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Instances for the Multidimensional Knapsack Problem (MKP)

This page lists the instance data we used in an article titled “An efficient parallelization strategy for dynamic programming on GPU”, by Karl-Eduard Berger and François Galea, submitted to the Third Workshop on Parallel Computing and Optimization of the IEEE IPDPS 2013 conference.

Generating MKP instances

We generated the instances by randomly choosing the weights between 0 and a maximum value - 1. For a good correlation factor, we used as the profit value for a given item the sum of its weights plus 5.

The file format description is the same as described here.

One-dimensional instances have been adapted from KP instances by Boyer *et al*.

Problem instances

Here is the list of our tested problem instances.

name	dimension	KS size	max weight	#items	optimal value
1.1	1	2484605	1000	10000	2839205
1.2	1	4989314	1000	20000	5696964
1.3	1	7457511	1000	30000	8519711
1.4	1	9974822	1000	40000	11389722
1.5	1	12467998	1000	50000	14236498
1.6	1	14963112	1000	60000	17085362
1.7	1	17468298	1000	70000	19943498
1.8	1	19957832	1000	80000	22786832
1.9	1	22457026	1000	90000	25640126
1.10	1	24967272	1000	100000	28503272
2.1	2	3000	20	600	8025
2.2	2	5000	40	500	11695
2.3	2	7500	50	600	16970
3.1	3	300	10	120	1305
3.2	3	400	10	160	1735
3.3	3	600	15	160	2320
3.4	3	600	12	200	2470
4.1	4	80	10	32	424
4.2	4	90	10	36	473
4.3	4	120	10	48	630

4.4	4	120	8	60	680

You can download our instance data files through this link.