100	10	30	Solution	30.06	1663	1222.00	26.52
624 100 10 30 rep 4.txt	100	10	30	Solution	30.10	1796	1256.00	30.07
625 100 10 30 rep 5.txt	100	10	30	Solution	30.10	1763	1371.00	22.23
626 100 10 30 rep 6.txt	100	10	30	Solution	30.07	1746	1315.00	24.68
627 100 10 30 rep 7.txt	100	10	30	Solution	30.03	1749	1271.00	27.33

Table 1: Results for CFSnoWait (CPO) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
628 100 10 30 rep 8.txt	100	10	30	Solution	30.08	1798	1324.00	26.36
629 100 10 30 rep 9.txt	100	10	30	Solution	30.09	1764	1259.00	28.63
630 100 10 30 rep 10.txt	100	10	30	Solution	30.04	1804	1300.00	27.94
631 100 10 50 rep 1.txt	100	10	50	Solution	30.10	1176	995.00	15.39
632 100 10 50 rep 2.txt	100	10	50	Solution	30.05	1126	886.00	21.31
633 100 10 50 rep 3.txt	100	10	50	Solution	30.04	1111	916.00	17.55
634 100 10 50 rep 4.txt	100	10	50	Solution	30.09	1039	847.00	18.48
635 100 10 50 rep 5.txt	100	10	50	Solution	30.11	1079	870.00	19.37
636 100 10 50 rep 6.txt	100	10	50	Solution	30.03	1125	927.00	17.60
637 100 10 50 rep 7.txt	100	10	50	Solution	30.07	1152	873.00	24.22
638 100 10 50 rep 8.txt	100	10	50	Solution	30.21	1052	910.00	13.50
639 100 10 50 rep 9.txt	100	10	50	Solution	30.09	1083	904.00	16.53
640 100 10 50 rep 10.txt	100	10	50	Solution	30.16	1142	974.00	14.71

2 Instances (CPSat)

Table 2: Results for CFSnoWait (CPSat) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
1 20 2 10 rep 1.txt	20	2	10	Optimal	300.05	746	746.00	0.00
2 20 2 10 rep 2.txt	20	2	10	Optimal	300.05	670	670.00	0.00
3 20 2 10 rep 3.txt	20	2	10	Optimal	136.60	602	602.00	0.00
4 20 2 10 rep 4.txt	20	2	10	Solution	300.19	810	794.00	1.98
5 20 2 10 rep 5.txt	20	2	10	Solution	300.45	592	545.00	7.94
6 20 2 10 rep 6.txt	20	2	10	Optimal	300.19	660	660.00	0.00
7 20 2 10 rep 7.txt	20	2	10	Optimal	300.06	664	664.00	0.00
8 20 2 10 rep 8.txt	20	2	10	Solution	300.18	971	946.00	2.57
9 20 2 10 rep 9.txt	20	2	10	Optimal	300.06	608	608.00	0.00
10 20 2 10 rep 10.txt	20	2	10	Solution	300.22	799	753.00	5.76
11 20 2 20 rep 1.txt	20	2	20	Optimal	300.02	338	338.00	0.00
12 20 2 20 rep 2.txt	20	2	20	Optimal	300.02	327	327.00	0.00
13 20 2 20 rep 3.txt	20	2	20	Optimal	300.08	300	300.00	0.00
14 20 2 20 rep 4.txt	20	2	20	Optimal	300.01	305	305.00	0.00
15 20 2 20 rep 5.txt	20	2	20	Optimal	300.03	343	343.00	0.00
16 20 2 20 rep 6.txt	20	2	20	Optimal	300.02	344	344.00	0.00
17 20 2 20 rep 7.txt	20	2	20	Optimal	300.01	365	365.00	0.00
18 20 2 20 rep 8.txt	20	2	20	Optimal	300.03	353	353.00	0.00
19 20 2 20 rep 9.txt	20	2	20	Optimal	300.01	301	301.00	0.00
20 20 2 20 rep 10.txt	20	2	20	Optimal	300.02	372	372.00	0.00
21 20 2 30 rep 1.txt	20	2	30	Optimal	0.02	185	185.00	0.00
22 20 2 30 rep 2.txt	20	2	30	Optimal	0.05	164	164.00	0.00

Table 2: Results for CFSnoWait (CPSat) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
23 20 2 30 rep 3.txt	20	2	30	Optimal	2.61	231	231.00	0.00
24 20 2 30 rep 4.txt	20	2	30	Optimal	6.54	255	255.00	0.00
25 20 2 30 rep 5.txt	20	2	30	Optimal	0.65	239	239.00	0.00
26 20 2 30 rep 6.txt	20	2	30	Optimal	300.01	254	254.00	0.00
27 20 2 30 rep 7.txt	20	2	30	Optimal	300.01	212	212.00	0.00
28 20 2 30 rep 8.txt	20	2	30	Optimal	300.00	230	230.00	0.00
29 20 2 30 rep 9.txt	20	2	30	Optimal	300.01	235	235.00	0.00
30 20 2 30 rep 10.txt	20	2	30	Optimal	300.04	337	337.00	0.00
31 20 2 50 rep 1.txt	20	2	50	Optimal	0.01	191	191.00	0.00
32 20 2 50 rep 2.txt	20	2	50	Optimal	0.01	172	172.00	0.00
33 20 2 50 rep 3.txt	20	2	50	Optimal	81.84	173	173.00	0.00
34 20 2 50 rep 4.txt	20	2	50	Optimal	0.01	184	184.00	0.00
35 20 2 50 rep 5.txt	20	2	50	Optimal	0.01	179	179.00	0.00
36 20 2 50 rep 6.txt	20	2	50	Optimal	300.01	220	220.00	0.00
37 20 2 50 rep 7.txt	20	2	50	Optimal	0.01	170	170.00	0.00
38 20 2 50 rep 8.txt	20	2	50	Optimal	0.01	192	192.00	0.00
39 20 2 50 rep 9.txt	20	2	50	Optimal	0.07	204	204.00	0.00
40 20 2 50 rep 10.txt	20	2	50	Optimal	21.40	218	218.00	0.00
41 20 3 10 rep 1.txt	20	3	10	Solution	300.12	759	718.00	5.40
42 20 3 10 rep 2.txt	20	3	10	Solution	300.14	847	754.00	10.98
43 20 3 10 rep 3.txt	20	3	10	Solution	300.19	753	668.00	11.29
44 20 3 10 rep 4.txt	20	3	10	Optimal	0.03	1104	1104.00	0.00
45 20 3 10 rep 5.txt	20	3	10	Solution	300.09	815	746.00	8.47
46 20 3 10 rep 6.txt	20	3	10	Solution	300.22	918	897.00	2.29
47 20 3 10 rep 7.txt	20	3	10	Solution	300.19	981	847.00	13.66
48 20 3 10 rep 8.txt	20	3	10	Solution	300.15	876	765.00	12.67
49 20 3 10 rep 9.txt	20	3	10	Optimal	66.31	893	893.00	0.00
50 20 3 10 rep 10.txt	20	3	10	Solution	300.11	1083	940.00	13.20
51 20 3 20 rep 1.txt	20	3	20	Solution	300.17	451	441.00	2.22
52 20 3 20 rep 2.txt	20	3	20	Optimal	300.02	403	403.00	0.00
53 20 3 20 rep 3.txt	20	3	20	Optimal	300.02	395	395.00	0.00
54 20 3 20 rep 4.txt	20	3	20	Optimal	300.02	393	393.00	0.00
55 20 3 20 rep 5.txt	20	3	20	Optimal	300.04	423	423.00	0.00
56 20 3 20 rep 6.txt	20	3	20	Optimal	3.53	357	357.00	0.00
57 20 3 20 rep 7.txt	20	3	20	Optimal	12.19	449	449.00	0.00
58 20 3 20 rep 8.txt	20	3	20	Optimal	300.03	351	351.00	0.00
59 20 3 20 rep 9.txt	20	3	20	Solution	300.18	370	353.00	4.59
60 20 3 20 rep 10.txt	20	3	20	Optimal	300.02	381	381.00	0.00
61 20 3 30 rep 1.txt	20	3	30	Optimal	300.01	345	345.00	0.00
62 20 3 30 rep 2.txt	20	3	30	Optimal	0.60	244	244.00	0.00
63 20 3 30 rep 3.txt	20	3	30	Optimal	0.11	279	279.00	0.00
64 20 3 30 rep 4.txt	20	3	30	Optimal	0.39	304	304.00	0.00
65 20 3 30 rep 5.txt	20	3	30	Optimal	300.01	268	268.00	0.00
66 20 3 30 rep 6.txt	20	3	30	Optimal	1.46	261	261.00	0.00
67 20 3 30 rep 7.txt	20	3	30	Optimal	226.68	377	377.00	0.00

