

# 1 Instances

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

Name	Nr Jobs	Nr Machines	Status	Time	Makespan	Bound	Gap Percent
100 20 5 20 rep 10.txt	20	0	Solution	30.10	516	465.00	9.88
101 20 5 30 rep 1.txt	20	0	Optimal	0.43	378	378.00	0.00
102 20 5 30 rep 2.txt	20	0	Solution	30.02	409	368.00	10.02
103 20 5 30 rep 3.txt	20	0	Optimal	0.42	379	379.00	0.00
104 20 5 30 rep 4.txt	20	0	Optimal	1.35	405	405.00	0.00
105 20 5 30 rep 5.txt	20	0	Optimal	4.34	417	417.00	0.00
106 20 5 30 rep 6.txt	20	0	Optimal	0.05	388	388.00	0.00
107 20 5 30 rep 7.txt	20	0	Optimal	0.08	424	424.00	0.00
108 20 5 30 rep 8.txt	20	0	Optimal	0.02	407	407.00	0.00
109 20 5 30 rep 9.txt	20	0	Optimal	0.49	360	360.00	0.00
10 20 2 10 rep 10.txt	20	0	Solution	30.01	799	657.00	17.77
110 20 5 30 rep 10.txt	20	0	Optimal	0.05	427	427.00	0.00
111 20 5 50 rep 1.txt	20	0	Optimal	0.02	408	408.00	0.00
112 20 5 50 rep 2.txt	20	0	Optimal	0.02	418	418.00	0.00
113 20 5 50 rep 3.txt	20	0	Optimal	0.02	357	357.00	0.00
114 20 5 50 rep 4.txt	20	0	Optimal	0.02	428	428.00	0.00
115 20 5 50 rep 5.txt	20	0	Optimal	0.02	373	373.00	0.00
116 20 5 50 rep 6.txt	20	0	Optimal	0.02	365	365.00	0.00
117 20 5 50 rep 7.txt	20	0	Optimal	0.02	387	387.00	0.00
118 20 5 50 rep 8.txt	20	0	Optimal	0.02	348	348.00	0.00
119 20 5 50 rep 9.txt	20	0	Optimal	0.02	405	405.00	0.00
11 20 2 20 rep 1.txt	20	0	Optimal	14.84	338	338.00	0.00
120 20 5 50 rep 10.txt	20	0	Optimal	0.02	417	417.00	0.00
121 20 10 10 rep 1.txt	20	0	Solution	30.02	1595	1000.00	37.30
122 20 10 10 rep 2.txt	20	0	Solution	30.01	1746	996.00	42.96
123 20 10 10 rep 3.txt	20	0	Solution	30.01	1646	1064.00	35.36
124 20 10 10 rep 4.txt	20	0	Solution	30.02	1600	992.00	38.00
125 20 10 10 rep 5.txt	20	0	Solution	30.01	1703	1066.00	37.40
126 20 10 10 rep 6.txt	20	0	Solution	30.01	1634	1022.00	37.45
127 20 10 10 rep 7.txt	20	0	Solution	30.02	1536	984.00	35.94
128 20 10 10 rep 8.txt	20	0	Solution	30.02	1819	1121.00	38.37
129 20 10 10 rep 9.txt	20	0	Solution	30.03	1581	1023.00	35.29
12 20 2 20 rep 2.txt	20	0	Optimal	12.46	327	327.00	0.00
130 20 10 10 rep 10.txt	20	0	Solution	30.01	1684	1036.00	38.48
131 20 10 20 rep 1.txt	20	0	Solution	30.03	791	724.00	8.47
132 20 10 20 rep 2.txt	20	0	Solution	30.01	828	721.00	12.92
133 20 10 20 rep 3.txt	20	0	Solution	30.01	807	705.00	12.64
134 20 10 20 rep 4.txt	20	0	Solution	30.01	843	674.00	20.05
135 20 10 20 rep 5.txt	20	0	Solution	30.01	900	773.00	14.11
136 20 10 20 rep 6.txt	20	0	Solution	30.02	893	740.00	17.13
137 20 10 20 rep 7.txt	20	0	Solution	30.03	875	755.00	13.71
138 20 10 20 rep 8.txt	20	0	Solution	30.02	805	667.00	17.14

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

Name	Nr Jobs	Nr Machines	Status	Time	Makespan	Bound	Gap Percent
139 20 10 20 rep 9.txt	20	0	Solution	30.01	899	750.00	16.57
13 20 2 20 rep 3.txt	20	0	Solution	30.01	300	284.00	5.33
140 20 10 20 rep 10.txt	20	0	Solution	30.02	819	759.00	7.33
141 20 10 30 rep 1.txt	20	0	Optimal	5.49	720	720.00	0.00
142 20 10 30 rep 2.txt	20	0	Optimal	0.03	720	720.00	0.00
143 20 10 30 rep 3.txt	20	0	Optimal	0.04	682	682.00	0.00
144 20 10 30 rep 4.txt	20	0	Optimal	2.80	651	651.00	0.00
145 20 10 30 rep 5.txt	20	0	Optimal	4.31	706	706.00	0.00
146 20 10 30 rep 6.txt	20	0	Optimal	8.98	627	627.00	0.00
147 20 10 30 rep 7.txt	20	0	Solution	30.03	667	633.00	5.10
148 20 10 30 rep 8.txt	20	0	Optimal	0.07	631	631.00	0.00
149 20 10 30 rep 9.txt	20	0	Optimal	3.54	696	696.00	0.00
14 20 2 20 rep 4.txt	20	0	Optimal	5.29	305	305.00	0.00
150 20 10 30 rep 10.txt	20	0	Optimal	5.28	696	696.00	0.00
151 20 10 50 rep 1.txt	20	0	Optimal	0.02	711	711.00	0.00
152 20 10 50 rep 2.txt	20	0	Optimal	0.02	621	621.00	0.00
153 20 10 50 rep 3.txt	20	0	Optimal	0.02	669	669.00	0.00
154 20 10 50 rep 4.txt	20	0	Optimal	0.02	740	740.00	0.00
155 20 10 50 rep 5.txt	20	0	Optimal	0.02	686	686.00	0.00
156 20 10 50 rep 6.txt	20	0	Optimal	0.02	715	715.00	0.00
157 20 10 50 rep 7.txt	20	0	Optimal	0.02	612	612.00	0.00
158 20 10 50 rep 8.txt	20	0	Optimal	0.02	628	628.00	0.00
159 20 10 50 rep 9.txt	20	0	Optimal	0.02	744	744.00	0.00
15 20 2 20 rep 5.txt	20	0	Optimal	2.66	343	343.00	0.00
160 20 10 50 rep 10.txt	20	0	Optimal	0.02	707	707.00	0.00
161 30 2 10 rep 1.txt	30	0	Solution	30.01	1257	1072.00	14.72
162 30 2 10 rep 2.txt	30	0	Solution	30.02	866	804.00	7.16
163 30 2 10 rep 3.txt	30	0	Solution	30.01	909	832.00	8.47
164 30 2 10 rep 4.txt	30	0	Solution	30.00	1119	1006.00	10.10
165 30 2 10 rep 5.txt	30	0	Solution	30.01	1215	1029.00	15.31
166 30 2 10 rep 6.txt	30	0	Solution	30.01	931	832.00	10.63
167 30 2 10 rep 7.txt	30	0	Solution	30.01	781	704.00	9.86
168 30 2 10 rep 8.txt	30	0	Solution	30.02	894	852.00	4.70
169 30 2 10 rep 9.txt	30	0	Solution	30.01	1027	895.00	12.85
16 20 2 20 rep 6.txt	20	0	Optimal	2.76	344	344.00	0.00
170 30 2 10 rep 10.txt	30	0	Solution	30.02	1202	1093.00	9.07
171 30 2 20 rep 1.txt	30	0	Solution	30.01	448	415.00	7.37
172 30 2 20 rep 2.txt	30	0	Solution	30.01	533	503.00	5.63
173 30 2 20 rep 3.txt	30	0	Solution	30.03	416	396.00	4.81
174 30 2 20 rep 4.txt	30	0	Solution	30.00	428	418.00	2.34
175 30 2 20 rep 5.txt	30	0	Solution	30.01	483	439.00	9.11
176 30 2 20 rep 6.txt	30	0	Solution	30.03	452	427.00	5.53
177 30 2 20 rep 7.txt	30	0	Solution	30.01	493	483.00	2.03
178 30 2 20 rep 8.txt	30	0	Solution	30.03	412	378.00	8.25
179 30 2 20 rep 9.txt	30	0	Solution	30.04	457	424.00	7.22

