KNAPSACK PROBLEM 0-1 - ALGORITHMS

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December 30, 2019

1 Abstract

The problem of backpack 0-1 is a problem of finding optimal algorithms for storing data in each backpack without escaping its maximum capacity. In this work, an attempt was made to capture snapshots with specific values. The resulting files were 320 in total. The following algorithms were applied to them:

1. Greedy method

2. Comprehensive list of combinations

3. Branching and blocking

4. Dynamic Programming

5. Integer programming

6. Specialist solver

2 The results of the random files and algorithms

Below, the results of the above algorithms are shown in the set of snapshots we created.

File Name	Total Weight	Total Value/profit
problem_10_50_1_1_5.txt	231	50
File Name	Total Weight	Total Value/profit
problem_10_50_1_2_5.txt	47	46
File Name	Total Weight	Total Value/profit
problem_10_50_1_3_5.txt	687	80
File Name	Total Weight	Total Value/profit
problem_10_50_1_4_5.txt	1284	95
File Name	Total Weight	Total Value/profit
problem_10_50_1_5_5.txt	1441	12
File Name	Total Weight	Total Value/profit
problem_10_50_2_1_5.txt	231	69
File Name	Total Weight	Total Value/profit
problem_10_50_2_2_5.txt	326	59
File Name	Total Weight	Total Value/profit
problem_10_50_2_3_5.txt	488	240
File Name	Total Weight	Total Value/profit
problem_10_50_2_5_5.txt	1441	31
File Name	Total Weight	Total Value/profit
problem_10_50_3_1_5.txt	16	45
File Name	Total Weight	Total Value/profit
problem_10_50_3_2_5.txt	1	70
File Name	Total Weight	Total Value/profit
problem_10_50_3_4_5.txt	6	55
File Name	Total Weight	Total Value/profit
problem_10_50_3_5_5.txt	10	81
File Name	Total Weight	Total Value/profit
problem_10_50_4_1_5.txt	16	35
File Name	Total Weight	Total Value/profit
problem_10_50_4_2_5.txt	1	50
File Name	Total Weight	Total Value/profit
problem_10_50_4_3_5.txt	27	24
File Name	Total Weight	Total Value/profit
problem_10_50_4_4_5.txt	6	45
File Name	Total Weight	Total Value/profit
problem_10_50_4_5_5.txt	34	17
File Name	Total Weight	Total Value/profit
problem_10_100_1_1_5.txt	381	100
File Name	Total Weight	Total Value/profit
problem_10_100_1_2_5.txt	826	65
File Name	Total Weight	Total Value/profit
problem_10_50_1_3_5.txt	0	0
File Name	Total Weight	Total Value/profit
problem_10_100_1_3_5.txt	1937	130
File Name	Total Weight	Total Value/profit
problem_10_100_1_4_5.txt	2634	195
File Name	Total Weight	Total Value/profit
problem_10_100_1_5_5.txt	2641	112
File Name	Total Weight	Total Value/profit
problem_10_500_2_1_5.txt	0	0

File Name	Total Weight	Total Value/profit
problem_10_100_2_3_5.txt	27	79
problem_10_100_2_4_5.txt	56	54
problem_10_100_2_5_5.txt	22	78
problem_10_100_3_1_5.txt	16	95
problem_10_100_3_2_5.txt	51	70
problem_10_100_3_3_5.txt	27	84
problem_10_100_3_4_5.txt	56	55
problem_10_100_3_5_5.txt	34	87
problem_10_100_4_1_5.txt	16	85
problem_10_100_4_2_5.txt	51	50
problem_10_100_4_3_5.txt	27	74
problem_10_100_4_4_5.txt	56	45
problem_10_100_4_5_5.txt	34	67
problem_10_500_1_1_5.txt	1707	94
problem_10_500_1_2_5.txt	4626	765
problem_10_500_1_3_5.txt	5037	930
problem_10_500_1_4_5.txt	7834	595
problem_10_500_1_5_5.txt	16841	612
problem_10_500_2_1_5.txt	16	513
problem_10_500_2_3_5.txt	0	0
problem_10_500_2_2_5.txt	297	245
problem_10_500_2_4_5.txt	156	346
problem_10_500_3_1_5.txt	16	495
problem_10_500_3_2_5.txt	297	214
problem_3_3_5.txt	0	0

