DEPARTMENT OF INFORMATION AND COMPUTER SCIENCE

T-79.4101 Discrete Models and Search Assignment 1

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The problem has been solved by applying a local search method. The method is Hill Climbing which uses 1-opt steepest descent. The neighbourhood structure is defined by considering every assignment of the processes to the machines to be a node of a graph. And two nodes have an undirected edge among them if and only if the re-assignment of only one process can convert one assignment into another. Below two tables describe the achieved result of this approach.

Table 0.1: Result on Small Instances

Instance	Initial Cost	Found Local Minima	Given Local Cost	Required Time(Second)
1	2983	1673	1147	< 1
2	3268	1580	874	< 1
3	4610	3281	2384	< 1
4	2628	341	158	< 1
5	2838	683	538	< 1
6	5415	4395	3207	< 1
7	4103	2539	1839	< 1
8	4714	2571	1980	< 1
9	4041	2880	1698	< 1
10	5736	5601	4752	< 1

Table 0.2: Result on Large Instances

Instance	Initial Cost	Found Local Minima	Given Local Cost	Required Time(Second)
1	65362	46825	43236	191
2	73085	65621	65146	60
3	77535	61343	60219	143
4	72782	57110	51000	172
5	75528	65573	61575	83
6	66567	47487	43457	221
7	62672	35985	34876	335
8	73442	55028	51305	158
9	70624	54622	44790	183
10	62830	40535	29870	256

Table 0.3: CPU Information

CPU	model name	cpu MHz	cache size(KB)	cpu cores
0	Intel(R) Core(TM) i5-3210M CPU @ 2.50GHz	1200	3072	2
1	Intel(R) Core(TM) i5-3210M CPU @ 2.50GHz	1200	3072	2
2	Intel(R) Core(TM) i5-3210M CPU @ 2.50GHz	1200	3072	2
3	Intel(R) Core(TM) i5-3210M CPU @ 2.50GHz	1200	3072	2

Table 0.4: Memory Information in MB

Total	Free
8145	361