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

Name	Nr Jobs	Nr Machines	Status	Time	Makespan	Bound	Gap Percent
17 20 2 20 rep 7.txt	20	0	Optimal	3.37	365	365.00	0.00
180 30 2 20 rep 10.txt	30	0	Solution	30.01	575	520.00	9.57
181 30 2 30 rep 1.txt	30	0	Solution	30.01	322	309.00	4.04
182 30 2 30 rep 2.txt	30	0	Solution	30.04	234	228.00	2.56
183 30 2 30 rep 3.txt	30	0	Solution	30.03	341	327.00	4.11
184 30 2 30 rep 4.txt	30	0	Solution	30.01	340	324.00	4.71
185 30 2 30 rep 5.txt	30	0	Solution	30.03	297	284.00	4.38
186 30 2 30 rep 6.txt	30	0	Solution	30.02	346	332.00	4.05
187 30 2 30 rep 7.txt	30	0	Solution	30.03	389	365.00	6.17
188 30 2 30 rep 8.txt	30	0	Solution	30.02	352	345.00	1.99
189 30 2 30 rep 9.txt	30	0	Solution	30.01	400	392.00	2.00
18 20 2 20 rep 8.txt	20	0	Optimal	16.15	353	353.00	0.00
190 30 2 30 rep 10.txt	30	0	Solution	30.02	325	304.00	6.46
191 30 2 50 rep 1.txt	30	0	Solution	30.01	206	199.00	3.40
192 30 2 50 rep 2.txt	30	0	Optimal	0.85	197	197.00	0.00
193 30 2 50 rep 3.txt	30	0	Solution	30.01	205	201.00	1.95
194 30 2 50 rep 4.txt	30	0	Optimal	3.35	202	202.00	0.00
195 30 2 50 rep 5.txt	30	0	Optimal	0.21	197	197.00	0.00
196 30 2 50 rep 6.txt	30	0	Solution	30.02	220	216.00	1.82
197 30 2 50 rep 7.txt	30	0	Solution	30.03	244	238.00	2.46
198 30 2 50 rep 8.txt	30	0	Optimal	0.02	176	176.00	0.00
199 30 2 50 rep 9.txt	30	0	Optimal	0.77	174	174.00	0.00
19 20 2 20 rep 9.txt	20	0	Optimal	1.79	301	301.00	0.00
1 20 2 10 rep 1.txt	20	0	Solution	30.00	746	639.00	14.34
200 30 2 50 rep 10.txt	30	0	Optimal	2.81	230	230.00	0.00
201 30 3 10 rep 1.txt	30	0	Solution	30.01	1139	909.00	20.19
202 30 3 10 rep 2.txt	30	0	Solution	30.01	1218	966.00	20.69
203 30 3 10 rep 3.txt	30	0	Solution	30.03	1290	1078.00	16.43
204 30 3 10 rep 4.txt	30	0	Solution	30.01	1017	847.00	16.72
205 30 3 10 rep 5.txt	30	0	Solution	30.01	1281	1015.00	20.77
206 30 3 10 rep 6.txt	30	0	Solution	30.02	1144	861.00	24.74
207 30 3 10 rep 7.txt	30	0	Solution	30.01	1002	854.00	14.77
208 30 3 10 rep 8.txt	30	0	Solution	30.02	1015	787.00	22.46
209 30 3 10 rep 9.txt	30	0	Solution	30.01	1188	989.00	16.75
20 20 2 20 rep 10.txt	20	0	Optimal	21.68	372	372.00	0.00
210 30 3 10 rep 10.txt	30	0	Solution	30.01	1214	938.00	22.73
211 30 3 20 rep 1.txt	30	0	Solution	30.01	560	511.00	8.75
212 30 3 20 rep 2.txt	30	0	Solution	30.01	614	586.00	4.56
213 30 3 20 rep 3.txt	30	0	Solution	30.00	510	446.00	12.55
214 30 3 20 rep 4.txt	30	0	Solution	30.03	651	572.00	12.14
215 30 3 20 rep 5.txt	30	0	Solution	30.03	600	522.00	13.00
216 30 3 20 rep 6.txt	30	0	Solution	30.02	620	567.00	8.55
217 30 3 20 rep 7.txt	30	0	Solution	30.02	689	607.00	11.90
218 30 3 20 rep 8.txt	30	0	Solution	30.02	609	534.00	12.32
219 30 3 20 rep 9.txt	30	0	Solution	30.01	579	507.00	12.44

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

Name	Nr Jobs	Nr Machines	Status	Time	Makespan	Bound	Gap Percent
21 20 2 30 rep 1.txt	20	0	Optimal	0.03	185	185.00	0.00
220 30 3 20 rep 10.txt	30	0	Solution	30.01	546	495.00	9.34
221 30 3 30 rep 1.txt	30	0	Solution	30.01	380	365.00	3.95
222 30 3 30 rep 2.txt	30	0	Solution	30.01	363	326.00	10.19
223 30 3 30 rep 3.txt	30	0	Solution	30.01	449	420.00	6.46
224 30 3 30 rep 4.txt	30	0	Solution	30.01	405	363.00	10.37
225 30 3 30 rep 5.txt	30	0	Solution	30.02	323	301.00	6.81
226 30 3 30 rep 6.txt	30	0	Solution	30.01	379	359.00	5.28
227 30 3 30 rep 7.txt	30	0	Solution	30.01	401	387.00	3.49
228 30 3 30 rep 8.txt	30	0	Solution	30.01	385	352.00	8.57
229 30 3 30 rep 9.txt	30	0	Solution	30.04	372	346.00	6.99
22 20 2 30 rep 2.txt	20	0	Optimal	0.01	164	164.00	0.00
230 30 3 30 rep 10.txt	30	0	Solution	30.04	355	316.00	10.99
231 30 3 50 rep 1.txt	30	0	Optimal	5.78	262	262.00	0.00
232 30 3 50 rep 2.txt	30	0	Optimal	0.34	241	241.00	0.00
233 30 3 50 rep 3.txt	30	0	Solution	30.03	261	257.00	1.53
234 30 3 50 rep 4.txt	30	0	Optimal	24.89	270	270.00	0.00
235 30 3 50 rep 5.txt	30	0	Optimal	0.02	256	256.00	0.00
236 30 3 50 rep 6.txt	30	0	Optimal	0.05	260	260.00	0.00
237 30 3 50 rep 7.txt	30	0	Optimal	2.39	268	268.00	0.00
238 30 3 50 rep 8.txt	30	0	Optimal	0.68	265	265.00	0.00
239 30 3 50 rep 9.txt	30	0	Optimal	4.07	236	236.00	0.00
23 20 2 30 rep 3.txt	20	0	Optimal	0.18	231	231.00	0.00
240 30 3 50 rep 10.txt	30	0	Optimal	0.08	263	263.00	0.00
241 30 5 10 rep 1.txt	30	0	Solution	30.01	1463	1080.00	26.18
242 30 5 10 rep 2.txt	30	0	Solution	30.00	1447	925.00	36.07
243 30 5 10 rep 3.txt	30	0	Solution	30.01	1447	1047.00	27.64
244 30 5 10 rep 4.txt	30	0	Solution	30.02	1423	998.00	29.87
245 30 5 10 rep 5.txt	30	0	Solution	30.01	1456	992.00	31.87
246 30 5 10 rep 6.txt	30	0	Solution	30.01	1579	1170.00	25.90
247 30 5 10 rep 7.txt	30	0	Solution	30.02	1492	1020.00	31.64
248 30 5 10 rep 8.txt	30	0	Solution	30.03	1238	908.00	26.66
249 30 5 10 rep 9.txt	30	0	Solution	30.01	1486	965.00	35.06
24 20 2 30 rep 4.txt	20	0	Optimal	1.12	255	255.00	0.00
250 30 5 10 rep 10.txt	30	0	Solution	30.01	1520	1133.00	25.46
251 30 5 20 rep 1.txt	30	0	Solution	30.01	744	625.00	15.99
252 30 5 20 rep 2.txt	30	0	Solution	30.01	714	658.00	7.84
253 30 5 20 rep 3.txt	30	0	Solution	30.01	711	574.00	19.27
254 30 5 20 rep 4.txt	30	0	Solution	30.03	703	610.00	13.23
255 30 5 20 rep 5.txt	30	0	Solution	30.02	673	552.00	17.98
256 30 5 20 rep 6.txt	30	0	Solution	30.02	656	566.00	13.72
257 30 5 20 rep 7.txt	30	0	Solution	30.02	788	600.00	23.86
258 30 5 20 rep 8.txt	30	0	Solution	30.02	675	568.00	15.85
259 30 5 20 rep 9.txt	30	0	Solution	30.01	769	618.00	19.64
25 20 2 30 rep 5.txt	20	0	Optimal	0.64	239	239.00	0.00