File Name	Total Weight	Total Value/profit
problem_10_500_3_3_5.txt	227	284
File Name	Total Weight	Total Value/profit
problem_10_500_3_4_5.txt	156	355
File Name	Total Weight	Total Value/profit
problem_10_500_3_5_5.txt	86	425
File Name	Total Weight	Total Value/profit
problem_10_500_4_1_5.txt	16	485
File Name	Total Weight	Total Value/profit
problem_10_500_4_2_5.txt	297	204
File Name	Total Weight	Total Value/profit
problem_10_500_4_3_5.txt	227	274
File Name	Total Weight	Total Value/profit
problem_10_500_4_4_5.txt	156	345
File Name	Total Weight	Total Value/profit
problem_10_500_4_5_5.txt	86	415
File Name	Total Weight	Total Value/profit
problem_10_1000_1_1_5.txt	3881	600
File Name	Total Weight	Total Value/profit
problem_10_1000_1_2_5.txt	10626	1765
File Name	Total Weight	Total Value/profit
problem_10_500_1_3_5.txt	0	0
File Name	Total Weight	Total Value/profit
problem_10_1000_1_3_5.txt	15037	930
File Name	Total Weight	Total Value/profit
problem_10_1000_1_4_5.txt	13334	1095
File Name	Total Weight	Total Value/profit
problem_10_1000_1_5_5.txt	31841	612
File Name	Total Weight	Total Value/profit
problem_10_1000_2_1_5	0	0
File Name	Total Weight	Total Value/profit
problem_10_1000_2_1_5.txt	190	739
File Name	Total Weight	Total Value/profit
problem_10_1000_2_2_5.txt	349	677
File Name	Total Weight	Total Value/profit
problem_10_1000_2_3_5.txt	156	967
File Name	Total Weight	Total Value/profit
problem_10_1000_2_4_5.txt	656	414
File Name	Total Weight	Total Value/profit
problem_10_1000_2_5_5.txt	122	944
File Name	Total Weight	Total Value/profit
problem_3_1_5.txt	0	0
File Name	Total Weight	Total Value/profit
problem_10_1000_3_1_5.txt	422	599
File Name	Total Weight	Total Value/profit
problem_10_1000_3_2_5.txt	797	214
File Name	Total Weight	Total Value/profit
problem_10_1000_3_3_5.txt	280	741
File Name	Total Weight	Total Value/profit
problem_10_1000_3_4_5.txt	357	664

File Name	Total Weight	Total Value/profit
peoblem_10_1000_3_5_5.txt	0	0
File Name	Total Weight	Total Value/profit
problem_10_1000_3_5_5.txt	434	587
File Name	Total Weight	Total Value/profit
problem_10_1000_4_1_5.txt	422	599
File Name	Total Weight	Total Value/profit
problem_10_1000_4_2_5.txt	797	214
File Name	Total Weight	Total Value/profit
problem_10_1000_4_4_5.txt	357	664
File Name	Total Weight	Total Value/profit
problem_10_1000_4_5_5.txt	434	587
File Name	Total Weight	Total Value/profit
problem_50_50_1_1_5.txt	16	44
File Name	Total Weight	Total Value/profit
problem_50_50_1_2_5.txt	47	46
File Name	Total Weight	Total Value/profit
problem_50_50_1_4_5.txt	6	49
File Name	Total Weight	Total Value/profit
problem_50_50_1_5_5.txt	22	12
File Name	Total Weight	Total Value/profit
program_50_50_2_1_5.txt	0	0
File Name	Total Weight	Total Value/profit
problem_50_50_2_1_5.txt	16	39
File Name	Total Weight	Total Value/profit
program_50_50_2_2_5.txt	0	0
File Name	Total Weight	Total Value/profit
problem_50_50_2_2_5.txt	47	9
File Name	Total Weight	Total Value/profit
problem_50_50_2_3_5.txt	6	40
File Name	Total Weight	Total Value/profit
problem_50_50_2_3_5.txt	6	40
File Name	Total Weight	Total Value/profit
problem_50_50_2_4_5.txt	6	44
File Name	Total Weight	Total Value/profit
problem_50_50_2_4_5.txt	6	44
File Name	Total Weight	Total Value/profit
problem_50_50_2_5_5.txt	22	31
File Name	Total Weight	Total Value/profit
problem_50_50_3_2_5.txt	1	70
File Name	Total Weight	Total Value/profit
problem_50_50_3_3_5.txt	27	34
File Name	Total Weight	Total Value/profit
problem_50_50_3_4_5.txt	6	55
File Name	Total Weight	Total Value/profit
problem_50_50_3_5_5.txt	34	37
File Name	Total Weight	Total Value/profit
problem_50_50_4_1_5.txt	16	35
File Name	Total Weight	Total Value/profit
problem_50_50_4_2_5.txt	1	50

File Name	TotalWeight	Total Value/profit	
problem_50_50_4_3_5.txt		27	24
File Name	TotalWeight	Total Value/profit	
problem_50_50_4_4_5.txt		6	45
File Name	TotalWeight	Total Value/profit	
problem_50_50_4_5_5.txt		34	17
File Name	TotalWeight	Total Value/profit	
problem_50_100_1_1_5.txt		16	94
File Name	TotalWeight	Total Value/profit	
problem_50_100_1_2_5.txt		49	65
File Name	TotalWeight	Total Value/profit	
problem_50_100_1_3_5.txt		27	47
File Name	TotalWeight	Total Value/profit	
problem_50_100_1_4_5.txt		56	99
File Name	TotalWeight	Total Value/profit	
problem_50_100_1_5_5.txt		22	112
File Name	TotalWeight	Total Value/profit	
problem_50_100_2_1_5.txt		16	79
File Name	TotalWeight	Total Value/profit	
problem_50_100_2_2_5.txt		49	47
File Name	TotalWeight	Total Value/profit	
problem_50_100_2_3_5.txt		27	79
File Name	TotalWeight	Total Value/profit	
problem_50_100_2_4_5.txt		6	44
File Name	TotalWeight	Total Value/profit	
problem_50_100_2_5_5.txt		22	78
File Name	TotalWeight	Total Value/profit	
problem_50_100_3_1_5.txt		16	95
File Name	TotalWeight	Total Value/profit	
problem_50_100_3_2_5.txt		51	70
File Name	TotalWeight	Total Value/profit	
problem_50_100_3_3_5.txt		27	84
File Name	TotalWeight	Total Value/profit	
problem_50_100_4_1_5.txt		16	85
File Name	TotalWeight	Total Value/profit	
problem_50_100_4_2_5.txt		3	98
File Name	TotalWeight	Total Value/profit	
problem_50_100_4_3_.txt		0	0
File Name	TotalWeight	Total Value/profit	
problem_50_100_4_3_5.txt		27	74
File Name	TotalWeight	Total Value/profit	
problem_50_100_4_4_5.txt		56	45
File Name	TotalWeight	Total Value/profit	
problem_50_100_4_5_5.txt		34	67
File Name	TotalWeight	Total Value/profit	
problem_50_500_1_1_5.txt		16	94
File Name	TotalWeight	Total Value/profit	
problem_50_500_1_2_5.txt		297	446
File Name	TotalWeight	Total Value/profit	
problem_50_500_1_3_5.txt		156	930