Table 2: Results for CFSnoWait (CPSat) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
68 20 3 30 rep 8.txt	20	3	30	Optimal	24.81	289	289.00	0.00
69 20 3 30 rep 9.txt	20	3	30	Optimal	0.22	245	245.00	0.00
70 20 3 30 rep 10.txt	20	3	30	Optimal	0.13	233	233.00	0.00
71 20 3 50 rep 1.txt	20	3	50	Optimal	0.01	259	259.00	0.00
72 20 3 50 rep 2.txt	20	3	50	Optimal	0.02	233	233.00	0.00
73 20 3 50 rep 3.txt	20	3	50	Optimal	0.01	234	234.00	0.00
74 20 3 50 rep 4.txt	20	3	50	Optimal	0.02	270	270.00	0.00
75 20 3 50 rep 5.txt	20	3	50	Optimal	0.01	247	247.00	0.00
76 20 3 50 rep 6.txt	20	3	50	Optimal	0.09	245	245.00	0.00
77 20 3 50 rep 7.txt	20	3	50	Optimal	0.15	217	217.00	0.00
78 20 3 50 rep 8.txt	20	3	50	Optimal	0.02	232	232.00	0.00
79 20 3 50 rep 9.txt	20	3	50	Optimal	0.36	242	242.00	0.00
80 20 3 50 rep 10.txt	20	3	50	Optimal	0.01	223	223.00	0.00
81 20 5 10 rep 1.txt	20	5	10	Solution	301.50	901	703.00	21.98
82 20 5 10 rep 2.txt	20	5	10	Solution	300.75	1117	928.00	16.92
83 20 5 10 rep 3.txt	20	5	10	Solution	300.22	1014	833.00	17.85
84 20 5 10 rep 4.txt	20	5	10	Solution	300.52	979	807.00	17.57
85 20 5 10 rep 5.txt	20	5	10	Solution	300.16	938	820.00	12.58
86 20 5 10 rep 6.txt	20	5	10	Solution	300.32	1206	1008.00	16.42
87 20 5 10 rep 7.txt	20	5	10	Solution	300.19	919	738.00	19.70
88 20 5 10 rep 8.txt	20	5	10	Solution	300.21	1103	910.00	17.50
89 20 5 10 rep 9.txt	20	5	10	Solution	300.10	1028	896.00	12.84
90 20 5 10 rep 10.txt	20	5	10	Solution	300.14	1110	933.00	15.95
91 20 5 20 rep 1.txt	20	5	20	Solution	300.11	513	465.00	9.36
92 20 5 20 rep 2.txt	20	5	20	Optimal	300.02	523	523.00	0.00
93 20 5 20 rep 3.txt	20	5	20	Solution	300.09	537	498.00	7.26
94 20 5 20 rep 4.txt	20	5	20	Optimal	300.05	472	472.00	0.00
95 20 5 20 rep 5.txt	20	5	20	Solution	300.18	580	529.00	8.79
96 20 5 20 rep 6.txt	20	5	20	Optimal	300.02	519	519.00	0.00
97 20 5 20 rep 7.txt	20	5	20	Solution	300.17	580	538.00	7.24
98 20 5 20 rep 8.txt	20	5	20	Optimal	300.02	502	502.00	0.00
99 20 5 20 rep 9.txt	20	5	20	Optimal	300.02	484	484.00	0.00
100 20 5 20 rep 10.txt	20	5	20	Optimal	300.03	510	510.00	0.00
101 20 5 30 rep 1.txt	20	5	30	Optimal	3.92	378	378.00	0.00
102 20 5 30 rep 2.txt	20	5	30	Optimal	300.01	401	401.00	0.00
103 20 5 30 rep 3.txt	20	5	30	Optimal	0.36	379	379.00	0.00
104 20 5 30 rep 4.txt	20	5	30	Optimal	300.02	405	405.00	0.00
105 20 5 30 rep 5.txt	20	5	30	Optimal	300.01	417	417.00	0.00
106 20 5 30 rep 6.txt	20	5	30	Optimal	0.08	388	388.00	0.00
107 20 5 30 rep 7.txt	20	5	30	Optimal	0.10	424	424.00	0.00
108 20 5 30 rep 8.txt	20	5	30	Optimal	0.04	407	407.00	0.00
109 20 5 30 rep 9.txt	20	5	30	Optimal	1.07	360	360.00	0.00
110 20 5 30 rep 10.txt	20	5	30	Optimal	0.09	427	427.00	0.00
111 20 5 50 rep 1.txt	20	5	50	Optimal	0.01	408	408.00	0.00
112 20 5 50 rep 2.txt	20	5	50	Optimal	0.01	418	418.00	0.00

Table 2: Results for CFSnoWait (CPSat) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
113 20 5 50 rep 3.txt	20	5	50	Optimal	0.01	357	357.00	0.00
114 20 5 50 rep 4.txt	20	5	50	Optimal	0.01	428	428.00	0.00
115 20 5 50 rep 5.txt	20	5	50	Optimal	0.04	373	373.00	0.00
116 20 5 50 rep 6.txt	20	5	50	Optimal	0.02	365	365.00	0.00
117 20 5 50 rep 7.txt	20	5	50	Optimal	0.01	387	387.00	0.00
118 20 5 50 rep 8.txt	20	5	50	Optimal	0.01	348	348.00	0.00
119 20 5 50 rep 9.txt	20	5	50	Optimal	0.01	405	405.00	0.00
120 20 5 50 rep 10.txt	20	5	50	Optimal	0.01	417	417.00	0.00
121 20 10 10 rep 1.txt	20	10	10	Solution	300.36	1545	1078.00	30.23
122 20 10 10 rep 2.txt	20	10	10	Solution	300.36	1771	1232.00	30.43
123 20 10 10 rep 3.txt	20	10	10	Solution	300.15	1673	1218.00	27.20
124 20 10 10 rep 4.txt	20	10	10	Solution	300.25	1632	1174.00	28.06
125 20 10 10 rep 5.txt	20	10	10	Solution	300.22	1694	1185.00	30.05
126 20 10 10 rep 6.txt	20	10	10	Solution	300.12	1636	1163.00	28.91
127 20 10 10 rep 7.txt	20	10	10	Solution	300.14	1472	1150.00	21.88
128 20 10 10 rep 8.txt	20	10	10	Solution	300.12	1806	1320.00	26.91
129 20 10 10 rep 9.txt	20	10	10	Solution	300.15	1589	1206.00	24.10
130 20 10 10 rep 10.txt	20	10	10	Solution	300.61	1679	1263.00	24.78
131 20 10 20 rep 1.txt	20	10	20	Optimal	300.01	785	785.00	0.00
132 20 10 20 rep 2.txt	20	10	20	Solution	300.06	819	783.00	4.40
133 20 10 20 rep 3.txt	20	10	20	Optimal	300.03	799	799.00	0.00
134 20 10 20 rep 4.txt	20	10	20	Solution	300.08	817	763.00	6.61
135 20 10 20 rep 5.txt	20	10	20	Optimal	300.03	889	889.00	0.00
136 20 10 20 rep 6.txt	20	10	20	Solution	300.60	864	815.00	5.67
137 20 10 20 rep 7.txt	20	10	20	Optimal	300.03	844	844.00	0.00
138 20 10 20 rep 8.txt	20	10	20	Optimal	300.07	805	805.00	0.00
139 20 10 20 rep 9.txt	20	10	20	Optimal	300.03	869	869.00	0.00
140 20 10 20 rep 10.txt	20	10	20	Optimal	300.02	816	816.00	0.00
141 20 10 30 rep 1.txt	20	10	30	Optimal	300.02	720	720.00	0.00
142 20 10 30 rep 2.txt	20	10	30	Optimal	0.11	720	720.00	0.00
143 20 10 30 rep 3.txt	20	10	30	Optimal	0.17	682	682.00	0.00
144 20 10 30 rep 4.txt	20	10	30	Optimal	2.76	651	651.00	0.00
145 20 10 30 rep 5.txt	20	10	30	Optimal	4.46	706	706.00	0.00
146 20 10 30 rep 6.txt	20	10	30	Optimal	300.01	627	627.00	0.00
147 20 10 30 rep 7.txt	20	10	30	Optimal	300.00	664	664.00	0.00
148 20 10 30 rep 8.txt	20	10	30	Optimal	0.09	631	631.00	0.00
149 20 10 30 rep 9.txt	20	10	30	Optimal	300.02	696	696.00	0.00
150 20 10 30 rep 10.txt	20	10	30	Optimal	300.02	696	696.00	0.00
151 20 10 50 rep 1.txt	20	10	50	Optimal	0.02	711	711.00	0.00
152 20 10 50 rep 2.txt	20	10	50	Optimal	0.01	621	621.00	0.00
153 20 10 50 rep 3.txt	20	10	50	Optimal	0.01	669	669.00	0.00
154 20 10 50 rep 4.txt	20	10	50	Optimal	0.01	740	740.00	0.00
155 20 10 50 rep 5.txt	20	10	50	Optimal	0.01	686	686.00	0.00
156 20 10 50 rep 6.txt	20	10	50	Optimal	0.01	715	715.00	0.00
157 20 10 50 rep 7.txt	20	10	50	Optimal	0.02	612	612.00	0.00