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

Name	Nr Jobs	Nr Machines	Status	Time	Makespan	Bound	Gap Percent
260 30 5 20 rep 10.txt	30	0	Solution	30.01	782	641.00	18.03
261 30 5 30 rep 1.txt	30	0	Solution	30.02	451	415.00	7.98
262 30 5 30 rep 2.txt	30	0	Solution	30.04	471	426.00	9.55
263 30 5 30 rep 3.txt	30	0	Solution	30.01	485	441.00	9.07
264 30 5 30 rep 4.txt	30	0	Solution	30.01	451	441.00	2.22
265 30 5 30 rep 5.txt	30	0	Solution	30.03	465	426.00	8.39
266 30 5 30 rep 6.txt	30	0	Solution	30.02	511	446.00	12.72
267 30 5 30 rep 7.txt	30	0	Solution	30.01	486	443.00	8.85
268 30 5 30 rep 8.txt	30	0	Solution	30.02	547	485.00	11.33
269 30 5 30 rep 9.txt	30	0	Solution	30.01	508	456.00	10.24
26 20 2 30 rep 6.txt	20	0	Optimal	0.48	254	254.00	0.00
270 30 5 30 rep 10.txt	30	0	Solution	30.02	530	490.00	7.55
271 30 5 50 rep 1.txt	30	0	Solution	30.03	399	388.00	2.76
272 30 5 50 rep 2.txt	30	0	Optimal	0.08	367	367.00	0.00
273 30 5 50 rep 3.txt	30	0	Optimal	0.04	397	397.00	0.00
274 30 5 50 rep 4.txt	30	0	Optimal	0.09	411	411.00	0.00
275 30 5 50 rep 5.txt	30	0	Optimal	0.05	399	399.00	0.00
276 30 5 50 rep 6.txt	30	0	Optimal	0.04	392	392.00	0.00
277 30 5 50 rep 7.txt	30	0	Optimal	0.02	406	406.00	0.00
278 30 5 50 rep 8.txt	30	0	Solution	30.04	404	393.00	2.72
279 30 5 50 rep 9.txt	30	0	Optimal	0.02	352	352.00	0.00
27 20 2 30 rep 7.txt	20	0	Optimal	4.98	212	212.00	0.00
280 30 5 50 rep 10.txt	30	0	Optimal	0.16	399	399.00	0.00
281 30 10 10 rep 1.txt	30	0	Solution	30.01	2315	1323.00	42.85
282 30 10 10 rep 2.txt	30	0	Solution	30.02	2368	1273.00	46.24
283 30 10 10 rep 3.txt	30	0	Solution	30.02	2055	1212.00	41.02
284 30 10 10 rep 4.txt	30	0	Solution	30.03	2088	1199.00	42.58
285 30 10 10 rep 5.txt	30	0	Solution	30.02	2223	1269.00	42.91
286 30 10 10 rep 6.txt	30	0	Solution	30.02	2336	1300.00	44.35
287 30 10 10 rep 7.txt	30	0	Solution	30.04	2218	1213.00	45.31
288 30 10 10 rep 8.txt	30	0	Solution	30.03	2116	1242.00	41.30
289 30 10 10 rep 9.txt	30	0	Solution	30.02	2199	1353.00	38.47
28 20 2 30 rep 8.txt	20	0	Optimal	0.38	230	230.00	0.00
290 30 10 10 rep 10.txt	30	0	Solution	30.01	2305	1255.00	45.55
291 30 10 20 rep 1.txt	30	0	Solution	30.01	1063	769.00	27.66
292 30 10 20 rep 2.txt	30	0	Solution	30.02	1066	845.00	20.73
293 30 10 20 rep 3.txt	30	0	Solution	30.01	996	774.00	22.29
294 30 10 20 rep 4.txt	30	0	Solution	30.02	992	736.00	25.81
295 30 10 20 rep 5.txt	30	0	Solution	30.04	1109	821.00	25.97
296 30 10 20 rep 6.txt	30	0	Solution	30.02	1075	860.00	20.00
297 30 10 20 rep 7.txt	30	0	Solution	30.02	1010	799.00	20.89
298 30 10 20 rep 8.txt	30	0	Solution	30.02	1060	847.00	20.09
299 30 10 20 rep 9.txt	30	0	Solution	30.02	1002	750.00	25.15
29 20 2 30 rep 9.txt	20	0	Optimal	2.25	235	235.00	0.00
2 20 2 10 rep 2.txt	20	0	Optimal	20.66	670	670.00	0.00