File Name	Total Weight	Total Value/profit
problem_50_500_1_4_5.txt	156	299
problem_50_500_1_5_5.txt	86	152
problem_50_500_2_1_5.txt	16	513
problem_50_500_2_2_5.txt	297	245
problem_50_500_2_3_5.txt	156	367
problem_50_500_2_4_5.txt	156	346
problem_50_500_2_5_5.txt	86	430
problem_50_500_3_1_5.txt	16	495
problem_50_500_3_3_5.txt	227	284
problem_50_500_3_4_5.txt	156	355
problem_50_500_3_5_5.txt	86	425
problem_50_500_4_1_5.txt	16	485
problem_50_500_4_2_5.txt	297	204
problem_50_500_4_3_5.txt	227	274
problem_50_500_4_4_5.txt	156	345
problem_50_500_4_5_5.txt	86	415
problem_50_1000_1_1_5.txt	190	600
problem_50_1000_1_2_5.txt	349	1765
problem_50_1000_1_3_5.txt	156	930
problem_50_1000_1_4_5.txt	656	299
problem_50_1000_1_5_5.txt	122	612
problem_50_1000_3_5_5.txt	434	587
problem_50_1000_4_1_5.txt	422	579
problem_50_1000_4_2_5.txt	797	204
problem_50_1000_4_3_5.txt	280	721

File Name	Total Weight	Total Value/profit
problem_50_1000_4_4_5.txt	357	644
File Name	Total Weight	Total Value/profit
problem_50_1000_4_5_5.txt	434	567
File Name	Total Weight	Total Value/profit
problem_100_50_1_1_5.txt	16	44
File Name	Total Weight	Total Value/profit
problem_100_50_1_2_5.txt	47	46
File Name	Total Weight	Total Value/profit
problem_100_50_1_3_5.txt	6	80
File Name	Total Weight	Total Value/profit
problem_100_50_1_4_5.txt	6	49
File Name	Total Weight	Total Value/profit
problem_100_50_1_5_5.txt	22	12
File Name	Total Weight	Total Value/profit
problem_100_50_2_1_5.txt	16	39
File Name	Total Weight	Total Value/profit
problem_100_50_2_2_5.txt	47	9
File Name	Total Weight	Total Value/profit
problem_100_50_2_3_5.txt	6	40
File Name	Total Weight	Total Value/profit
problem_100_50_2_4_5.txt	6	44
File Name	Total Weight	Total Value/profit
problem_100_50_2_5_5.txt	22	31
File Name	Total Weight	Total Value/profit
problem_100_50_3_1_5.txt	16	45
File Name	Total Weight	Total Value/profit
problem_100_50_3_2_5.txt	1	70
File Name	Total Weight	Total Value/profit
problem_100_50_3_3_5.txt	27	34
File Name	Total Weight	Total Value/profit
problem_100_50_3_4_5.txt	6	55
File Name	Total Weight	Total Value/profit
problem_100_50_3_5_5.txt	34	37
File Name	Total Weight	Total Value/profit
problem_100_50_4_1_5.txt	16	35
File Name	Total Weight	Total Value/profit
problem_100_50_4_2_5.txt	1	5
File Name	Total Weight	Total Value/profit
problem_100_50_4_3_5.txt	27	24
File Name	Total Weight	Total Value/profit
problem_100_50_4_4_5.txt	6	45
File Name	Total Weight	Total Value/profit
problem_100_50_4_5_5.txt	34	17
File Name	Total Weight	Total Value/profit
problem_100_100_1_1_5.txt	16	94
File Name	Total Weight	Total Value/profit
problem_100_100_1_2_5.txt	49	65
File Name	Total Weight	Total Value/profit
problem_100_100_1_3_5.txt	27	47