Table 2: Results for CFSnoWait (CPSat) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
158 20 10 50 rep 8.txt	20	10	50	Optimal	0.01	628	628.00	0.00
159 20 10 50 rep 9.txt	20	10	50	Optimal	0.02	744	744.00	0.00
160 20 10 50 rep 10.txt	20	10	50	Optimal	0.02	707	707.00	0.00
161 30 2 10 rep 1.txt	30	2	10	Solution	300.34	1257	1249.00	0.64
162 30 2 10 rep 2.txt	30	2	10	Solution	300.74	866	811.00	6.35
163 30 2 10 rep 3.txt	30	2	10	Solution	300.22	888	842.00	5.18
164 30 2 10 rep 4.txt	30	2	10	Solution	300.16	1123	1074.00	4.36
165 30 2 10 rep 5.txt	30	2	10	Solution	300.07	1215	1179.00	2.96
166 30 2 10 rep 6.txt	30	2	10	Solution	300.14	931	832.00	10.63
167 30 2 10 rep 7.txt	30	2	10	Solution	300.15	772	705.00	8.68
168 30 2 10 rep 8.txt	30	2	10	Solution	300.19	895	890.00	0.56
169 30 2 10 rep 9.txt	30	2	10	Solution	300.17	1025	987.00	3.71
170 30 2 10 rep 10.txt	30	2	10	Solution	301.00	1210	1139.00	5.87
171 30 2 20 rep 1.txt	30	2	20	Solution	300.17	442	416.00	5.88
172 30 2 20 rep 2.txt	30	2	20	Solution	300.17	526	506.00	3.80
173 30 2 20 rep 3.txt	30	2	20	Solution	300.17	416	398.00	4.33
174 30 2 20 rep 4.txt	30	2	20	Solution	300.15	426	418.00	1.88
175 30 2 20 rep 5.txt	30	2	20	Solution	300.24	478	442.00	7.53
176 30 2 20 rep 6.txt	30	2	20	Solution	300.09	441	427.00	3.17
177 30 2 20 rep 7.txt	30	2	20	Solution	300.17	491	483.00	1.63
178 30 2 20 rep 8.txt	30	2	20	Solution	300.11	404	378.00	6.44
179 30 2 20 rep 9.txt	30	2	20	Solution	300.27	447	428.00	4.25
180 30 2 20 rep 10.txt	30	2	20	Solution	300.21	570	526.00	7.72
181 30 2 30 rep 1.txt	30	2	30	Solution	300.10	316	309.00	2.22
182 30 2 30 rep 2.txt	30	2	30	Solution	300.06	232	228.00	1.72
183 30 2 30 rep 3.txt	30	2	30	Solution	300.05	338	329.00	2.66
184 30 2 30 rep 4.txt	30	2	30	Solution	300.05	333	324.00	2.70
185 30 2 30 rep 5.txt	30	2	30	Solution	300.10	293	286.00	2.39
186 30 2 30 rep 6.txt	30	2	30	Solution	300.13	341	333.00	2.35
187 30 2 30 rep 7.txt	30	2	30	Solution	300.13	388	368.00	5.15
188 30 2 30 rep 8.txt	30	2	30	Solution	300.19	351	345.00	1.71
189 30 2 30 rep 9.txt	30	2	30	Solution	300.16	398	393.00	1.26
190 30 2 30 rep 10.txt	30	2	30	Solution	300.14	322	307.00	4.66
191 30 2 50 rep 1.txt	30	2	50	Optimal	300.01	205	205.00	0.00
192 30 2 50 rep 2.txt	30	2	50	Optimal	2.76	197	197.00	0.00
193 30 2 50 rep 3.txt	30	2	50	Solution	300.03	205	202.00	1.46
194 30 2 50 rep 4.txt	30	2	50	Optimal	300.01	202	202.00	0.00
195 30 2 50 rep 5.txt	30	2	50	Optimal	15.75	197	197.00	0.00
196 30 2 50 rep 6.txt	30	2	50	Solution	300.03	220	216.00	1.82
197 30 2 50 rep 7.txt	30	2	50	Optimal	300.02	242	242.00	0.00
198 30 2 50 rep 8.txt	30	2	50	Optimal	0.01	176	176.00	0.00
199 30 2 50 rep 9.txt	30	2	50	Optimal	2.59	174	174.00	0.00
200 30 2 50 rep 10.txt	30	2	50	Optimal	300.01	230	230.00	0.00
201 30 3 10 rep 1.txt	30	3	10	Solution	300.14	1094	1069.00	2.29
202 30 3 10 rep 2.txt	30	3	10	Solution	300.14	1215	1062.00	12.59

Table 2: Results for CFSnoWait (CPSat) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
203 30 3 10 rep 3.txt	30	3	10	Solution	300.19	1261	1147.00	9.04
204 30 3 10 rep 4.txt	30	3	10	Solution	300.23	997	864.00	13.34
205 30 3 10 rep 5.txt	30	3	10	Solution	300.13	1264	1059.00	16.22
206 30 3 10 rep 6.txt	30	3	10	Solution	300.22	1161	1020.00	12.14
207 30 3 10 rep 7.txt	30	3	10	Solution	300.15	993	878.00	11.58
208 30 3 10 rep 8.txt	30	3	10	Solution	300.20	1005	803.00	20.10
209 30 3 10 rep 9.txt	30	3	10	Solution	300.17	1191	1108.00	6.97
210 30 3 10 rep 10.txt	30	3	10	Solution	300.23	1173	953.00	18.76
211 30 3 20 rep 1.txt	30	3	20	Solution	300.15	565	520.00	7.96
212 30 3 20 rep 2.txt	30	3	20	Solution	300.20	606	586.00	3.30
213 30 3 20 rep 3.txt	30	3	20	Solution	300.16	500	456.00	8.80
214 30 3 20 rep 4.txt	30	3	20	Solution	300.75	646	579.00	10.37
215 30 3 20 rep 5.txt	30	3	20	Solution	300.19	570	528.00	7.37
216 30 3 20 rep 6.txt	30	3	20	Solution	300.15	608	575.00	5.43
217 30 3 20 rep 7.txt	30	3	20	Solution	301.25	668	608.00	8.98
218 30 3 20 rep 8.txt	30	3	20	Solution	300.22	591	543.00	8.12
219 30 3 20 rep 9.txt	30	3	20	Solution	300.19	571	516.00	9.63
220 30 3 20 rep 10.txt	30	3	20	Solution	300.26	539	505.00	6.31
221 30 3 30 rep 1.txt	30	3	30	Solution	300.04	373	368.00	1.34
222 30 3 30 rep 2.txt	30	3	30	Solution	300.07	357	327.00	8.40
223 30 3 30 rep 3.txt	30	3	30	Solution	300.12	441	422.00	4.31
224 30 3 30 rep 4.txt	30	3	30	Solution	300.05	403	367.00	8.93
225 30 3 30 rep 5.txt	30	3	30	Solution	300.46	317	302.00	4.73
226 30 3 30 rep 6.txt	30	3	30	Solution	300.06	375	361.00	3.73
227 30 3 30 rep 7.txt	30	3	30	Solution	300.07	394	388.00	1.52
228 30 3 30 rep 8.txt	30	3	30	Solution	300.05	382	351.00	8.12
229 30 3 30 rep 9.txt	30	3	30	Solution	300.06	361	349.00	3.32
230 30 3 30 rep 10.txt	30	3	30	Solution	300.05	351	325.00	7.41
231 30 3 50 rep 1.txt	30	3	50	Optimal	300.01	262	262.00	0.00
232 30 3 50 rep 2.txt	30	3	50	Optimal	0.64	241	241.00	0.00
233 30 3 50 rep 3.txt	30	3	50	Solution	300.03	259	257.00	0.77
234 30 3 50 rep 4.txt	30	3	50	Optimal	300.01	270	270.00	0.00
235 30 3 50 rep 5.txt	30	3	50	Optimal	0.02	256	256.00	0.00
236 30 3 50 rep 6.txt	30	3	50	Optimal	0.02	260	260.00	0.00
237 30 3 50 rep 7.txt	30	3	50	Optimal	300.01	268	268.00	0.00
238 30 3 50 rep 8.txt	30	3	50	Optimal	1.53	265	265.00	0.00
239 30 3 50 rep 9.txt	30	3	50	Optimal	300.01	236	236.00	0.00
240 30 3 50 rep 10.txt	30	3	50	Optimal	0.19	263	263.00	0.00
241 30 5 10 rep 1.txt	30	5	10	Solution	300.16	1451	1136.00	21.71
242 30 5 10 rep 2.txt	30	5	10	Solution	300.21	1441	1028.00	28.66
243 30 5 10 rep 3.txt	30	5	10	Solution	300.11	1455	1160.00	20.27
244 30 5 10 rep 4.txt	30	5	10	Solution	300.21	1438	1003.00	30.25
245 30 5 10 rep 5.txt	30	5	10	Solution	300.16	1453	1063.00	26.84
246 30 5 10 rep 6.txt	30	5	10	Solution	300.20	1585	1257.00	20.69
247 30 5 10 rep 7.txt	30	5	10	Solution	300.16	1444	1133.00	21.54