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Name	Nr Jobs	Nr Machines	Status	Time	Makespan	Bound	Gap Percent
300 30 10 20 rep 10.txt	30	0	Solution	30.01	1008	792.00	21.43
301 30 10 30 rep 1.txt	30	0	Solution	30.01	788	712.00	9.64
302 30 10 30 rep 2.txt	30	0	Solution	30.04	810	710.00	12.35
303 30 10 30 rep 3.txt	30	0	Solution	30.01	780	678.00	13.08
304 30 10 30 rep 4.txt	30	0	Solution	30.03	727	685.00	5.78
305 30 10 30 rep 5.txt	30	0	Solution	30.03	794	777.00	2.14
306 30 10 30 rep 6.txt	30	0	Solution	30.03	803	717.00	10.71
307 30 10 30 rep 7.txt	30	0	Solution	30.01	785	674.00	14.14
308 30 10 30 rep 8.txt	30	0	Solution	30.03	781	671.00	14.08
309 30 10 30 rep 9.txt	30	0	Solution	30.01	789	679.00	13.94
30 20 2 30 rep 10.txt	20	0	Optimal	16.92	337	337.00	0.00
310 30 10 30 rep 10.txt	30	0	Solution	30.04	751	695.00	7.46
311 30 10 50 rep 1.txt	30	0	Optimal	0.03	760	760.00	0.00
312 30 10 50 rep 2.txt	30	0	Optimal	0.04	694	694.00	0.00
313 30 10 50 rep 3.txt	30	0	Optimal	0.02	762	762.00	0.00
314 30 10 50 rep 4.txt	30	0	Optimal	0.12	671	671.00	0.00
315 30 10 50 rep 5.txt	30	0	Optimal	0.04	747	747.00	0.00
316 30 10 50 rep 6.txt	30	0	Optimal	15.12	669	669.00	0.00
317 30 10 50 rep 7.txt	30	0	Optimal	0.26	659	659.00	0.00
318 30 10 50 rep 8.txt	30	0	Optimal	0.03	668	668.00	0.00
319 30 10 50 rep 9.txt	30	0	Optimal	0.07	658	658.00	0.00
31 20 2 50 rep 1.txt	20	0	Optimal	0.01	191	191.00	0.00
320 30 10 50 rep 10.txt	30	0	Optimal	0.02	695	695.00	0.00
321 50 2 10 rep 1.txt	50	0	Solution	30.01	1681	1505.00	10.47
322 50 2 10 rep 2.txt	50	0	Solution	30.01	1617	1450.00	10.33
323 50 2 10 rep 3.txt	50	0	Solution	30.02	1711	1505.00	12.04
324 50 2 10 rep 4.txt	50	0	Solution	30.01	1838	1688.00	8.16
325 50 2 10 rep 5.txt	50	0	Solution	30.03	1739	1647.00	5.29
326 50 2 10 rep 6.txt	50	0	Solution	30.01	1387	1277.00	7.93
327 50 2 10 rep 7.txt	50	0	Solution	30.03	1747	1560.00	10.70
328 50 2 10 rep 8.txt	50	0	Solution	30.02	1634	1517.00	7.16
329 50 2 10 rep 9.txt	50	0	Solution	30.02	1451	1310.00	9.72
32 20 2 50 rep 2.txt	20	0	Optimal	0.01	172	172.00	0.00
330 50 2 10 rep 10.txt	50	0	Solution	30.01	1549	1401.00	9.55
331 50 2 20 rep 1.txt	50	0	Solution	30.02	887	835.00	5.86
332 50 2 20 rep 2.txt	50	0	Solution	30.03	692	644.00	6.94
333 50 2 20 rep 3.txt	50	0	Solution	30.01	788	765.00	2.92
334 50 2 20 rep 4.txt	50	0	Solution	30.01	689	662.00	3.92
335 50 2 20 rep 5.txt	50	0	Solution	30.02	834	804.00	3.60
336 50 2 20 rep 6.txt	50	0	Solution	30.02	849	803.00	5.42
337 50 2 20 rep 7.txt	50	0	Solution	30.01	718	661.00	7.94
338 50 2 20 rep 8.txt	50	0	Solution	30.02	845	765.00	9.47
339 50 2 20 rep 9.txt	50	0	Solution	30.02	757	732.00	3.30
33 20 2 50 rep 3.txt	20	0	Optimal	0.11	173	173.00	0.00
340 50 2 20 rep 10.txt	50	0	Solution	30.02	703	670.00	4.69

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

Name	Nr Jobs	Nr Machines	Status	Time	Makespan	Bound	Gap Percent
341 50 2 30 rep 1.txt	50	0	Solution	30.02	487	450.00	7.60
342 50 2 30 rep 2.txt	50	0	Solution	30.03	497	468.00	5.84
343 50 2 30 rep 3.txt	50	0	Solution	30.01	484	454.00	6.20
344 50 2 30 rep 4.txt	50	0	Solution	30.01	517	502.00	2.90
345 50 2 30 rep 5.txt	50	0	Solution	30.01	606	587.00	3.14
346 50 2 30 rep 6.txt	50	0	Solution	30.02	567	532.00	6.17
347 50 2 30 rep 7.txt	50	0	Solution	30.02	594	543.00	8.59
348 50 2 30 rep 8.txt	50	0	Solution	30.02	549	513.00	6.56
349 50 2 30 rep 9.txt	50	0	Solution	30.01	509	466.00	8.45
34 20 2 50 rep 4.txt	20	0	Optimal	0.01	184	184.00	0.00
350 50 2 30 rep 10.txt	50	0	Solution	30.03	460	422.00	8.26
351 50 2 50 rep 1.txt	50	0	Solution	30.02	338	327.00	3.25
352 50 2 50 rep 2.txt	50	0	Solution	30.02	288	283.00	1.74
353 50 2 50 rep 3.txt	50	0	Solution	30.01	398	393.00	1.26
354 50 2 50 rep 4.txt	50	0	Solution	30.02	341	333.00	2.35
355 50 2 50 rep 5.txt	50	0	Solution	30.01	299	295.00	1.34
356 50 2 50 rep 6.txt	50	0	Solution	30.03	338	331.00	2.07
357 50 2 50 rep 7.txt	50	0	Solution	30.00	331	315.00	4.83
358 50 2 50 rep 8.txt	50	0	Solution	30.01	327	321.00	1.83
359 50 2 50 rep 9.txt	50	0	Solution	30.00	336	323.00	3.87
35 20 2 50 rep 5.txt	20	0	Optimal	0.02	179	179.00	0.00
360 50 2 50 rep 10.txt	50	0	Solution	30.01	282	279.00	1.06
361 50 3 10 rep 1.txt	50	0	Solution	30.01	2073	1710.00	17.51
362 50 3 10 rep 2.txt	50	0	Solution	30.01	1834	1490.00	18.76
363 50 3 10 rep 3.txt	50	0	Solution	30.02	1747	1428.00	18.26
364 50 3 10 rep 4.txt	50	0	Solution	30.02	2083	1655.00	20.55
365 50 3 10 rep 5.txt	50	0	Solution	30.01	2103	1747.00	16.93
366 50 3 10 rep 6.txt	50	0	Solution	30.01	1903	1551.00	18.50
367 50 3 10 rep 7.txt	50	0	Solution	30.01	1704	1436.00	15.73
368 50 3 10 rep 8.txt	50	0	Solution	30.01	1909	1476.00	22.68
369 50 3 10 rep 9.txt	50	0	Solution	30.02	2077	1714.00	17.48
36 20 2 50 rep 6.txt	20	0	Optimal	0.20	220	220.00	0.00
370 50 3 10 rep 10.txt	50	0	Solution	30.03	1714	1326.00	22.64
371 50 3 20 rep 1.txt	50	0	Solution	30.02	833	726.00	12.85
372 50 3 20 rep 2.txt	50	0	Solution	30.01	883	757.00	14.27
373 50 3 20 rep 3.txt	50	0	Solution	30.03	877	760.00	13.34
374 50 3 20 rep 4.txt	50	0	Solution	30.01	876	771.00	11.99
375 50 3 20 rep 5.txt	50	0	Solution	30.01	859	731.00	14.90
376 50 3 20 rep 6.txt	50	0	Solution	30.01	930	859.00	7.63
377 50 3 20 rep 7.txt	50	0	Solution	30.03	883	796.00	9.85
378 50 3 20 rep 8.txt	50	0	Solution	30.02	973	840.00	13.67
379 50 3 20 rep 9.txt	50	0	Solution	30.01	982	922.00	6.11
37 20 2 50 rep 7.txt	20	0	Optimal	0.02	170	170.00	0.00
380 50 3 20 rep 10.txt	50	0	Solution	30.01	884	753.00	14.82
381 50 3 30 rep 1.txt	50	0	Solution	30.01	551	510.00	7.44