File Name	Total Weight	Total Value/profit
problem_100_100_1_4_5.txt	56	99
File Name	Total Weight	Total Value/profit
problem_100_100_1_5_5.txt	22	112
File Name	Total Weight	Total Value/profit
problem_100_100_2_1_5.txt	16	79
File Name	Total Weight	Total Value/profit
problem_100_100_2_2_5.txt	49	47
File Name	Total Weight	Total Value/profit
problem_100_100_2_3_5.txt	27	79
File Name	Total Weight	Total Value/profit
problem_100_100_2_4_5.txt	56	54
File Name	Total Weight	Total Value/profit
problem_100_100_2_5_5.txt	22	78
File Name	Total Weight	Total Value/profit
problem_100_100_3_1_5.txt	16	95
File Name	Total Weight	Total Value/profit
problem_100_100_3_2_5.txt	51	70
File Name	Total Weight	Total Value/profit
problem_100_100_3_3_5.txt	27	84
File Name	Total Weight	Total Value/profit
problem_100_100_3_4_5.txt	56	55
File Name	Total Weight	Total Value/profit
problem_100_100_3_5_5.txt	34	87
File Name	Total Weight	Total Value/profit
problem_100_100_4_1_5.txt	16	85
File Name	Total Weight	Total Value/profit
problem_100_100_4_2_5.txt	51	50
File Name	Total Weight	Total Value/profit
problem_100_100_4_3_5.txt	27	74
File Name	Total Weight	Total Value/profit
problem_100_100_4_4_5.txt	56	45
File Name	Total Weight	Total Value/profit
problem_100_100_4_5_5.txt	34	67
File Name	Total Weight	Total Value/profit
problem_100-500_2_4_5.txt	0	0

Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_50_1_1_5.txt	35
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_50_1_2_5.txt	4
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_50_1_3_5.txt	24
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_50_1_3_5.txt	24
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_50_1_4_5.txt	45
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_50_1_4_5.txt	45
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_50_1_5_5.txt	15
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_50_2_1_5.txt	35
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_50_2_2_5.txt	4
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_50_2_3_5.txt	24
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_50_2_4_5.txt	45
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_50_2_5_5.txt	15
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_50_3_1_5.txt	35
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_50_3_2_5.txt	4
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_50_3_3_5.txt	24
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_50_3_4_5.txt	0

Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_50_3_5_5.txt	15
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_50_4_1_5.txt	35
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_50_4_2_5.txt	4
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_50_4_3_5.txt	24
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_50_4_4_5.txt	45
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_50_4_5_5.txt	15
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_100_1_1_5.txt	85
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_200_1_2_5.txt	0
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_100_1_3_5.txt	74
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_100_1_4_5.txt	45
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_100_1_5_5.txt	15
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_100_2_1_5.txt	85
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_100_2_2_5.txt	4
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_100_2_3_5.txt	74
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_100_2_4_5.txt	45
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_100_2_5_5.txt	15
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_100_3_1_5.txt	85
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_100_3_2_5.txt	4
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_100_3_3_5.txt	74
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_100_3_4_5.txt	0
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_100_3_5_5.txt	15
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_100_4_1_5.txt	0
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_100_4_2_5.txt	0
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_100_4_3_5.txt	0
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_100_4_4_5.txt	0

Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_100_4_5_5.txt	0
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_500_1_1_5.txt	485
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_500_1_2_5.txt	204
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_500_1_3_5.txt	0
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_500_1_4_5.txt	345
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_500_1_5_5.txt	415
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_500_2_1_5.txt	485
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_500_2_2_5.txt	204
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_500_2_3_5.txt	274
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_500_2_4_5.txt	345
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_500_2_5_5.txt	415
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_500_3_1_5.txt	485
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_500_3_2_5.txt	204
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_500_3_3_5.txt	274
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_500_3_4_5.txt	345
Best first BNB Programmic	File Name	Total Weight
1396854338	prolem_10_500_3_5_5.txt	0
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_100_4_1_5.txt	0
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_500_4_1_5.txt	0
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_500_4_2_5.txt	204
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_500_4_3_5.txt	0
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_500_4_4_5.txt	345
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_500_4_5_5.txt	415
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_1000_1_1_5.txt	485
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_1000_1_2_5.txt	0
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_1000_1_3_5.txt	0

Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_1000_1_4_5.txt	345
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_1000_1_5_5.txt	415
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_1000_2_1_5.txt	0
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_1000_2_2_5.txt	0
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_1000_2_3_5.txt	274
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_1000_2_4_5.txt	345
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_1000_2_5_5.txt	0
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_1000_3_1_5.txt	0
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_1000_3_2_5.txt	0
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_1000_3_3_5.txt	274
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_1000_3_5_5.txt	415
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_1000_3_4_5.txt	345
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_1000_4_1_5.txt	485
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_1000_4_2_5.txt	204
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_1000_4_3_5.txt	274
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_1000_4_4_5.txt	345
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_10_1000_4_5_5.txt	415
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_50_50_1_1_5.txt	17
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_50_50_1_2_5.txt	38
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_50_50_1_3_5.txt	12
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_50_50_1_4_5.txt	8
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_50_50_1_5_5.txt	5
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_50_50_2_1_5.txt	18
Best first BNB Programmic	File Name	Total Weight
1396854338	problem_50_50_2_2_5.txt	28
Best first BNB Programmic	File Name	Total Weight