Table 2: Results for CFSnoWait (CPSat) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
248 30 5 10 rep 8.txt	30	5	10	Solution	300.19	1291	926.00	28.27
249 30 5 10 rep 9.txt	30	5	10	Solution	300.14	1443	1039.00	28.00
250 30 5 10 rep 10.txt	30	5	10	Solution	300.18	1497	1137.00	24.05
251 30 5 20 rep 1.txt	30	5	20	Solution	300.19	713	635.00	10.94
252 30 5 20 rep 2.txt	30	5	20	Solution	300.15	720	665.00	7.64
253 30 5 20 rep 3.txt	30	5	20	Solution	300.48	691	582.00	15.77
254 30 5 20 rep 4.txt	30	5	20	Solution	300.51	701	618.00	11.84
255 30 5 20 rep 5.txt	30	5	20	Solution	300.14	645	574.00	11.01
256 30 5 20 rep 6.txt	30	5	20	Solution	300.16	629	572.00	9.06
257 30 5 20 rep 7.txt	30	5	20	Solution	300.17	734	619.00	15.67
258 30 5 20 rep 8.txt	30	5	20	Solution	300.17	663	577.00	12.97
259 30 5 20 rep 9.txt	30	5	20	Solution	300.16	733	633.00	13.64
260 30 5 20 rep 10.txt	30	5	20	Solution	300.14	762	656.00	13.91
261 30 5 30 rep 1.txt	30	5	30	Solution	300.04	436	418.00	4.13
262 30 5 30 rep 2.txt	30	5	30	Solution	300.09	468	429.00	8.33
263 30 5 30 rep 3.txt	30	5	30	Solution	300.05	475	449.00	5.47
264 30 5 30 rep 4.txt	30	5	30	Solution	300.07	446	441.00	1.12
265 30 5 30 rep 5.txt	30	5	30	Solution	300.04	465	430.00	7.53
266 30 5 30 rep 6.txt	30	5	30	Solution	300.04	507	455.00	10.26
267 30 5 30 rep 7.txt	30	5	30	Solution	300.07	483	447.00	7.45
268 30 5 30 rep 8.txt	30	5	30	Solution	300.07	534	490.00	8.24
269 30 5 30 rep 9.txt	30	5	30	Solution	300.05	495	455.00	8.08
270 30 5 30 rep 10.txt	30	5	30	Solution	300.07	520	494.00	5.00
271 30 5 50 rep 1.txt	30	5	50	Optimal	300.01	397	397.00	0.00
272 30 5 50 rep 2.txt	30	5	50	Optimal	0.09	367	367.00	0.00
273 30 5 50 rep 3.txt	30	5	50	Optimal	0.09	397	397.00	0.00
274 30 5 50 rep 4.txt	30	5	50	Optimal	0.85	411	411.00	0.00
275 30 5 50 rep 5.txt	30	5	50	Optimal	0.03	399	399.00	0.00
276 30 5 50 rep 6.txt	30	5	50	Optimal	0.05	392	392.00	0.00
277 30 5 50 rep 7.txt	30	5	50	Optimal	0.04	406	406.00	0.00
278 30 5 50 rep 8.txt	30	5	50	Optimal	300.02	401	401.00	0.00
279 30 5 50 rep 9.txt	30	5	50	Optimal	0.01	352	352.00	0.00
280 30 5 50 rep 10.txt	30	5	50	Optimal	1.01	399	399.00	0.00
281 30 10 10 rep 1.txt	30	10	10	Solution	300.14	2270	1411.00	37.84
282 30 10 10 rep 2.txt	30	10	10	Solution	300.18	2353	1425.00	39.44
283 30 10 10 rep 3.txt	30	10	10	Solution	300.13	2041	1342.00	34.25
284 30 10 10 rep 4.txt	30	10	10	Solution	300.16	2123	1292.00	39.14
285 30 10 10 rep 5.txt	30	10	10	Solution	300.29	2262	1419.00	37.27
286 30 10 10 rep 6.txt	30	10	10	Solution	300.19	2280	1391.00	38.99
287 30 10 10 rep 7.txt	30	10	10	Solution	300.20	2214	1442.00	34.87
288 30 10 10 rep 8.txt	30	10	10	Solution	300.22	2164	1368.00	36.78
289 30 10 10 rep 9.txt	30	10	10	Solution	300.42	2236	1566.00	29.96
290 30 10 10 rep 10.txt	30	10	10	Solution	300.76	2262	1378.00	39.08
291 30 10 20 rep 1.txt	30	10	20	Solution	300.17	1000	775.00	22.50
292 30 10 20 rep 2.txt	30	10	20	Solution	300.11	1052	889.00	15.49

Table 2: Results for CFSnoWait (CPSat) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
293 30 10 20 rep 3.txt	30	10	20	Solution	300.13	974	804.00	17.45
294 30 10 20 rep 4.txt	30	10	20	Solution	300.13	922	807.00	12.47
295 30 10 20 rep 5.txt	30	10	20	Solution	300.18	1068	841.00	21.25
296 30 10 20 rep 6.txt	30	10	20	Solution	300.10	1040	856.00	17.69
297 30 10 20 rep 7.txt	30	10	20	Solution	300.10	999	808.00	19.12
298 30 10 20 rep 8.txt	30	10	20	Solution	300.16	1051	859.00	18.27
299 30 10 20 rep 9.txt	30	10	20	Solution	300.12	959	816.00	14.91
300 30 10 20 rep 10.txt	30	10	20	Solution	300.14	948	840.00	11.39
301 30 10 30 rep 1.txt	30	10	30	Solution	300.06	764	719.00	5.89
302 30 10 30 rep 2.txt	30	10	30	Solution	300.12	780	744.00	4.62
303 30 10 30 rep 3.txt	30	10	30	Solution	300.06	754	692.00	8.22
304 30 10 30 rep 4.txt	30	10	30	Solution	300.05	717	697.00	2.79
305 30 10 30 rep 5.txt	30	10	30	Optimal	23.43	777	777.00	0.00
306 30 10 30 rep 6.txt	30	10	30	Solution	300.04	768	721.00	6.12
307 30 10 30 rep 7.txt	30	10	30	Solution	300.05	761	702.00	7.75
308 30 10 30 rep 8.txt	30	10	30	Solution	300.09	748	693.00	7.35
309 30 10 30 rep 9.txt	30	10	30	Solution	300.11	768	706.00	8.07
310 30 10 30 rep 10.txt	30	10	30	Solution	300.07	733	708.00	3.41
311 30 10 50 rep 1.txt	30	10	50	Optimal	0.02	760	760.00	0.00
312 30 10 50 rep 2.txt	30	10	50	Optimal	0.04	694	694.00	0.00
313 30 10 50 rep 3.txt	30	10	50	Optimal	0.02	762	762.00	0.00
314 30 10 50 rep 4.txt	30	10	50	Optimal	0.07	671	671.00	0.00
315 30 10 50 rep 5.txt	30	10	50	Optimal	0.04	747	747.00	0.00
316 30 10 50 rep 6.txt	30	10	50	Optimal	300.01	669	669.00	0.00
317 30 10 50 rep 7.txt	30	10	50	Optimal	0.12	659	659.00	0.00
318 30 10 50 rep 8.txt	30	10	50	Optimal	0.09	668	668.00	0.00
319 30 10 50 rep 9.txt	30	10	50	Optimal	0.12	658	658.00	0.00
320 30 10 50 rep 10.txt	30	10	50	Optimal	0.02	695	695.00	0.00
321 50 2 10 rep 1.txt	50	2	10	Solution	300.13	1686	1591.00	5.63
322 50 2 10 rep 2.txt	50	2	10	Solution	300.16	1627	1596.00	1.91
323 50 2 10 rep 3.txt	50	2	10	Solution	300.23	1677	1622.00	3.28
324 50 2 10 rep 4.txt	50	2	10	Solution	300.11	1835	1819.00	0.87
325 50 2 10 rep 5.txt	50	2	10	Solution	300.14	1741	1653.00	5.05
326 50 2 10 rep 6.txt	50	2	10	Solution	300.16	1354	1278.00	5.61
327 50 2 10 rep 7.txt	50	2	10	Optimal	300.03	1747	1747.00	0.00
328 50 2 10 rep 8.txt	50	2	10	Solution	300.11	1626	1611.00	0.92
329 50 2 10 rep 9.txt	50	2	10	Solution	300.16	1435	1362.00	5.09
330 50 2 10 rep 10.txt	50	2	10	Solution	300.29	1559	1482.00	4.94
331 50 2 20 rep 1.txt	50	2	20	Solution	300.12	878	836.00	4.78
332 50 2 20 rep 2.txt	50	2	20	Solution	300.18	691	645.00	6.66
333 50 2 20 rep 3.txt	50	2	20	Solution	300.10	794	765.00	3.65
334 50 2 20 rep 4.txt	50	2	20	Solution	300.10	678	663.00	2.21
335 50 2 20 rep 5.txt	50	2	20	Solution	300.19	828	804.00	2.90
336 50 2 20 rep 6.txt	50	2	20	Solution	300.14	840	803.00	4.40
337 50 2 20 rep 7.txt	50	2	20	Solution	300.14	716	661.00	7.68