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

Name	Nr Jobs	Nr Machines	Status	Time	Makespan	Bound	Gap Percent
382 50 3 30 rep 2.txt	50	0	Solution	30.02	536	479.00	10.63
383 50 3 30 rep 3.txt	50	0	Solution	30.01	546	488.00	10.62
384 50 3 30 rep 4.txt	50	0	Solution	30.03	589	538.00	8.66
385 50 3 30 rep 5.txt	50	0	Solution	30.01	580	511.00	11.90
386 50 3 30 rep 6.txt	50	0	Solution	30.01	622	559.00	10.13
387 50 3 30 rep 7.txt	50	0	Solution	30.03	529	488.00	7.75
388 50 3 30 rep 8.txt	50	0	Solution	30.01	643	586.00	8.86
389 50 3 30 rep 9.txt	50	0	Solution	30.01	546	492.00	9.89
38 20 2 50 rep 8.txt	20	0	Optimal	0.02	192	192.00	0.00
390 50 3 30 rep 10.txt	50	0	Solution	30.01	568	515.00	9.33
391 50 3 50 rep 1.txt	50	0	Solution	30.01	348	315.00	9.48
392 50 3 50 rep 2.txt	50	0	Solution	30.04	302	286.00	5.30
393 50 3 50 rep 3.txt	50	0	Solution	30.01	379	362.00	4.49
394 50 3 50 rep 4.txt	50	0	Solution	30.01	374	352.00	5.88
395 50 3 50 rep 5.txt	50	0	Solution	30.01	405	370.00	8.64
396 50 3 50 rep 6.txt	50	0	Solution	30.03	360	345.00	4.17
397 50 3 50 rep 7.txt	50	0	Solution	30.01	365	345.00	5.48
398 50 3 50 rep 8.txt	50	0	Solution	30.02	370	346.00	6.49
399 50 3 50 rep 9.txt	50	0	Solution	30.03	343	322.00	6.12
39 20 2 50 rep 9.txt	20	0	Optimal	0.05	204	204.00	0.00
3 20 2 10 rep 3.txt	20	0	Optimal	14.15	602	602.00	0.00
400 50 3 50 rep 10.txt	50	0	Solution	30.04	360	325.00	9.72
401 50 5 10 rep 1.txt	50	0	Solution	30.02	2562	1841.00	28.14
402 50 5 10 rep 2.txt	50	0	Solution	30.02	2115	1425.00	32.62
403 50 5 10 rep 3.txt	50	0	Solution	30.02	2311	1501.00	35.05
404 50 5 10 rep 4.txt	50	0	Solution	30.01	2412	1837.00	23.84
405 50 5 10 rep 5.txt	50	0	Solution	30.02	2252	1498.00	33.48
406 50 5 10 rep 6.txt	50	0	Solution	30.02	2469	1729.00	29.97
407 50 5 10 rep 7.txt	50	0	Solution	30.02	2567	1783.00	30.54
408 50 5 10 rep 8.txt	50	0	Solution	30.02	2568	1764.00	31.31
409 50 5 10 rep 9.txt	50	0	Solution	30.01	2411	1767.00	26.71
40 20 2 50 rep 10.txt	20	0	Optimal	0.24	218	218.00	0.00
410 50 5 10 rep 10.txt	50	0	Solution	30.02	2511	1762.00	29.83
411 50 5 20 rep 1.txt	50	0	Solution	30.02	1064	820.00	22.93
412 50 5 20 rep 2.txt	50	0	Solution	30.02	1028	863.00	16.05
413 50 5 20 rep 3.txt	50	0	Solution	30.02	1039	792.00	23.77
414 50 5 20 rep 4.txt	50	0	Solution	30.02	1037	879.00	15.24
415 50 5 20 rep 5.txt	50	0	Solution	30.02	999	798.00	20.12
416 50 5 20 rep 6.txt	50	0	Solution	30.01	907	710.00	21.72
417 50 5 20 rep 7.txt	50	0	Solution	30.03	1100	849.00	22.82
418 50 5 20 rep 8.txt	50	0	Solution	30.01	1001	797.00	20.38
419 50 5 20 rep 9.txt	50	0	Solution	30.01	1039	823.00	20.79
41 20 3 10 rep 1.txt	20	0	Solution	30.01	760	688.00	9.47
420 50 5 20 rep 10.txt	50	0	Solution	30.03	1013	779.00	23.10
421 50 5 30 rep 1.txt	50	0	Solution	30.02	738	605.00	18.02



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

Name	Nr Jobs	Nr Machines	Status	Time	Makespan	Bound	Gap Percent
422 50 5 30 rep 2.txt	50	0	Solution	30.01	760	658.00	13.42
423 50 5 30 rep 3.txt	50	0	Solution	30.03	731	660.00	9.71
424 50 5 30 rep 4.txt	50	0	Solution	30.02	668	575.00	13.92
425 50 5 30 rep 5.txt	50	0	Solution	30.01	720	628.00	12.78
426 50 5 30 rep 6.txt	50	0	Solution	30.01	702	619.00	11.82
427 50 5 30 rep 7.txt	50	0	Solution	30.01	746	621.00	16.76
428 50 5 30 rep 8.txt	50	0	Solution	30.02	771	701.00	9.08
429 50 5 30 rep 9.txt	50	0	Solution	30.01	714	612.00	14.29
42 20 3 10 rep 2.txt	20	0	Solution	30.02	866	673.00	22.29
430 50 5 30 rep 10.txt	50	0	Solution	30.03	733	658.00	10.23
431 50 5 50 rep 1.txt	50	0	Solution	30.03	468	415.00	11.32
432 50 5 50 rep 2.txt	50	0	Solution	30.03	488	449.00	7.99
433 50 5 50 rep 3.txt	50	0	Solution	30.02	481	445.00	7.48
434 50 5 50 rep 4.txt	50	0	Solution	30.03	506	449.00	11.26
435 50 5 50 rep 5.txt	50	0	Solution	30.01	492	439.00	10.77
436 50 5 50 rep 6.txt	50	0	Solution	30.01	497	461.00	7.24
437 50 5 50 rep 7.txt	50	0	Solution	30.01	460	428.00	6.96
438 50 5 50 rep 8.txt	50	0	Solution	30.02	488	444.00	9.02
439 50 5 50 rep 9.txt	50	0	Solution	30.03	516	471.00	8.72
43 20 3 10 rep 3.txt	20	0	Solution	30.03	753	598.00	20.58
440 50 5 50 rep 10.txt	50	0	Solution	30.02	482	430.00	10.79
441 50 10 10 rep 1.txt	50	0	Solution	30.03	3543	1884.00	46.82
442 50 10 10 rep 2.txt	50	0	Solution	30.03	3271	1742.00	46.74
443 50 10 10 rep 3.txt	50	0	Solution	30.03	3683	1963.00	46.70
444 50 10 10 rep 4.txt	50	0	Solution	30.03	3751	2156.00	42.52
445 50 10 10 rep 5.txt	50	0	Solution	30.02	3371	1791.00	46.87
446 50 10 10 rep 6.txt	50	0	Solution	30.03	3475	2096.00	39.68
447 50 10 10 rep 7.txt	50	0	Solution	30.03	3444	1880.00	45.41
448 50 10 10 rep 8.txt	50	0	Solution	30.03	3512	1960.00	44.19
449 50 10 10 rep 9.txt	50	0	Solution	30.03	3396	1816.00	46.53
44 20 3 10 rep 4.txt	20	0	Solution	30.01	1104	847.00	23.28
450 50 10 10 rep 10.txt	50	0	Solution	30.03	3547	1799.00	49.28
451 50 10 20 rep 1.txt	50	0	Solution	30.02	1587	1119.00	29.49
452 50 10 20 rep 2.txt	50	0	Solution	30.03	1526	1111.00	27.20
453 50 10 20 rep 3.txt	50	0	Solution	30.04	1515	1028.00	32.15
454 50 10 20 rep 4.txt	50	0	Solution	30.02	1605	1176.00	26.73
455 50 10 20 rep 5.txt	50	0	Solution	30.01	1491	1043.00	30.05
456 50 10 20 rep 6.txt	50	0	Solution	30.02	1496	1051.00	29.75
457 50 10 20 rep 7.txt	50	0	Solution	30.02	1554	1127.00	27.48
458 50 10 20 rep 8.txt	50	0	Solution	30.02	1553	1101.00	29.10
459 50 10 20 rep 9.txt	50	0	Solution	30.04	1537	1107.00	27.98
45 20 3 10 rep 5.txt	20	0	Solution	30.01	832	688.00	17.31
460 50 10 20 rep 10.txt	50	0	Solution	30.02	1598	1184.00	25.91
461 50 10 30 rep 1.txt	50	0	Solution	30.02	1114	862.00	22.62
462 50 10 30 rep 2.txt	50	0	Solution	30.03	993	879.00	11.48

