Optimal Binary Search Trees

Dynamic programming.

Operation Research.

The goal of the maximum weight independent set problem (MWIS) is to compute, for a given set of geometric objects with certain weights, a subset of disjoint (non-overlapping) objects with maximum total weight.

There is a PTAS (polynomial-time algorihtm scheme) for MWIS in disk graphs, provided that a disk representation of the graph is given. The running-time for achieving approximation ratio $1 + \epsilon$ is $n^{O(1/\epsilon^2)}$ for a disk graph with n disks.

Details:

- Executed on : 30/09/2014 05:30.
- Execution time : 0,000012 SECONDS.
- Memory required : 1148 BYTES.

Nodes

	Name	Probabilities
1	20	5,00
2	25	4,00
3	32	3,00
4	44	2,00
5	48	1,00
6	78	6,00
7	83	7,00
8	88	8,00
9	root	10,00

Table 1: Nodes probabilities.

Contents

Execution

	1	2	3	4	5	6	7	8	9	10
0	0,00	5,00	13,00	20,00	26,00	30,00	47,00	65,00	88,00	118,00
1		0,00	4,00	10,00	15,00	18,00	33,00	48,00	71,00	99,00
2			0,00	3,00	7,00	10,00	22,00	36,00	57,00	83,00
3				0,00	2,00	4,00	13,00	27,00	45,00	71,00
4					0,00	1,00	8,00	22,00	38,00	64,00
5						0,00	6,00	19,00	35,00	60,00
6							0,00	7,00	22,00	42,00
7								0,00	8,00	26,00
8									0,00	10,00
9										0,00

Table 2: Table A.

	1	2	3	4	5	6	7	8	9	10
0	0	1	1	2	2	2	3	6	6	6
1		0	2	2	3	3	3	6	6	8
2			0	3	3	3	6	6	7	8
3				0	4	4	6	6	7	8
4					0	5	6	6	7	8
5						0	6	7	7	8
6							0	7	8	8
7								0	8	9
8									0	9
9										0

Table 3: Table R.

Analisis

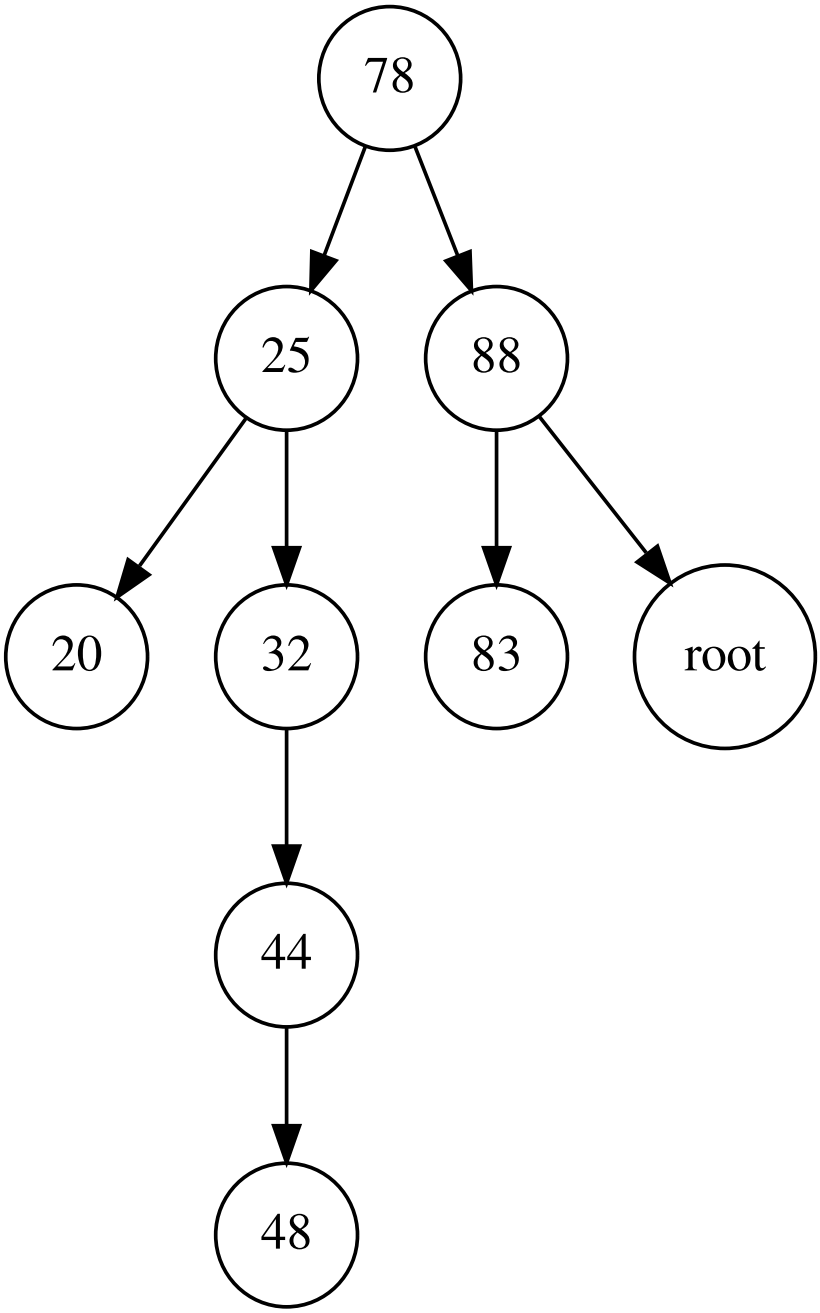

Figure 1: Optimal search tree.

Digest

- Total nodes : 9.
- Levels : 5.
- Expected cost : 118,00.