Table 2: Results for CFSnoWait (CPSat) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
338 50 2 20 rep 8.txt	50	2	20	Solution	300.13	830	766.00	7.71
339 50 2 20 rep 9.txt	50	2	20	Solution	300.10	745	732.00	1.74
340 50 2 20 rep 10.txt	50	2	20	Solution	300.15	699	671.00	4.01
341 50 2 30 rep 1.txt	50	2	30	Solution	300.08	483	450.00	6.83
342 50 2 30 rep 2.txt	50	2	30	Solution	300.07	497	470.00	5.43
343 50 2 30 rep 3.txt	50	2	30	Solution	300.05	478	460.00	3.77
344 50 2 30 rep 4.txt	50	2	30	Solution	300.08	515	502.00	2.52
345 50 2 30 rep 5.txt	50	2	30	Solution	300.12	607	587.00	3.29
346 50 2 30 rep 6.txt	50	2	30	Solution	300.06	562	532.00	5.34
347 50 2 30 rep 7.txt	50	2	30	Solution	300.07	575	544.00	5.39
348 50 2 30 rep 8.txt	50	2	30	Solution	300.06	547	513.00	6.22
349 50 2 30 rep 9.txt	50	2	30	Solution	300.05	503	466.00	7.36
350 50 2 30 rep 10.txt	50	2	30	Solution	300.06	450	423.00	6.00
351 50 2 50 rep 1.txt	50	2	50	Solution	300.05	339	330.00	2.65
352 50 2 50 rep 2.txt	50	2	50	Solution	300.04	286	283.00	1.05
353 50 2 50 rep 3.txt	50	2	50	Solution	300.04	400	393.00	1.75
354 50 2 50 rep 4.txt	50	2	50	Solution	300.04	341	334.00	2.05
355 50 2 50 rep 5.txt	50	2	50	Solution	300.04	299	295.00	1.34
356 50 2 50 rep 6.txt	50	2	50	Solution	300.04	340	331.00	2.65
357 50 2 50 rep 7.txt	50	2	50	Solution	300.04	330	315.00	4.55
358 50 2 50 rep 8.txt	50	2	50	Solution	300.04	327	322.00	1.53
359 50 2 50 rep 9.txt	50	2	50	Solution	300.05	334	322.00	3.59
360 50 2 50 rep 10.txt	50	2	50	Solution	300.04	282	279.00	1.06
361 50 3 10 rep 1.txt	50	3	10	Solution	300.07	2100	1824.00	13.14
362 50 3 10 rep 2.txt	50	3	10	Solution	300.14	1793	1578.00	11.99
363 50 3 10 rep 3.txt	50	3	10	Solution	300.13	1748	1537.00	12.07
364 50 3 10 rep 4.txt	50	3	10	Solution	300.13	2052	1761.00	14.18
365 50 3 10 rep 5.txt	50	3	10	Solution	300.14	2067	1885.00	8.81
366 50 3 10 rep 6.txt	50	3	10	Solution	300.26	1885	1683.00	10.72
367 50 3 10 rep 7.txt	50	3	10	Solution	300.14	1705	1528.00	10.38
368 50 3 10 rep 8.txt	50	3	10	Solution	300.21	1912	1502.00	21.44
369 50 3 10 rep 9.txt	50	3	10	Solution	300.13	2028	1862.00	8.19
370 50 3 10 rep 10.txt	50	3	10	Solution	300.14	1695	1396.00	17.64
371 50 3 20 rep 1.txt	50	3	20	Solution	300.09	801	725.00	9.49
372 50 3 20 rep 2.txt	50	3	20	Solution	300.13	877	758.00	13.57
373 50 3 20 rep 3.txt	50	3	20	Solution	300.15	858	761.00	11.31
374 50 3 20 rep 4.txt	50	3	20	Solution	300.13	869	775.00	10.82
375 50 3 20 rep 5.txt	50	3	20	Solution	300.15	843	736.00	12.69
376 50 3 20 rep 6.txt	50	3	20	Solution	300.12	932	860.00	7.73
377 50 3 20 rep 7.txt	50	3	20	Solution	300.15	864	800.00	7.41
378 50 3 20 rep 8.txt	50	3	20	Solution	300.16	961	845.00	12.07
379 50 3 20 rep 9.txt	50	3	20	Solution	300.12	981	926.00	5.61
380 50 3 20 rep 10.txt	50	3	20	Solution	300.10	885	757.00	14.46
381 50 3 30 rep 1.txt	50	3	30	Solution	300.81	544	516.00	5.15
382 50 3 30 rep 2.txt	50	3	30	Solution	300.08	531	483.00	9.04

Table 2: Results for CFSnoWait (CPSat) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
383 50 3 30 rep 3.txt	50	3	30	Solution	300.07	537	489.00	8.94
384 50 3 30 rep 4.txt	50	3	30	Solution	300.56	584	538.00	7.88
385 50 3 30 rep 5.txt	50	3	30	Solution	300.07	572	514.00	10.14
386 50 3 30 rep 6.txt	50	3	30	Solution	300.05	619	560.00	9.53
387 50 3 30 rep 7.txt	50	3	30	Solution	300.05	532	493.00	7.33
388 50 3 30 rep 8.txt	50	3	30	Solution	300.09	629	586.00	6.84
389 50 3 30 rep 9.txt	50	3	30	Solution	300.07	541	496.00	8.32
390 50 3 30 rep 10.txt	50	3	30	Solution	300.17	557	515.00	7.54
391 50 3 50 rep 1.txt	50	3	50	Solution	300.04	345	316.00	8.41
392 50 3 50 rep 2.txt	50	3	50	Solution	300.04	301	286.00	4.98
393 50 3 50 rep 3.txt	50	3	50	Solution	300.04	374	362.00	3.21
394 50 3 50 rep 4.txt	50	3	50	Solution	300.04	368	352.00	4.35
395 50 3 50 rep 5.txt	50	3	50	Solution	300.04	395	370.00	6.33
396 50 3 50 rep 6.txt	50	3	50	Solution	300.06	359	348.00	3.06
397 50 3 50 rep 7.txt	50	3	50	Solution	300.04	368	347.00	5.71
398 50 3 50 rep 8.txt	50	3	50	Solution	300.03	367	347.00	5.45
399 50 3 50 rep 9.txt	50	3	50	Solution	300.04	336	322.00	4.17
400 50 3 50 rep 10.txt	50	3	50	Solution	300.05	355	327.00	7.89
401 50 5 10 rep 1.txt	50	5	10	Solution	300.13	2682	1856.00	30.80
402 50 5 10 rep 2.txt	50	5	10	Solution	300.10	2174	1484.00	31.74
403 50 5 10 rep 3.txt	50	5	10	Solution	300.08	2267	1621.00	28.50
404 50 5 10 rep 4.txt	50	5	10	Solution	300.06	2434	1975.00	18.86
405 50 5 10 rep 5.txt	50	5	10	Solution	300.14	2213	1620.00	26.80
406 50 5 10 rep 6.txt	50	5	10	Solution	300.13	2463	1785.00	27.53
407 50 5 10 rep 7.txt	50	5	10	Solution	300.13	2584	1795.00	30.53
408 50 5 10 rep 8.txt	50	5	10	Solution	300.09	2505	1817.00	27.47
409 50 5 10 rep 9.txt	50	5	10	Solution	300.11	2368	1895.00	19.97
410 50 5 10 rep 10.txt	50	5	10	Solution	300.07	2408	1968.00	18.27
411 50 5 20 rep 1.txt	50	5	20	Solution	300.11	1010	840.00	16.83
412 50 5 20 rep 2.txt	50	5	20	Solution	300.09	1029	874.00	15.06
413 50 5 20 rep 3.txt	50	5	20	Solution	300.12	999	805.00	19.42
414 50 5 20 rep 4.txt	50	5	20	Solution	300.10	1035	883.00	14.69
415 50 5 20 rep 5.txt	50	5	20	Solution	300.09	961	811.00	15.61
416 50 5 20 rep 6.txt	50	5	20	Solution	300.08	867	718.00	17.19
417 50 5 20 rep 7.txt	50	5	20	Solution	300.08	1085	858.00	20.92
418 50 5 20 rep 8.txt	50	5	20	Solution	300.11	993	808.00	18.63
419 50 5 20 rep 9.txt	50	5	20	Solution	300.08	1036	829.00	19.98
420 50 5 20 rep 10.txt	50	5	20	Solution	300.10	1024	800.00	21.88
421 50 5 30 rep 1.txt	50	5	30	Solution	300.06	703	617.00	12.23
422 50 5 30 rep 2.txt	50	5	30	Solution	300.05	723	665.00	8.02
423 50 5 30 rep 3.txt	50	5	30	Solution	300.06	722	660.00	8.59
424 50 5 30 rep 4.txt	50	5	30	Solution	300.05	657	576.00	12.33
425 50 5 30 rep 5.txt	50	5	30	Solution	300.06	694	628.00	9.51
426 50 5 30 rep 6.txt	50	5	30	Solution	300.07	698	630.00	9.74
427 50 5 30 rep 7.txt	50	5	30	Solution	300.05	726	625.00	13.91