Best first BNB Programmic	File Name	Total Weight
1396854338	problem_50_50_2_3_5.txt	17
1396854338	problem_50_50_2_4_5.txt	48
1396854338	problem_50_50_2_5_5.txt	18
1396854338	problem_50_50_3_1_5.txt	0
1396854338	problem_50_50_3_2_5.txt	0
1396854338	problem_50_50_3_4_5.txt	30
1396854338	problem_50_50_3_3_5.txt	26
1396854338	problem_50_50_4_1_5.txt	43
1396854338	problem_50_50_4_2_2.txt	0
1396854338	problem_50_50_4_2_5.txt	34
1396854338	problem_50_50_4_3_5.txt	10
1396854338	problem_50_50_4_5_5.txt	29
1396854338	problem_50_100_1_1_5.txt	67
1396854338	problem_50_100_1_2_5.xtx	0
1396854338	problem_50_100_1_2_5.txt	63
1396854338	problem_50_100_1_3_5.txt	12
1396854338	problem_50_100_1_4_5.txt	9
1396854338	problem_50_100_1_5_5.txt	56
1396854338	problem_50_100_2_1_5.txt	24
1396854338	problem_50_100_2_2_5.txt	88
1396854338	problem_50_100_2_3_5.txt	21
1396854338	problem_50_100_2_4_5.txt	48
1396854338	problem_50_100_2_5_5.txt	63
1396854338	problem_50_100_3_1_5.txt	53
1396854338	problem_50_100_3_2_5.txt	11
Best first BNB Programmic	File Name	Total Weight

	1396854338 problem_50_100_3_3_5.txt		70
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_50_100_3_4_5.txt		81
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_50_100_3_5_5.txt		65
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_50_100_4_1_5.txt		43
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_50_100_4_2_5.txt		9
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_50_100_4_4_5.txt		70
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_50_100_4_3_5.txt		60
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_50_100_4_5_5.txt		84
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_50_500_1_1_5.txt		167
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_50_500_1_2_5.txt		463
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_50_500_1_3_5.txt		324
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_50_500_1_4_5.txt		408
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_50_500_1_5_5.txt		465
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_50_500_2_1_5.txt		143
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_50_500_2_2_5.txt		336
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_50_500_2_3_5.txt		466
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_50_500_2_4_5.txt		468
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_50_500_3_1_5.txt		483
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_50_500_2_5_5.txt		399
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_50_500_3_4_5.txt		180
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_50_500_3_5_5.txt		439
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_50_500_4_1_5.txt		43
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_50_500_4_2_5.txt		301
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_50_500_4_3_5.txt		470
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_50_500_4_4_5.txt		375
Best first BNB Programmic	File Name	Total Weight	

Best first BNB Programmic	File Name	Total Weight
1396854338	problem_50_500_4_5_5.txt	493
1396854338	problem_50_1000_1_1_5.txt	667
1396854338	problem_50_1000_1_2_5.txt	463
1396854338	problem_50_1000_1_3_5.txt	677
1396854338	problem_50_1000_1_4_5.txt	408
1396854338	problem_50_1000_1_5_5.txt	205
1396854338	problem_50_100_4_1_5.txt	0
1396854338	problem_50_1000_4_1_5.txt	43
1396854338	problem_4_2_5.txt	0
1396854338	problem_50_1000_4_2_5.txt	801
1396854338	problem_50_1000_4_3_5.txt	560
1396854338	problem_50_1000_4_4_5.txt	670
1396854338	problem_50_1000_4_5_5.txt	429
1396854338	problem_100_50_1_1_5.txt	17
1396854338	problem_100_50_1_2_5.txt	38
1396854338	problem_100_50_1_3_5.txt	12
1396854338	problem_100_50_1_4_5.txt	9
1396854338	problem_100_50_1_5_5.txt	5
1396854338	problem_100_50_2_1_5.txt	18
1396854338	problem_100_50_2_2_5.txt	49
1396854338	problem_100_50_2_3_5.txt	17
1396854338	problem_100_50_2_4_5.txt	48
1396854338	problem_100_50_2_5_5.txt	0
1396854338	problem_100_50_3_1_5.txt	0
1396854338	problem_100_50_3_2_5.txt	11
Best first BNB Programmic	File Name	Total Weight

	1396854338 problem_100_50_3_3_5.txt		20
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_100_50_3_4_5.txt		25
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_100_50_3_5_5.txt		39
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_100_50_4_1_5.txt		43
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_100_50_4_2_5.txt		1
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_100_50_4_3_5.txt		30
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_100_50_4_4_5.txt		34
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_100_50_4_5_5.txt		47
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_100_100_1_1_5.txt		67
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_100_100_1_2_5.txt		58
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_100_100_1_3_5.txt		83
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_100_100_1_4_5.txt		9
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_100_100_1_5_5.txt		5
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_100_100_2_1_5.txt		24
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_100_100_2_2_5.txt		88
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_100_100_2_44_5.txt		0
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_100_100_2_4_5.txt		85
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_100_100_2_5_5.txt		20
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_100_100_3_1_5.txt		36
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_100_100_3_2_5.txt		0
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_100_100_3_3_5.txt		74
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_100_100_3_4_5.txt		80
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_100_100_3_5_5.txt		39
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_100_100_4_1_5.txt		46
Best first BNB Programmic	File Name	Total Weight	
	1396854338 problem_100_100_4_2_5.txt		84
Best first BNB Programmic	File Name	Total Weight	