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

Name	Nr Jobs	Nr Machines	Status	Time	Makespan	Bound	Gap Percent
463 50 10 30 rep 3.txt	50	0	Solution	30.03	1019	785.00	22.96
464 50 10 30 rep 4.txt	50	0	Solution	30.03	990	788.00	20.40
465 50 10 30 rep 5.txt	50	0	Solution	30.02	1018	887.00	12.87
466 50 10 30 rep 6.txt	50	0	Solution	30.03	1024	875.00	14.55
467 50 10 30 rep 7.txt	50	0	Solution	30.02	1103	871.00	21.03
468 50 10 30 rep 8.txt	50	0	Solution	30.03	1034	829.00	19.83
469 50 10 30 rep 9.txt	50	0	Solution	30.04	1114	851.00	23.61
46 20 3 10 rep 6.txt	20	0	Solution	30.03	918	756.00	17.65
470 50 10 30 rep 10.txt	50	0	Solution	30.02	1083	910.00	15.97
471 50 10 50 rep 1.txt	50	0	Optimal	8.60	727	727.00	0.00
472 50 10 50 rep 2.txt	50	0	Solution	30.02	718	695.00	3.20
473 50 10 50 rep 3.txt	50	0	Solution	30.04	700	654.00	6.57
474 50 10 50 rep 4.txt	50	0	Solution	30.02	761	720.00	5.39
475 50 10 50 rep 5.txt	50	0	Solution	30.04	725	696.00	4.00
476 50 10 50 rep 6.txt	50	0	Solution	30.03	776	751.00	3.22
477 50 10 50 rep 7.txt	50	0	Solution	30.02	771	706.00	8.43
478 50 10 50 rep 8.txt	50	0	Solution	30.02	731	714.00	2.33
479 50 10 50 rep 9.txt	50	0	Optimal	1.69	767	767.00	0.00
47 20 3 10 rep 7.txt	20	0	Solution	30.01	981	785.00	19.98
480 50 10 50 rep 10.txt	50	0	Solution	30.02	718	661.00	7.94
481 100 2 10 rep 1.txt	100	0	Solution	30.02	2825	2485.00	12.04
482 100 2 10 rep 2.txt	100	0	Solution	30.02	3212	2890.00	10.02
483 100 2 10 rep 3.txt	100	0	Solution	30.03	2952	2712.00	8.13
484 100 2 10 rep 4.txt	100	0	Solution	30.03	2984	2747.00	7.94
485 100 2 10 rep 5.txt	100	0	Solution	30.03	3156	2877.00	8.84
486 100 2 10 rep 6.txt	100	0	Solution	30.02	3527	3139.00	11.00
487 100 2 10 rep 7.txt	100	0	Solution	30.01	3141	2838.00	9.65
488 100 2 10 rep 8.txt	100	0	Solution	30.03	3315	2942.00	11.25
489 100 2 10 rep 9.txt	100	0	Solution	30.02	3088	2826.00	8.48
48 20 3 10 rep 8.txt	20	0	Solution	30.01	880	677.00	23.07
490 100 2 10 rep 10.txt	100	0	Solution	30.01	3059	2886.00	5.66
491 100 2 20 rep 1.txt	100	0	Solution	30.02	1511	1401.00	7.28
492 100 2 20 rep 2.txt	100	0	Solution	30.03	1566	1497.00	4.41
493 100 2 20 rep 3.txt	100	0	Solution	30.02	1420	1289.00	9.23
494 100 2 20 rep 4.txt	100	0	Solution	30.02	1402	1284.00	8.42
495 100 2 20 rep 5.txt	100	0	Solution	30.01	1471	1378.00	6.32
496 100 2 20 rep 6.txt	100	0	Solution	30.01	1538	1439.00	6.44
497 100 2 20 rep 7.txt	100	0	Solution	30.01	1517	1405.00	7.38
498 100 2 20 rep 8.txt	100	0	Solution	30.02	1604	1481.00	7.67
499 100 2 20 rep 9.txt	100	0	Solution	30.01	1390	1320.00	5.04
49 20 3 10 rep 9.txt	20	0	Optimal	22.94	893	893.00	0.00
4 20 2 10 rep 4.txt	20	0	Solution	30.01	810	706.00	12.84
500 100 2 20 rep 10.txt	100	0	Solution	30.03	1553	1419.00	8.63
501 100 2 30 rep 1.txt	100	0	Solution	30.01	988	916.00	7.29
502 100 2 30 rep 2.txt	100	0	Solution	30.01	911	857.00	5.93

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

Name	Nr Jobs	Nr Machines	Status	Time	Makespan	Bound	Gap Percent
503 100 2 30 rep 3.txt	100	0	Solution	30.01	1060	1012.00	4.53
504 100 2 30 rep 4.txt	100	0	Solution	30.02	1028	980.00	4.67
505 100 2 30 rep 5.txt	100	0	Solution	30.02	947	931.00	1.69
506 100 2 30 rep 6.txt	100	0	Solution	30.01	981	908.00	7.44
507 100 2 30 rep 7.txt	100	0	Solution	30.02	996	956.00	4.02
508 100 2 30 rep 8.txt	100	0	Solution	30.01	944	881.00	6.67
509 100 2 30 rep 9.txt	100	0	Solution	30.04	954	890.00	6.71
50 20 3 10 rep 10.txt	20	0	Solution	30.01	1087	811.00	25.39
510 100 2 30 rep 10.txt	100	0	Solution	30.01	1051	994.00	5.42
511 100 2 50 rep 1.txt	100	0	Solution	30.04	671	646.00	3.73
512 100 2 50 rep 2.txt	100	0	Solution	30.01	592	560.00	5.41
513 100 2 50 rep 3.txt	100	0	Solution	30.02	584	564.00	3.42
514 100 2 50 rep 4.txt	100	0	Solution	30.01	625	609.00	2.56
515 100 2 50 rep 5.txt	100	0	Solution	30.01	583	566.00	2.92
516 100 2 50 rep 6.txt	100	0	Solution	30.04	696	685.00	1.58
517 100 2 50 rep 7.txt	100	0	Solution	30.04	599	577.00	3.67
518 100 2 50 rep 8.txt	100	0	Solution	30.01	627	613.00	2.23
519 100 2 50 rep 9.txt	100	0	Solution	30.01	604	581.00	3.81
51 20 3 20 rep 1.txt	20	0	Solution	30.01	455	440.00	3.30
520 100 2 50 rep 10.txt	100	0	Solution	30.03	553	540.00	2.35
521 100 3 10 rep 1.txt	100	0	Solution	30.02	3401	2720.00	20.02
522 100 3 10 rep 2.txt	100	0	Solution	30.02	3669	2932.00	20.09
523 100 3 10 rep 3.txt	100	0	Solution	30.02	4056	3404.00	16.07
524 100 3 10 rep 4.txt	100	0	Solution	30.03	3557	2681.00	24.63
525 100 3 10 rep 5.txt	100	0	Solution	30.02	3626	2824.00	22.12
526 100 3 10 rep 6.txt	100	0	Solution	30.03	3922	3164.00	19.33
527 100 3 10 rep 7.txt	100	0	Solution	30.03	3807	2925.00	23.17
528 100 3 10 rep 8.txt	100	0	Solution	30.03	3567	3046.00	14.61
529 100 3 10 rep 9.txt	100	0	Solution	30.03	3889	3044.00	21.73
52 20 3 20 rep 2.txt	20	0	Optimal	16.69	403	403.00	0.00
530 100 3 10 rep 10.txt	100	0	Solution	30.02	3792	2991.00	21.12
531 100 3 20 rep 1.txt	100	0	Solution	30.03	1830	1490.00	18.58
532 100 3 20 rep 2.txt	100	0	Solution	30.02	1778	1517.00	14.68
533 100 3 20 rep 3.txt	100	0	Solution	30.02	1676	1398.00	16.59
534 100 3 20 rep 4.txt	100	0	Solution	30.03	1728	1513.00	12.44
535 100 3 20 rep 5.txt	100	0	Solution	30.03	1722	1503.00	12.72
536 100 3 20 rep 6.txt	100	0	Solution	30.02	1682	1551.00	7.79
537 100 3 20 rep 7.txt	100	0	Solution	30.03	1725	1540.00	10.72
538 100 3 20 rep 8.txt	100	0	Solution	30.02	1813	1532.00	15.50
539 100 3 20 rep 9.txt	100	0	Solution	30.02	1603	1361.00	15.10
53 20 3 20 rep 3.txt	20	0	Optimal	13.09	395	395.00	0.00
540 100 3 20 rep 10.txt	100	0	Solution	30.01	1891	1675.00	11.42
541 100 3 30 rep 1.txt	100	0	Solution	30.04	1080	977.00	9.54
542 100 3 30 rep 2.txt	100	0	Solution	30.02	1120	992.00	11.43
543 100 3 30 rep 3.txt	100	0	Solution	30.03	1122	1048.00	6.60

