OPTIMIZATION ALGORITHMS

UNIVERSITÀ DEGLI STUDI DI BRESCIA

Tabu Search: Exercise

Prof. **Renata Mansini**

Research Group MAO@DII

Models and Algorithms for Optimization at Department of Information Engineering

Website: `http://or-dii.unibs.it/`

Exercise: The use of Tabu Search 1/2

We have to determine the optimal sequencing of 6 jobs on a machine that minimizes global job tardiness. Each job has a processing time p_j, a due date d_j, and a penalty for tardiness equal to $w_j, j = 1, \ldots, 6$. The objective function (to be minimized) is computed as:

$$T = \sum_{j=1}^{6} w_j [C_j - d_j]^+$$

where C_j is the completion time of job j, while for each value v, $[v]^+ = \max(0, v)$. Completion time C_j is computed as the sum of the processing time p_j of job j, and the processing times of all the jobs that have been scheduled before j.

Exercise: The use of Tabu Search 2/2

You are provided with the following data:

job	w_j	p_j	d_j
1	1	6	9
2	1	4	12
3	1	8	15
4	1	2	8
5	1	10	20
6	1	3	22

Design a tabu search metaheuristic, and consider that you need to:

1. find a way to determine an initial feasible solution;
2. define the move that determines the neighborhood;
3. determine which attribute becomes tabu;
4. define the tabu tenure;

Try to complete the first 10 iterations of the method.