Algorithm	Number	File Name	Total Weight
	1396854338	problem_100_100_4_3_5.txt	60
Best first BNB Programmic		File Name	Total Weight
	1396854338	problem_100_100_4_4_5.txt	0
Best first BNB Programmic		File Name	Total Weight
	1396854338	problem_100_100_4_5_5.txt	29
Dynamic Programmic		File Name	Total Weight
	284	problem_10_50_1_1_5.txt	292
Dynamic Programmic		File Name	Total Weight
	5488	problem_10_50_1_2_5.txt	476
Dynamic Programmic		File Name	Total Weight
	302	problem_10_50_1_3_5.txt	732
Dynamic Programmic		File Name	Total Weight
	264	problem_10_50_1_4_5.txt	1372
Dynamic Programmic		File Name	Total Weight
	0	problem_1_50_1_5_5.txt	0
Dynamic Programmic		File Name	Total Weight
	222	problem_10_50_1_5_5.txt	1470
Dynamic Programmic		File Name	Total Weight
	319	problem_10_50_2_1_5.txt	292
Dynamic Programmic		File Name	Total Weight
	211	problem_10_50_2_2_5.txt	378
Dynamic Programmic		File Name	Total Weight
	240	problem_10_50_2_3_5.txt	732
Dynamic Programmic		File Name	Total Weight
	0	problem_10_2_4_5.txt	0
Dynamic Programmic		File Name	Total Weight
	339	problem_10_50_2_4_5.txt	1372
Dynamic Programmic		File Name	Total Weight
	290	problem_10_50_2_5_5.txt	1470
Dynamic Programmic		File Name	Total Weight
	79	problem_10_50_3_1_5.txt	51
Dynamic Programmic		File Name	Total Weight
	97	problem_10_50_3_2_5.txt	51
Dynamic Programmic		File Name	Total Weight
	89	problem_10_50_3_3_5.txt	51
Dynamic Programmic		File Name	Total Weight
	66	problem_10_50_3_4_5.txt	51
Dynamic Programmic		File Name	Total Weight
	91	problem_10_50_3_5_5.txt	51
Dynamic Programmic		File Name	Total Weight
	51	problem_10_50_4_1_5.txt	51
Dynamic Programmic		File Name	Total Weight
	51	problem_10_50_4_2_5.txt	51
Dynamic Programmic		File Name	Total Weight
	50	problem_10_50_4_3_5.txt	51
Dynamic Programmic		File Name	Total Weight
	50	problem_10_50_4_4_5.txt	51
Dynamic Programmic		File Name	Total Weight
	51	problem_10_50_4_5_5.txt	51
Dynamic Programmic		File Name	Total Weight