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

Name	Nr Jobs	Nr Machines	Status	Time	Makespan	Bound	Gap Percent
544 100 3 30 rep 4.txt	100	0	Solution	30.03	1143	1014.00	11.29
545 100 3 30 rep 5.txt	100	0	Solution	30.04	1186	1071.00	9.70
546 100 3 30 rep 6.txt	100	0	Solution	30.01	1072	946.00	11.75
547 100 3 30 rep 7.txt	100	0	Solution	30.03	1097	1023.00	6.75
548 100 3 30 rep 8.txt	100	0	Solution	30.01	1125	969.00	13.87
549 100 3 30 rep 9.txt	100	0	Solution	30.02	1023	903.00	11.73
54 20 3 20 rep 4.txt	20	0	Optimal	2.12	393	393.00	0.00
550 100 3 30 rep 10.txt	100	0	Solution	30.03	1194	1099.00	7.96
551 100 3 50 rep 1.txt	100	0	Solution	30.03	632	570.00	9.81
552 100 3 50 rep 2.txt	100	0	Solution	30.03	719	668.00	7.09
553 100 3 50 rep 3.txt	100	0	Solution	30.01	686	625.00	8.89
554 100 3 50 rep 4.txt	100	0	Solution	30.02	684	625.00	8.63
555 100 3 50 rep 5.txt	100	0	Solution	30.01	668	603.00	9.73
556 100 3 50 rep 6.txt	100	0	Solution	30.02	650	613.00	5.69
557 100 3 50 rep 7.txt	100	0	Solution	30.03	732	694.00	5.19
558 100 3 50 rep 8.txt	100	0	Solution	30.02	649	608.00	6.32
559 100 3 50 rep 9.txt	100	0	Solution	30.02	610	585.00	4.10
55 20 3 20 rep 5.txt	20	0	Solution	30.02	425	384.00	9.65
560 100 3 50 rep 10.txt	100	0	Solution	30.01	656	612.00	6.71
561 100 5 10 rep 1.txt	100	0	Solution	30.04	4448	2913.00	34.51
562 100 5 10 rep 2.txt	100	0	Solution	30.06	4627	2994.00	35.29
563 100 5 10 rep 3.txt	100	0	Solution	30.05	5039	3112.00	38.24
564 100 5 10 rep 4.txt	100	0	Solution	30.04	5018	3470.00	30.85
565 100 5 10 rep 5.txt	100	0	Solution	30.05	4583	3068.00	33.06
566 100 5 10 rep 6.txt	100	0	Solution	30.04	4373	3131.00	28.40
567 100 5 10 rep 7.txt	100	0	Solution	30.05	4931	3306.00	32.95
568 100 5 10 rep 8.txt	100	0	Solution	30.03	4991	3358.00	32.72
569 100 5 10 rep 9.txt	100	0	Solution	30.04	4562	3112.00	31.78
56 20 3 20 rep 6.txt	20	0	Optimal	3.36	357	357.00	0.00
570 100 5 10 rep 10.txt	100	0	Solution	30.05	4767	3005.00	36.96
571 100 5 20 rep 1.txt	100	0	Solution	30.03	2010	1542.00	23.28
572 100 5 20 rep 2.txt	100	0	Solution	30.06	2104	1690.00	19.68
573 100 5 20 rep 3.txt	100	0	Solution	30.04	2086	1650.00	20.90
574 100 5 20 rep 4.txt	100	0	Solution	30.04	2023	1515.00	25.11
575 100 5 20 rep 5.txt	100	0	Solution	30.04	2069	1659.00	19.82
576 100 5 20 rep 6.txt	100	0	Solution	30.05	2041	1601.00	21.56
577 100 5 20 rep 7.txt	100	0	Solution	30.02	2024	1574.00	22.23
578 100 5 20 rep 8.txt	100	0	Solution	30.05	2092	1602.00	23.42
579 100 5 20 rep 9.txt	100	0	Solution	30.03	1976	1508.00	23.68
57 20 3 20 rep 7.txt	20	0	Optimal	7.97	449	449.00	0.00
580 100 5 20 rep 10.txt	100	0	Solution	30.03	1953	1599.00	18.13
581 100 5 30 rep 1.txt	100	0	Solution	30.02	1204	989.00	17.86
582 100 5 30 rep 2.txt	100	0	Solution	30.06	1281	998.00	22.09
583 100 5 30 rep 3.txt	100	0	Solution	30.03	1274	994.00	21.98
584 100 5 30 rep 4.txt	100	0	Solution	30.05	1296	1106.00	14.66

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

Name	Nr Jobs	Nr Machines	Status	Time	Makespan	Bound	Gap Percent
585 100 5 30 rep 5.txt	100	0	Solution	30.03	1293	1050.00	18.79
586 100 5 30 rep 6.txt	100	0	Solution	30.02	1301	1067.00	17.99
587 100 5 30 rep 7.txt	100	0	Solution	30.04	1315	1081.00	17.79
588 100 5 30 rep 8.txt	100	0	Solution	30.04	1330	1063.00	20.08
589 100 5 30 rep 9.txt	100	0	Solution	30.03	1316	1097.00	16.64
58 20 3 20 rep 8.txt	20	0	Optimal	11.48	351	351.00	0.00
590 100 5 30 rep 10.txt	100	0	Solution	30.04	1393	1166.00	16.30
591 100 5 50 rep 1.txt	100	0	Solution	30.07	813	742.00	8.73
592 100 5 50 rep 2.txt	100	0	Solution	30.07	773	661.00	14.49
593 100 5 50 rep 3.txt	100	0	Solution	30.02	856	724.00	15.42
594 100 5 50 rep 4.txt	100	0	Solution	30.03	826	695.00	15.86
595 100 5 50 rep 5.txt	100	0	Solution	30.06	835	687.00	17.72
596 100 5 50 rep 6.txt	100	0	Solution	30.06	831	765.00	7.94
597 100 5 50 rep 7.txt	100	0	Solution	30.03	799	700.00	12.39
598 100 5 50 rep 8.txt	100	0	Solution	30.05	816	716.00	12.25
599 100 5 50 rep 9.txt	100	0	Solution	30.05	782	716.00	8.44
59 20 3 20 rep 9.txt	20	0	Solution	30.01	375	350.00	6.67
5 20 2 10 rep 5.txt	20	0	Solution	30.01	595	541.00	9.08
600 100 5 50 rep 10.txt	100	0	Solution	30.01	782	697.00	10.87
601 100 10 10 rep 1.txt	100	0	Solution	30.12	6743	3440.00	48.98
602 100 10 10 rep 2.txt	100	0	Solution	30.10	6875	3511.00	48.93
603 100 10 10 rep 3.txt	100	0	Solution	30.13	6510	3186.00	51.06
604 100 10 10 rep 4.txt	100	0	Solution	30.13	6944	3469.00	50.04
605 100 10 10 rep 5.txt	100	0	Solution	30.11	6863	3634.00	47.05
606 100 10 10 rep 6.txt	100	0	Solution	30.10	6826	3483.00	48.97
607 100 10 10 rep 7.txt	100	0	Solution	30.11	6944	3418.00	50.78
608 100 10 10 rep 8.txt	100	0	Solution	30.12	6625	3175.00	52.08
609 100 10 10 rep 9.txt	100	0	Solution	30.15	6693	3261.00	51.28
60 20 3 20 rep 10.txt	20	0	Optimal	2.73	381	381.00	0.00
610 100 10 10 rep 10.txt	100	0	Solution	30.10	6958	3380.00	51.42
611 100 10 20 rep 1.txt	100	0	Solution	30.04	2709	1748.00	35.47
612 100 10 20 rep 2.txt	100	0	Solution	30.14	2752	1740.00	36.77
613 100 10 20 rep 3.txt	100	0	Solution	30.06	2732	1740.00	36.31
614 100 10 20 rep 4.txt	100	0	Solution	30.05	2788	1818.00	34.79
615 100 10 20 rep 5.txt	100	0	Solution	30.05	2719	1903.00	30.01
616 100 10 20 rep 6.txt	100	0	Solution	30.05	2809	1883.00	32.97
617 100 10 20 rep 7.txt	100	0	Solution	30.08	2625	1725.00	34.29
618 100 10 20 rep 8.txt	100	0	Solution	30.06	2686	1766.00	34.25
619 100 10 20 rep 9.txt	100	0	Solution	30.06	2512	1690.00	32.72
61 20 3 30 rep 1.txt	20	0	Optimal	8.88	345	345.00	0.00
620 100 10 20 rep 10.txt	100	0	Solution	30.07	2662	1795.00	32.57
621 100 10 30 rep 1.txt	100	0	Solution	30.03	1826	1338.00	26.73
622 100 10 30 rep 2.txt	100	0	Solution	30.04	1682	1279.00	23.96
623 100 10 30 rep 3.txt	100	0	Solution	30.06	1663	1222.00	26.52
624 100 10 30 rep 4.txt	100	0	Solution	30.10	1796	1256.00	30.07