Table 2: Results for CFSnoWait (CPSat) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
428 50 5 30 rep 8.txt	50	5	30	Solution	300.05	752	702.00	6.65
429 50 5 30 rep 9.txt	50	5	30	Solution	300.05	702	621.00	11.54
430 50 5 30 rep 10.txt	50	5	30	Solution	300.06	716	660.00	7.82
431 50 5 50 rep 1.txt	50	5	50	Solution	300.03	455	416.00	8.57
432 50 5 50 rep 2.txt	50	5	50	Solution	300.05	487	450.00	7.60
433 50 5 50 rep 3.txt	50	5	50	Solution	300.04	467	445.00	4.71
434 50 5 50 rep 4.txt	50	5	50	Solution	300.04	484	450.00	7.02
435 50 5 50 rep 5.txt	50	5	50	Solution	300.04	487	439.00	9.86
436 50 5 50 rep 6.txt	50	5	50	Solution	300.04	487	461.00	5.34
437 50 5 50 rep 7.txt	50	5	50	Solution	300.04	457	428.00	6.35
438 50 5 50 rep 8.txt	50	5	50	Solution	300.03	487	443.00	9.03
439 50 5 50 rep 9.txt	50	5	50	Solution	300.04	519	471.00	9.25
440 50 5 50 rep 10.txt	50	5	50	Solution	300.04	472	434.00	8.05
441 50 10 10 rep 1.txt	50	10	10	Solution	300.14	3634	2060.00	43.31
442 50 10 10 rep 2.txt	50	10	10	Solution	300.10	3388	1797.00	46.96
443 50 10 10 rep 3.txt	50	10	10	Solution	300.09	3642	2082.00	42.83
444 50 10 10 rep 4.txt	50	10	10	Solution	300.08	3755	2400.00	36.09
445 50 10 10 rep 5.txt	50	10	10	Solution	300.12	3413	1906.00	44.15
446 50 10 10 rep 6.txt	50	10	10	Solution	300.11	3622	2138.00	40.97
447 50 10 10 rep 7.txt	50	10	10	Solution	300.07	3486	1994.00	42.80
448 50 10 10 rep 8.txt	50	10	10	Solution	300.14	3598	2009.00	44.16
449 50 10 10 rep 9.txt	50	10	10	Solution	300.12	3524	1956.00	44.49
450 50 10 10 rep 10.txt	50	10	10	Solution	300.24	3608	2034.00	43.63
451 50 10 20 rep 1.txt	50	10	20	Solution	300.13	1559	1122.00	28.03
452 50 10 20 rep 2.txt	50	10	20	Solution	300.09	1506	1140.00	24.30
453 50 10 20 rep 3.txt	50	10	20	Solution	300.07	1414	1040.00	26.45
454 50 10 20 rep 4.txt	50	10	20	Solution	300.13	1557	1184.00	23.96
455 50 10 20 rep 5.txt	50	10	20	Solution	300.06	1487	1059.00	28.78
456 50 10 20 rep 6.txt	50	10	20	Solution	300.07	1474	1060.00	28.09
457 50 10 20 rep 7.txt	50	10	20	Solution	300.08	1498	1146.00	23.50
458 50 10 20 rep 8.txt	50	10	20	Solution	300.07	1472	1104.00	25.00
459 50 10 20 rep 9.txt	50	10	20	Solution	300.07	1489	1120.00	24.78
460 50 10 20 rep 10.txt	50	10	20	Solution	300.09	1565	1193.00	23.77
461 50 10 30 rep 1.txt	50	10	30	Solution	300.06	1061	866.00	18.38
462 50 10 30 rep 2.txt	50	10	30	Solution	300.04	982	885.00	9.88
463 50 10 30 rep 3.txt	50	10	30	Solution	300.05	1009	788.00	21.90
464 50 10 30 rep 4.txt	50	10	30	Solution	300.05	934	797.00	14.67
465 50 10 30 rep 5.txt	50	10	30	Solution	300.04	1021	889.00	12.93
466 50 10 30 rep 6.txt	50	10	30	Solution	300.05	965	882.00	8.60
467 50 10 30 rep 7.txt	50	10	30	Solution	300.05	1082	891.00	17.65
468 50 10 30 rep 8.txt	50	10	30	Solution	300.05	1013	831.00	17.97
469 50 10 30 rep 9.txt	50	10	30	Solution	300.05	1030	860.00	16.50
470 50 10 30 rep 10.txt	50	10	30	Solution	300.05	1035	915.00	11.59
471 50 10 50 rep 1.txt	50	10	50	Optimal	300.01	727	727.00	0.00
472 50 10 50 rep 2.txt	50	10	50	Solution	300.03	712	695.00	2.39

Table 2: Results for CFSnoWait (CPSat) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
473 50 10 50 rep 3.txt	50	10	50	Solution	300.04	699	653.00	6.58
474 50 10 50 rep 4.txt	50	10	50	Solution	300.03	754	720.00	4.51
475 50 10 50 rep 5.txt	50	10	50	Solution	300.03	710	696.00	1.97
476 50 10 50 rep 6.txt	50	10	50	Solution	300.04	771	751.00	2.59
477 50 10 50 rep 7.txt	50	10	50	Solution	300.06	753	706.00	6.24
478 50 10 50 rep 8.txt	50	10	50	Solution	300.04	727	714.00	1.79
479 50 10 50 rep 9.txt	50	10	50	Optimal	300.01	767	767.00	0.00
480 50 10 50 rep 10.txt	50	10	50	Solution	300.04	697	661.00	5.16
481 100 2 10 rep 1.txt	100	2	10	Solution	300.12	2836	2485.00	12.38
482 100 2 10 rep 2.txt	100	2	10	Solution	300.17	3172	3085.00	2.74
483 100 2 10 rep 3.txt	100	2	10	Solution	300.18	2959	2741.00	7.37
484 100 2 10 rep 4.txt	100	2	10	Solution	300.09	2971	2784.00	6.29
485 100 2 10 rep 5.txt	100	2	10	Solution	300.09	3125	2939.00	5.95
486 100 2 10 rep 6.txt	100	2	10	Solution	300.15	3539	3253.00	8.08
487 100 2 10 rep 7.txt	100	2	10	Solution	300.13	3146	2922.00	7.12
488 100 2 10 rep 8.txt	100	2	10	Solution	300.14	3249	3093.00	4.80
489 100 2 10 rep 9.txt	100	2	10	Solution	300.11	3041	2912.00	4.24
490 100 2 10 rep 10.txt	100	2	10	Solution	300.24	3087	2911.00	5.70
491 100 2 20 rep 1.txt	100	2	20	Solution	300.09	1511	1401.00	7.28
492 100 2 20 rep 2.txt	100	2	20	Solution	300.11	1564	1497.00	4.28
493 100 2 20 rep 3.txt	100	2	20	Solution	300.08	1409	1291.00	8.37
494 100 2 20 rep 4.txt	100	2	20	Solution	300.10	1398	1285.00	8.08
495 100 2 20 rep 5.txt	100	2	20	Solution	300.09	1479	1378.00	6.83
496 100 2 20 rep 6.txt	100	2	20	Solution	300.16	1531	1440.00	5.94
497 100 2 20 rep 7.txt	100	2	20	Solution	300.09	1520	1407.00	7.43
498 100 2 20 rep 8.txt	100	2	20	Solution	300.10	1592	1481.00	6.97
499 100 2 20 rep 9.txt	100	2	20	Solution	300.12	1396	1321.00	5.37
500 100 2 20 rep 10.txt	100	2	20	Solution	300.11	1554	1421.00	8.56
501 100 2 30 rep 1.txt	100	2	30	Solution	300.07	970	917.00	5.46
502 100 2 30 rep 2.txt	100	2	30	Solution	300.08	917	856.00	6.65
503 100 2 30 rep 3.txt	100	2	30	Solution	300.06	1061	1014.00	4.43
504 100 2 30 rep 4.txt	100	2	30	Solution	300.07	1037	981.00	5.40
505 100 2 30 rep 5.txt	100	2	30	Solution	300.09	958	931.00	2.82
506 100 2 30 rep 6.txt	100	2	30	Solution	300.07	969	910.00	6.09
507 100 2 30 rep 7.txt	100	2	30	Solution	300.07	1000	957.00	4.30
508 100 2 30 rep 8.txt	100	2	30	Solution	300.07	951	882.00	7.26
509 100 2 30 rep 9.txt	100	2	30	Solution	300.05	950	892.00	6.11
510 100 2 30 rep 10.txt	100	2	30	Solution	300.07	1047	995.00	4.97
511 100 2 50 rep 1.txt	100	2	50	Solution	300.05	671	646.00	3.73
512 100 2 50 rep 2.txt	100	2	50	Solution	300.06	597	560.00	6.20
513 100 2 50 rep 3.txt	100	2	50	Solution	300.05	583	565.00	3.09
514 100 2 50 rep 4.txt	100	2	50	Solution	300.09	626	609.00	2.72
515 100 2 50 rep 5.txt	100	2	50	Solution	300.06	587	567.00	3.41
516 100 2 50 rep 6.txt	100	2	50	Solution	300.08	699	685.00	2.00
517 100 2 50 rep 7.txt	100	2	50	Solution	300.06	598	580.00	3.01