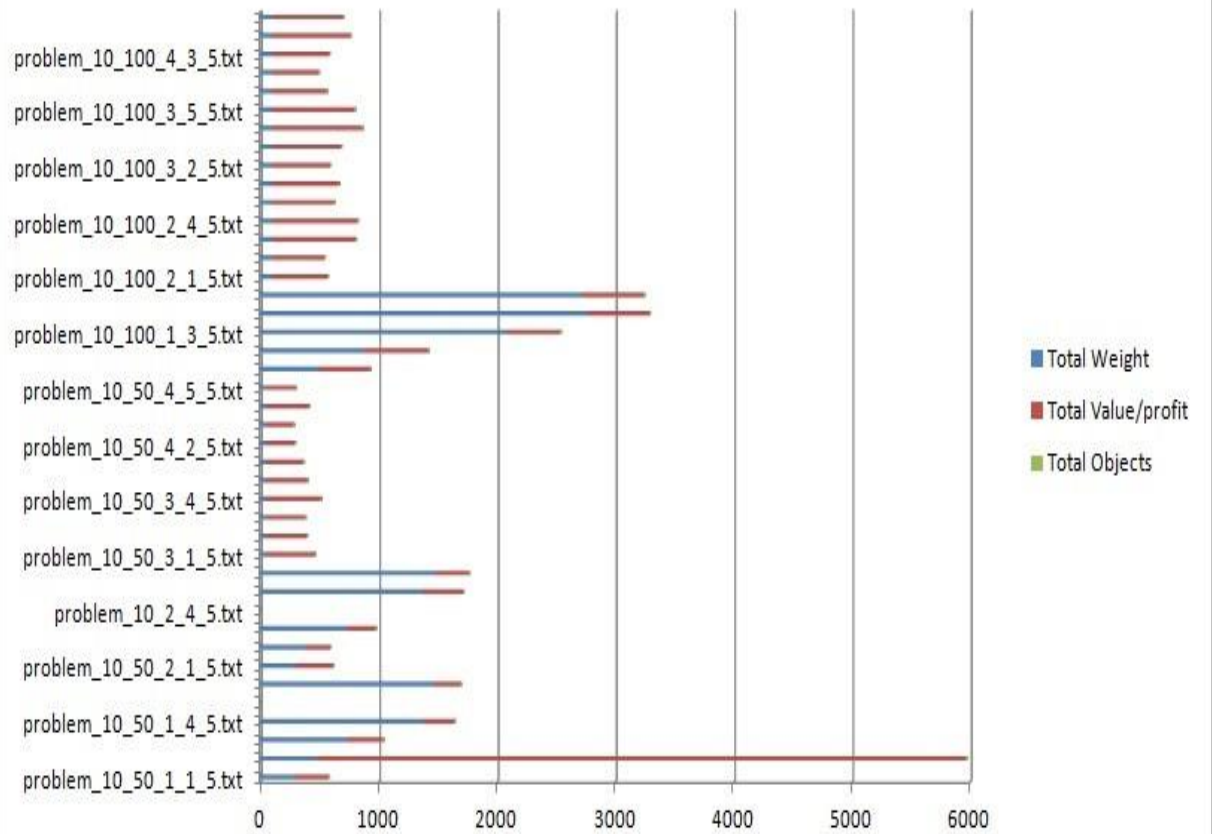| Dynamic Programmic	File Name		Total Weight
	434 problem_10_100_1_1_5.txt		492
Dynamic Programmic	File Name		Total Weight
	540 problem_10_100_1_2_5.txt		878
Dynamic Programmic	File Name		Total Weight
	452 problem_10_100_1_3_5.txt		2082
Dynamic Programmic	File Name		Total Weight
	514 problem_10_100_1_4_5.txt		2772
Dynamic Programmic	File Name		Total Weight
	522 problem_10_100_1_5_5.txt		2720
Dynamic Programmic	File Name		Total Weight
	117 problem_10_100_2_1_5.txt		101
Dynamic Programmic	File Name		Total Weight
	105 problem_10_100_2_2_5.txt		101
Dynamic Programmic	File Name		Total Weight
	100 problem_10_100_2_3_5.txt		101
Dynamic Programmic	File Name		Total Weight
	109 problem_10_100_2_4_5.txt		101
Dynamic Programmic	File Name		Total Weight
	107 problem_10_100_2_5_5.txt		101
Dynamic Programmic	File Name		Total Weight
	141 problem_10_100_3_1_5.txt		101
Dynamic Programmic	File Name		Total Weight
	147 problem_10_100_3_2_5.txt		101
Dynamic Programmic	File Name		Total Weight
	135 problem_10_100_3_3_5.txt		101
Dynamic Programmic	File Name		Total Weight
	127 problem_10_100_3_4_5.txt		101
Dynamic Programmic	File Name		Total Weight
	131 problem_10_100_3_5_5.txt		101
Dynamic Programmic	File Name		Total Weight
	101 problem_10_100_4_1_5.txt		101
Dynamic Programmic	File Name		Total Weight
	101 problem_10_100_4_2_5.txt		101
Dynamic Programmic	File Name		Total Weight
	100 problem_10_100_4_3_5.txt		101
Dynamic Programmic	File Name		Total Weight
	100 problem_10_100_4_4_5.txt		101
Dynamic Programmic	File Name		Total Weight
	101 problem_10_100_4_5_5.txt		101