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

Name	Nr Jobs	Nr Machines	Status	Time	Makespan	Bound	Gap Percent
625 100 10 30 rep 5.txt	100	0	Solution	30.10	1763	1371.00	22.23
626 100 10 30 rep 6.txt	100	0	Solution	30.07	1746	1315.00	24.68
627 100 10 30 rep 7.txt	100	0	Solution	30.03	1749	1271.00	27.33
628 100 10 30 rep 8.txt	100	0	Solution	30.08	1798	1324.00	26.36
629 100 10 30 rep 9.txt	100	0	Solution	30.09	1764	1259.00	28.63
62 20 3 30 rep 2.txt	20	0	Optimal	0.50	244	244.00	0.00
630 100 10 30 rep 10.txt	100	0	Solution	30.04	1804	1300.00	27.94
631 100 10 50 rep 1.txt	100	0	Solution	30.10	1176	995.00	15.39
632 100 10 50 rep 2.txt	100	0	Solution	30.05	1126	886.00	21.31
633 100 10 50 rep 3.txt	100	0	Solution	30.04	1111	916.00	17.55
634 100 10 50 rep 4.txt	100	0	Solution	30.09	1039	847.00	18.48
635 100 10 50 rep 5.txt	100	0	Solution	30.11	1079	870.00	19.37
636 100 10 50 rep 6.txt	100	0	Solution	30.03	1125	927.00	17.60
637 100 10 50 rep 7.txt	100	0	Solution	30.07	1152	873.00	24.22
638 100 10 50 rep 8.txt	100	0	Solution	30.21	1052	910.00	13.50
639 100 10 50 rep 9.txt	100	0	Solution	30.09	1083	904.00	16.53
63 20 3 30 rep 3.txt	20	0	Optimal	0.17	279	279.00	0.00
640 100 10 50 rep 10.txt	100	0	Solution	30.16	1142	974.00	14.71
64 20 3 30 rep 4.txt	20	0	Optimal	1.58	304	304.00	0.00
65 20 3 30 rep 5.txt	20	0	Optimal	0.55	268	268.00	0.00
66 20 3 30 rep 6.txt	20	0	Optimal	0.22	261	261.00	0.00
67 20 3 30 rep 7.txt	20	0	Optimal	8.07	377	377.00	0.00
68 20 3 30 rep 8.txt	20	0	Optimal	0.38	289	289.00	0.00
69 20 3 30 rep 9.txt	20	0	Optimal	0.36	245	245.00	0.00
6 20 2 10 rep 6.txt	20	0	Solution	30.01	660	600.00	9.09
70 20 3 30 rep 10.txt	20	0	Optimal	0.23	233	233.00	0.00
71 20 3 50 rep 1.txt	20	0	Optimal	0.02	259	259.00	0.00
72 20 3 50 rep 2.txt	20	0	Optimal	0.02	233	233.00	0.00
73 20 3 50 rep 3.txt	20	0	Optimal	0.02	234	234.00	0.00
74 20 3 50 rep 4.txt	20	0	Optimal	0.02	270	270.00	0.00
75 20 3 50 rep 5.txt	20	0	Optimal	0.02	247	247.00	0.00
76 20 3 50 rep 6.txt	20	0	Optimal	0.09	245	245.00	0.00
77 20 3 50 rep 7.txt	20	0	Optimal	0.10	217	217.00	0.00
78 20 3 50 rep 8.txt	20	0	Optimal	0.04	232	232.00	0.00
79 20 3 50 rep 9.txt	20	0	Optimal	0.09	242	242.00	0.00
7 20 2 10 rep 7.txt	20	0	Solution	30.01	672	584.00	13.10
80 20 3 50 rep 10.txt	20	0	Optimal	0.02	223	223.00	0.00
81 20 5 10 rep 1.txt	20	0	Solution	30.02	901	589.00	34.63
82 20 5 10 rep 2.txt	20	0	Solution	30.02	1131	802.00	29.09
83 20 5 10 rep 3.txt	20	0	Solution	30.01	1030	744.00	27.77
84 20 5 10 rep 4.txt	20	0	Solution	30.01	1008	694.00	31.15
85 20 5 10 rep 5.txt	20	0	Solution	30.03	975	703.00	27.90
86 20 5 10 rep 6.txt	20	0	Solution	30.01	1234	875.00	29.09
87 20 5 10 rep 7.txt	20	0	Solution	30.02	919	708.00	22.96
88 20 5 10 rep 8.txt	20	0	Solution	30.01	1102	790.00	28.31

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

Name	Nr Jobs	Nr Machines	Status	Time	Makespan	Bound	Gap Percent
89 20 5 10 rep 9.txt	20	0	Solution	30.02	1043	803.00	23.01
8 20 2 10 rep 8.txt	20	0	Solution	30.01	971	782.00	19.46
90 20 5 10 rep 10.txt	20	0	Solution	30.02	1119	901.00	19.48
91 20 5 20 rep 1.txt	20	0	Solution	30.03	519	443.00	14.64
92 20 5 20 rep 2.txt	20	0	Solution	30.03	525	492.00	6.29
93 20 5 20 rep 3.txt	20	0	Solution	30.02	554	480.00	13.36
94 20 5 20 rep 4.txt	20	0	Optimal	6.17	472	472.00	0.00
95 20 5 20 rep 5.txt	20	0	Solution	30.01	590	512.00	13.22
96 20 5 20 rep 6.txt	20	0	Optimal	13.15	519	519.00	0.00
97 20 5 20 rep 7.txt	20	0	Solution	30.02	593	520.00	12.31
98 20 5 20 rep 8.txt	20	0	Solution	30.03	512	459.00	10.35
99 20 5 20 rep 9.txt	20	0	Solution	30.01	484	437.00	9.71
9 20 2 10 rep 9.txt	20	0	Optimal	16.28	608	608.00	0.00