Table 2: Results for CFSnoWait (CPSat) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
518 100 2 50 rep 8.txt	100	2	50	Solution	300.05	630	616.00	2.22
519 100 2 50 rep 9.txt	100	2	50	Solution	300.08	601	582.00	3.16
520 100 2 50 rep 10.txt	100	2	50	Solution	300.07	550	540.00	1.82
521 100 3 10 rep 1.txt	100	3	10	Solution	300.11	3456	2764.00	20.02
522 100 3 10 rep 2.txt	100	3	10	Solution	300.17	3619	3009.00	16.86
523 100 3 10 rep 3.txt	100	3	10	Solution	300.17	4020	3527.00	12.26
524 100 3 10 rep 4.txt	100	3	10	Solution	300.12	3468	2693.00	22.35
525 100 3 10 rep 5.txt	100	3	10	Solution	300.11	3626	2921.00	19.44
526 100 3 10 rep 6.txt	100	3	10	Solution	300.12	3907	3261.00	16.53
527 100 3 10 rep 7.txt	100	3	10	Solution	300.13	3827	2962.00	22.60
528 100 3 10 rep 8.txt	100	3	10	Solution	300.11	3605	3198.00	11.29
529 100 3 10 rep 9.txt	100	3	10	Solution	300.08	3777	3275.00	13.29
530 100 3 10 rep 10.txt	100	3	10	Solution	300.12	3799	3069.00	19.22
531 100 3 20 rep 1.txt	100	3	20	Solution	300.09	1790	1492.00	16.65
532 100 3 20 rep 2.txt	100	3	20	Solution	300.10	1748	1519.00	13.10
533 100 3 20 rep 3.txt	100	3	20	Solution	300.12	1658	1402.00	15.44
534 100 3 20 rep 4.txt	100	3	20	Solution	300.07	1711	1513.00	11.57
535 100 3 20 rep 5.txt	100	3	20	Solution	300.08	1714	1503.00	12.31
536 100 3 20 rep 6.txt	100	3	20	Solution	300.11	1666	1551.00	6.90
537 100 3 20 rep 7.txt	100	3	20	Solution	300.08	1704	1542.00	9.51
538 100 3 20 rep 8.txt	100	3	20	Solution	300.10	1799	1537.00	14.56
539 100 3 20 rep 9.txt	100	3	20	Solution	300.09	1602	1362.00	14.98
540 100 3 20 rep 10.txt	100	3	20	Solution	300.08	1866	1683.00	9.81
541 100 3 30 rep 1.txt	100	3	30	Solution	300.09	1087	978.00	10.03
542 100 3 30 rep 2.txt	100	3	30	Solution	300.06	1131	995.00	12.02
543 100 3 30 rep 3.txt	100	3	30	Solution	300.14	1101	1050.00	4.63
544 100 3 30 rep 4.txt	100	3	30	Solution	300.06	1134	1014.00	10.58
545 100 3 30 rep 5.txt	100	3	30	Solution	300.08	1177	1075.00	8.67
546 100 3 30 rep 6.txt	100	3	30	Solution	300.09	1061	951.00	10.37
547 100 3 30 rep 7.txt	100	3	30	Solution	300.07	1108	1024.00	7.58
548 100 3 30 rep 8.txt	100	3	30	Solution	300.07	1103	974.00	11.70
549 100 3 30 rep 9.txt	100	3	30	Solution	300.07	1019	904.00	11.29
550 100 3 30 rep 10.txt	100	3	30	Solution	300.07	1191	1102.00	7.47
551 100 3 50 rep 1.txt	100	3	50	Solution	300.06	638	578.00	9.40
552 100 3 50 rep 2.txt	100	3	50	Solution	300.07	704	668.00	5.11
553 100 3 50 rep 3.txt	100	3	50	Solution	300.09	687	625.00	9.02
554 100 3 50 rep 4.txt	100	3	50	Solution	300.07	677	625.00	7.68
555 100 3 50 rep 5.txt	100	3	50	Solution	300.05	661	603.00	8.77
556 100 3 50 rep 6.txt	100	3	50	Solution	300.06	653	616.00	5.67
557 100 3 50 rep 7.txt	100	3	50	Solution	300.11	729	694.00	4.80
558 100 3 50 rep 8.txt	100	3	50	Solution	300.08	647	617.00	4.64
559 100 3 50 rep 9.txt	100	3	50	Solution	300.05	608	586.00	3.62
560 100 3 50 rep 10.txt	100	3	50	Solution	300.05	655	614.00	6.26
561 100 5 10 rep 1.txt	100	5	10	Solution	300.16	4471	2925.00	34.58
562 100 5 10 rep 2.txt	100	5	10	Solution	300.15	4552	3166.00	30.45

Table 2: Results for CFSnoWait (CPSat) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
563 100 5 10 rep 3.txt	100	5	10	Solution	300.08	5003	3328.00	33.48
564 100 5 10 rep 4.txt	100	5	10	Solution	300.12	5004	3814.00	23.78
565 100 5 10 rep 5.txt	100	5	10	Solution	300.11	4490	3202.00	28.69
566 100 5 10 rep 6.txt	100	5	10	Solution	300.08	4628	3268.00	29.39
567 100 5 10 rep 7.txt	100	5	10	Solution	300.09	4842	3722.00	23.13
568 100 5 10 rep 8.txt	100	5	10	Solution	300.10	4937	3742.00	24.20
569 100 5 10 rep 9.txt	100	5	10	Solution	300.09	4703	3167.00	32.66
570 100 5 10 rep 10.txt	100	5	10	Solution	300.11	4830	3061.00	36.63
571 100 5 20 rep 1.txt	100	5	20	Solution	300.09	2014	1542.00	23.44
572 100 5 20 rep 2.txt	100	5	20	Solution	300.08	2034	1701.00	16.37
573 100 5 20 rep 3.txt	100	5	20	Solution	300.14	2055	1659.00	19.27
574 100 5 20 rep 4.txt	100	5	20	Solution	300.09	2008	1518.00	24.40
575 100 5 20 rep 5.txt	100	5	20	Solution	300.13	2048	1659.00	18.99
576 100 5 20 rep 6.txt	100	5	20	Solution	300.08	2040	1601.00	21.52
577 100 5 20 rep 7.txt	100	5	20	Solution	300.12	2025	1582.00	21.88
578 100 5 20 rep 8.txt	100	5	20	Solution	300.11	2071	1604.00	22.55
579 100 5 20 rep 9.txt	100	5	20	Solution	300.08	1994	1508.00	24.37
580 100 5 20 rep 10.txt	100	5	20	Solution	300.09	1931	1602.00	17.04
581 100 5 30 rep 1.txt	100	5	30	Solution	300.06	1182	995.00	15.82
582 100 5 30 rep 2.txt	100	5	30	Solution	300.06	1271	1004.00	21.01
583 100 5 30 rep 3.txt	100	5	30	Solution	300.11	1242	998.00	19.65
584 100 5 30 rep 4.txt	100	5	30	Solution	300.09	1322	1113.00	15.81
585 100 5 30 rep 5.txt	100	5	30	Solution	300.07	1281	1051.00	17.95
586 100 5 30 rep 6.txt	100	5	30	Solution	300.06	1276	1080.00	15.36
587 100 5 30 rep 7.txt	100	5	30	Solution	300.06	1315	1092.00	16.96
588 100 5 30 rep 8.txt	100	5	30	Solution	300.06	1315	1071.00	18.56
589 100 5 30 rep 9.txt	100	5	30	Solution	300.06	1282	1097.00	14.43
590 100 5 30 rep 10.txt	100	5	30	Solution	300.06	1377	1175.00	14.67
591 100 5 50 rep 1.txt	100	5	50	Solution	300.05	809	746.00	7.79
592 100 5 50 rep 2.txt	100	5	50	Solution	300.05	742	667.00	10.11
593 100 5 50 rep 3.txt	100	5	50	Solution	300.05	825	737.00	10.67
594 100 5 50 rep 4.txt	100	5	50	Solution	300.12	806	705.00	12.53
595 100 5 50 rep 5.txt	100	5	50	Solution	300.09	795	700.00	11.95
596 100 5 50 rep 6.txt	100	5	50	Solution	300.09	819	765.00	6.59
597 100 5 50 rep 7.txt	100	5	50	Solution	300.10	767	706.00	7.95
598 100 5 50 rep 8.txt	100	5	50	Solution	300.05	792	727.00	8.21
599 100 5 50 rep 9.txt	100	5	50	Solution	300.05	782	715.00	8.57
600 100 5 50 rep 10.txt	100	5	50	Solution	300.06	778	698.00	10.28
601 100 10 10 rep 1.txt	100	10	10	Solution	300.09	6803	3565.00	47.60
602 100 10 10 rep 2.txt	100	10	10	Solution	300.10	6852	3460.00	49.50
603 100 10 10 rep 3.txt	100	10	10	Solution	300.10	6615	3215.00	51.40
604 100 10 10 rep 4.txt	100	10	10	Solution	300.11	6986	3609.00	48.34
605 100 10 10 rep 5.txt	100	10	10	Solution	300.10	6987	3738.00	46.50
606 100 10 10 rep 6.txt	100	10	10	Solution	300.13	6941	3148.00	54.65
607 100 10 10 rep 7.txt	100	10	10	Solution	300.08	6877	3539.00	48.54

Table 2: Results for CFSnoWait (CPSat) (640 Instances)

Name	Nr Jobs	Nr Machines	Capa	Status	Time	Makespan	Bound	Gap Percent
608 100 10 10 rep 8.txt	100	10	10	Solution	300.07	6654	3220.00	51.61
609 100 10 10 rep 9.txt	100	10	10	Solution	300.09	6670	3590.00	46.18
610 100 10 10 rep 10.txt	100	10	10	Solution	300.11	7049	3216.00	54.38
611 100 10 20 rep 1.txt	100	10	20	Solution	300.07	2697	1755.00	34.93
612 100 10 20 rep 2.txt	100	10	20	Solution	300.09	2686	1745.00	35.03
613 100 10 20 rep 3.txt	100	10	20	Solution	300.07	2699	1753.00	35.05
614 100 10 20 rep 4.txt	100	10	20	Solution	300.09	2776	1823.00	34.33
615 100 10 20 rep 5.txt	100	10	20	Solution	300.06	2694	1905.00	29.29
616 100 10 20 rep 6.txt	100	10	20	Solution	300.06	2769	1887.00	31.85
617 100 10 20 rep 7.txt	100	10	20	Solution	300.07	2594	1728.00	33.38
618 100 10 20 rep 8.txt	100	10	20	Solution	300.09	2622	1768.00	32.57
619 100 10 20 rep 9.txt	100	10	20	Solution	300.06	2493	1707.00	31.53
620 100 10 20 rep 10.txt	100	10	20	Solution	300.09	2626	1796.00	31.61
621 100 10 30 rep 1.txt	100	10	30	Solution	300.06	1761	1351.00	23.28
622 100 10 30 rep 2.txt	100	10	30	Solution	300.10	1640	1284.00	21.71
623 100 10 30 rep 3.txt	100	10	30	Solution	300.06	1636	1226.00	25.06
624 100 10 30 rep 4.txt	100	10	30	Solution	300.06	1675	1268.00	24.30
625 100 10 30 rep 5.txt	100	10	30	Solution	300.07	1672	1377.00	17.64
626 100 10 30 rep 6.txt	100	10	30	Solution	300.06	1702	1318.00	22.56
627 100 10 30 rep 7.txt	100	10	30	Solution	300.05	1706	1272.00	25.44
628 100 10 30 rep 8.txt	100	10	30	Solution	300.06	1750	1329.00	24.06
629 100 10 30 rep 9.txt	100	10	30	Solution	300.07	1693	1266.00	25.22
630 100 10 30 rep 10.txt	100	10	30	Solution	300.10	1723	1313.00	23.80
631 100 10 50 rep 1.txt	100	10	50	Solution	300.08	1130	997.00	11.77
632 100 10 50 rep 2.txt	100	10	50	Solution	300.08	1077	894.00	16.99
633 100 10 50 rep 3.txt	100	10	50	Solution	300.05	1095	933.00	14.79
634 100 10 50 rep 4.txt	100	10	50	Solution	300.05	1012	845.00	16.50
635 100 10 50 rep 5.txt	100	10	50	Solution	300.09	1061	878.00	17.25
636 100 10 50 rep 6.txt	100	10	50	Solution	300.06	1105	940.00	14.93
637 100 10 50 rep 7.txt	100	10	50	Solution	300.11	1061	895.00	15.65
638 100 10 50 rep 8.txt	100	10	50	Solution	300.06	1063	916.00	13.83
639 100 10 50 rep 9.txt	100	10	50	Solution	300.09	1053	908.00	13.77
640 100 10 50 rep 10.txt	100	10	50	Solution	300.09	1105	983.00	11.04