3 GRAPHS

GREEDY ALGORITHM
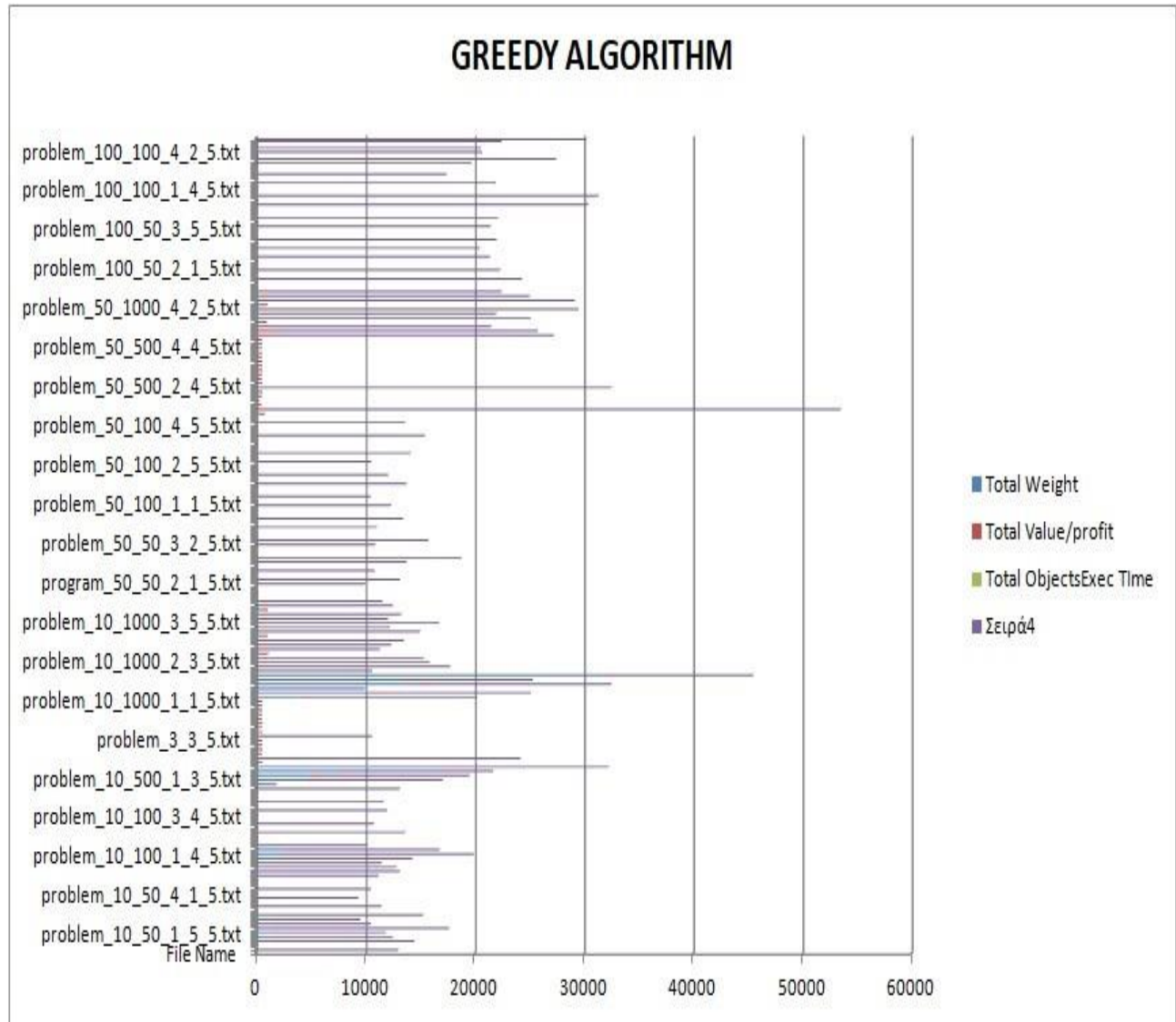
Total ObjectsExec Time - bnb algorithm
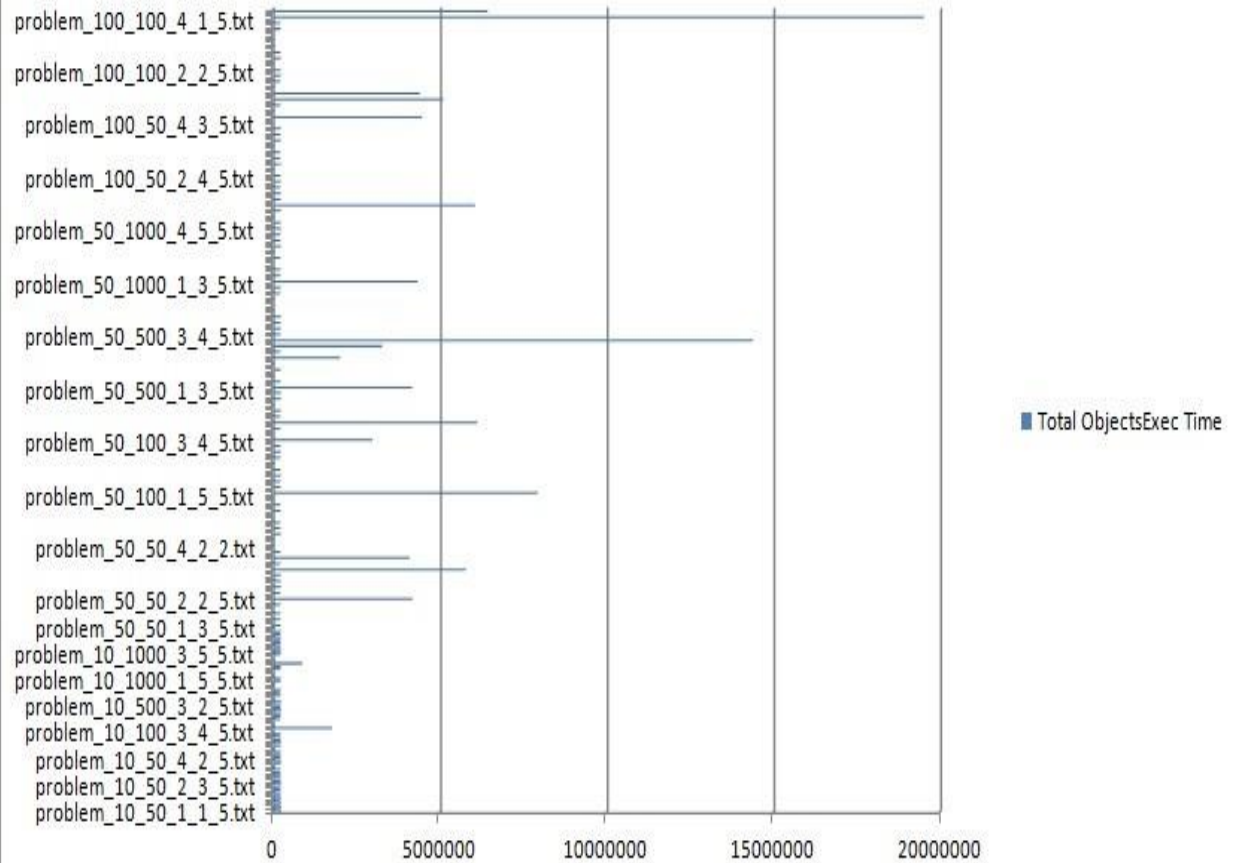
DYNAMIC PROGRAMMING - ALL WITHOUT EXEC

Exec Time - Dynamic Programming