3 Comparison

Table 3: Comparison of CPO and CPSat for Results of CFS

		All Instances Optimal (% of All Instances)				Optimal Only Time (% of VB)		Non Optimal Only Cost (% of VB)		Bound (% of VB)	
Group	Nr	Both	CPO	CPSat	None	CPO	CPSat	CPO	CPSat	CPO	CPSat
20/0/2/10	10	30.00	0.00	30.00	40.00	100.00	1442.29	100.21	100.00	88.27	100.00
20/0/2/20	10	90.00	0.00	10.00	0.00	100.00	3333.38	100.00	100.00	94.67	100.00
20/0/2/30	10	100.00	0.00	0.00	0.00	100.00	5593.16	n/a	n/a	n/a	n/a
20/0/2/50	10	100.00	0.00	0.00	0.00	104.61	60890.08	n/a	n/a	n/a	n/a
20/0/3/10	10	10.00	0.00	10.00	80.00	100.00	289.11	100.55	100.00	87.69	100.00
20/0/3/20	10	70.00	0.00	10.00	20.00	100.00	2639.56	100.88	100.00	96.47	100.00
20/0/3/30	10	100.00	0.00	0.00	0.00	107.69	4393.23	n/a	n/a	n/a	n/a
20/0/3/50	10	100.00	0.00	0.00	0.00	113.61	189.37	n/a	n/a	n/a	n/a
20/0/5/10	10	0.00	0.00	0.00	100.00	n/a	n/a	101.43	100.01	88.72	100.00
20/0/5/20	10	20.00	0.00	40.00	40.00	100.00	3105.90	101.51	100.00	94.05	100.00
20/0/5/30	10	90.00	0.00	10.00	0.00	100.79	8447.33	102.00	100.00	91.77	100.00
20/0/5/50	10	100.00	0.00	0.00	0.00	148.08	111.74	n/a	n/a	n/a	n/a
20/0/10/10	10	0.00	0.00	0.00	100.00	n/a	n/a	100.86	100.57	85.95	100.00
20/0/10/20	10	0.00	0.00	70.00	30.00	n/a	n/a	101.84	100.00	88.98	100.00
20/0/10/30	10	90.00	0.00	10.00	0.00	100.14	3959.43	100.45	100.00	95.33	100.00
20/0/10/50	10	100.00	0.00	0.00	0.00	137.36	100.00	n/a	n/a	n/a	n/a
30/0/2/10	10	0.00	0.00	0.00	100.00	n/a	n/a	100.31	100.13	93.93	100.00
30/0/2/20	10	0.00	0.00	0.00	100.00	n/a	n/a	101.21	100.00	99.57	100.00
30/0/2/30	10	0.00	0.00	0.00	100.00	n/a	n/a	101.03	100.00	99.63	100.00
30/0/2/50	10	60.00	0.00	20.00	20.00	100.06	7756.84	100.34	100.00	98.73	100.00
30/0/3/10	10	0.00	0.00	0.00	100.00	n/a	n/a	101.54	100.18	92.78	100.00
30/0/3/20	10	0.00	0.00	0.00	100.00	n/a	n/a	102.03	100.09	98.73	100.00
30/0/3/30	10	0.00	0.00	0.00	100.00	n/a	n/a	101.55	100.00	99.27	99.97
30/0/3/50	10	90.00	0.00	0.00	10.00	100.06	3142.30	100.77	100.00	100.00	100.00
30/0/5/10	10	0.00	0.00	0.00	100.00	n/a	n/a	100.94	100.57	94.08	100.00
30/0/5/20	10	0.00	0.00	0.00	100.00	n/a	n/a	103.29	100.09	98.06	100.00
30/0/5/30	10	0.00	0.00	0.00	100.00	n/a	n/a	101.57	100.00	99.11	99.98
30/0/5/50	10	80.00	0.00	20.00	0.00	104.74	447.11	100.63	100.00	97.87	100.00
30/0/10/10	10	0.00	0.00	0.00	100.00	n/a	n/a	100.80	100.72	90.06	100.00
30/0/10/20	10	0.00	0.00	0.00	100.00	n/a	n/a	103.68	100.00	96.31	99.95
30/0/10/30	10	0.00	0.00	10.00	90.00	n/a	n/a	103.14	100.00	97.75	100.00
30/0/10/50	10	100.00	0.00	0.00	0.00	101.28	1935.33	n/a	n/a	n/a	n/a
50/0/2/10	10	0.00	0.00	10.00	90.00	n/a	n/a	100.58	100.17	94.28	100.00
50/0/2/20	10	0.00	0.00	0.00	100.00	n/a	n/a	100.90	100.08	99.93	100.00
50/0/2/30	10	0.00	0.00	0.00	100.00	n/a	n/a	101.04	100.02	99.80	100.00
50/0/2/50	10	0.00	0.00	0.00	100.00	n/a	n/a	100.15	100.15	99.84	99.97
50/0/3/10	10	0.00	0.00	0.00	100.00	n/a	n/a	101.02	100.17	93.82	100.00
50/0/3/20	10	0.00	0.00	0.00	100.00	n/a	n/a	101.26	100.03	99.63	99.99
50/0/3/30	10	0.00	0.00	0.00	100.00	n/a	n/a	101.19	100.05	99.54	100.00
50/0/3/50	10	0.00	0.00	0.00	100.00	n/a	n/a	101.15	100.08	99.73	100.00
50/0/5/10	10	0.00	0.00	0.00	100.00	n/a	n/a	101.25	100.91	94.90	100.00
50/0/5/20	10	0.00	0.00	0.00	100.00	n/a	n/a	101.99	100.12	98.59	100.00
50/0/5/30	10	0.00	0.00	0.00	100.00	n/a	n/a	102.68	100.00	99.26	100.00
50/0/5/50	10	0.00	0.00	0.00	100.00	n/a	n/a	101.65	100.06	99.84	99.98
50/0/10/10	10	0.00	0.00	0.00	100.00	n/a	n/a	100.12	102.05	93.67	100.00
50/0/10/20	10	0.00	0.00	0.00	100.00	n/a	n/a	102.94	100.00	98.92	100.00
50/0/10/30	10	0.00	0.00	0.00	100.00	n/a	n/a	103.58	100.03	99.22	100.00
50/0/10/50	10	20.00	0.00	0.00	80.00	100.00	5832.16	101.32	100.00	100.00	99.98
100/0/2/10	10	0.00	0.00	0.00	100.00	n/a	n/a	100.63	100.20	97.31	100.00
100/0/2/20	10	0.00	0.00	0.00	100.00	n/a	n/a	100.24	100.12	99.94	100.00
100/0/2/30	10	0.00	0.00	0.00	100.00	n/a	n/a	100.39	100.39	99.88	99.99
100/0/2/50	10	0.00	0.00	0.00	100.00	n/a	n/a	100.13	100.26	99.85	100.00
100/0/3/10	10	0.00	0.00	0.00	100.00	n/a	n/a	100.82	100.32	96.91	100.00
100/0/3/20	10	0.00	0.00	0.00	100.00	n/a	n/a	101.10	100.00	99.84	100.00
100/0/3/30	10	0.00	0.00	0.00	100.00	n/a	n/a	100.71	100.26	99.75	100.00
100/0/3/50	10	0.00	0.00	0.00	100.00	n/a	n/a	100.56	100.15	99.63	100.00
100/0/5/10	10	0.00	0.00	0.00	100.00	n/a	n/a	100.77	101.03	94.23	100.00
100/0/5/20	10	0.00	0.00	0.00	100.00	n/a	n/a	100.90	100.11	99.77	100.00
100/0/5/30	10	0.00	0.00	0.00	100.00	n/a	n/a	101.29	100.20	99.39	100.00
100/0/5/50	10	0.00	0.00	0.00	100.00	n/a	n/a	102.50	100.00	99.11	99.99
100/0/10/10	10	0.00	0.00	0.00	100.00	n/a	n/a	100.17	100.83	97.44	98.42
100/0/10/20	10	0.00	0.00	0.00	100.00	n/a	n/a	101.27	100.00	99.67	100.00
100/0/10/30	10	0.00	0.00	0.00	100.00	n/a	n/a	103.73	100.00	99.47	100.00
100/0/10/50	10	0.00	0.00	0.00	100.00	n/a	n/a	103.11	100.10	99.03	99.98