

Evaluation of the performance of the encodings discussed in the paper

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The evaluation is based on the instances used during the competition phase of the 3rd Answer Set Programming Competition (ASPCOMP2011)

Machine specs: 4 Intel i7 processors running at 3GHz, 4GB RAM, FedoraCore11

Programs: gringo 3.0.3, clasp 1.3.7, iclingo 3.0.3 (with clasp 1.3.5), B-Prolog 7.4, ezcspp 1.6.20b33

$\Pi_3(RF)$: EZCSP encoding, at most 1 delayed move

$\Pi_2(RF)$: pure ASP encoding, at most 1 delayed move

$\Pi_1(AP) - \Pi_3(AP)$: encoding proposed in the ASPOCP11 paper

$\Pi_b(AP)$: pure ASP encoding

	ReverseFolding		Airport Pickup	
	$\Pi_3(RF)$	$\Pi_2(RF)$	$\Pi_1(AP) - \Pi_3(AP)$	$\Pi_b(AP)$
Total	88.61	9000.00	302.71	7077.21
Timeouts	0	15	0	7
Avg w/o Timeouts	5.91	0.00	20.18	359.65

$\Pi_2(WA)$: CASP encoding proposed in the ASPOCP11 paper

$\Pi_b(WA)$: pure ASP encoding

$\Pi'(HP)$: encoding proposed in the ASPOCP11 paper

$\Pi_b(HP)$: pure ASP encoding

	WeightAssignment		HydraulicPlanning	
	$\Pi_2(WA)$	$\Pi_b(WA)$	$\Pi'(HP)$	$\Pi_b(HP)$
Total	3.49	2158.44	2.07	47.25
Timeouts	0	0	0	0
Avg w/o Timeouts	0.23	143.90	0.16	3.63

ReverseFolding $\Pi_3(RF)$: EZCSP encoding, at most 1 delayed move $\Pi_2(RF)$: pure ASP encoding, at most 1 delayed move

	$\Pi_3(RF)$	$\Pi_2(RF)$		
		Grounding	Solving	Total
<i>07-reverse_folding-0-0</i>	1.22	600.00	N/A	600.00
<i>11-reverse_folding-0-0</i>	0.37	600.00	N/A	600.00
<i>15-reverse_folding-0-0</i>	0.57	600.00	N/A	600.00
<i>18-reverse_folding-0-0</i>	0.73	600.00	N/A	600.00
<i>20-reverse_folding-0-0</i>	1.86	600.00	N/A	600.00
<i>24-reverse_folding-0-0</i>	2.36	600.00	N/A	600.00
<i>28-reverse_folding-0-0</i>	2.83	600.00	N/A	600.00
<i>31-reverse_folding-0-0</i>	23.90	600.00	N/A	600.00
<i>34-reverse_folding-0-0</i>	4.61	600.00	N/A	600.00
<i>35-reverse_folding-0-0</i>	6.51	600.00	N/A	600.00
<i>39-reverse_folding-0-0</i>	12.73	600.00	N/A	600.00
<i>44-reverse_folding-0-0</i>	21.73	600.00	N/A	600.00
<i>47-reverse_folding-0-0</i>	4.29	600.00	N/A	600.00
<i>49-reverse_folding-0-0</i>	2.81	600.00	N/A	600.00
<i>50-reverse_folding-0-0</i>	2.09	600.00	N/A	600.00
<i>Total</i>	88.61	9000.00	0.00	9000.00
<i>Average</i>	5.91	600.00	N/A	600.00
Timeouts	0	15	0	15
Avg w/o Timeouts	5.91	0.00	N/A	0.00

AirportPickup $\Pi_1(AP) - \Pi_3(AP)$: encoding proposed in the ASPOCP11 paper $\Pi_b(AP)$: pure ASP encoding

	$\Pi_1(AP) - \Pi_3(AP)$	$\Pi_b(AP)$		
		Grounding	Solving	Total
<i>10-airport_pickup-500-0</i>	4.23	82.53	131.18	213.71
<i>14-airport_pickup-500-0</i>	10.06	66.23	76.66	142.89
<i>23-airport_pickup-500-0</i>	0.41	181.59	119.84	301.43
<i>28-airport_pickup-500-0</i>	1.47	288.58	98.61	387.19
<i>32-airport_pickup-500-0</i>	22.38	403.65	99.10	502.75
<i>39-airport_pickup-500-0</i>	29.18	341.35	96.23	437.58
<i>49-airport_pickup-500-0</i>	19.34	408.66	104.60	513.26
<i>52-airport_pickup-500-0</i>	3.26	600.00	N/A	600.00
<i>59-airport_pickup-500-0</i>	33.11	600.00	N/A	600.00
<i>63-airport_pickup-500-0</i>	2.25	600.00	N/A	600.00
<i>64-airport_pickup-500-0</i>	7.91	600.00	N/A	600.00
<i>65-airport_pickup-500-0</i>	97.68	600.00	N/A	600.00
<i>67-airport_pickup-500-0</i>	6.82	600.00	N/A	600.00
<i>69-airport_pickup-500-0</i>	60.80	600.00	N/A	600.00
<i>9-airport_pickup-500-0</i>	3.81	56.23	322.17	378.40
<i>Total</i>	<i>302.71</i>	<i>6028.82</i>	<i>1048.39</i>	<i>7077.21</i>
<i>Average</i>	<i>20.18</i>	<i>401.92</i>	<i>131.05</i>	<i>471.81</i>
Timeouts	0	7	0	7
Avg w/o Timeouts	20.18	228.60	131.05	359.65

WeightAssignment

$\Pi_2(WA)$: CASP encoding proposed in the ASPOCP11 paper

$\Pi_b(WA)$: pure ASP encoding

	$\Pi_2(WA)$	$\Pi_b(WA)$		
		Grounding	Solving	Total
<i>06-weight_assignment_tree-560-0</i>	0.37	25.69	64.13	89.82
<i>09-weight_assignment_tree-778-0</i>	0.20	31.52	63.33	94.85
<i>12-weight_assignment_tree-918-0</i>	0.23	25.71	99.09	124.80
<i>30-weight_assignment_tree-631-0</i>	0.21	15.49	35.41	50.90
<i>33-weight_assignment_tree-810-0</i>	0.20	27.89	59.67	87.56
<i>43-weight_assignment_tree-645-0</i>	0.19	15.41	35.12	50.53
<i>45-weight_assignment_tree-312-0</i>	0.20	6.74	13.54	20.28
<i>51-weight_assignment_tree-2133-0</i>	0.20	99.73	97.39	197.12
<i>52-weight_assignment_tree-1777-0</i>	0.23	114.72	95.41	210.13
<i>55-weight_assignment_tree-1620-0</i>	0.28	113.55	96.52	210.07
<i>56-weight_assignment_tree-1735-0</i>	0.24	108.96	95.47	204.43
<i>58-weight_assignment_tree-1647-0</i>	0.19	108.67	95.98	204.65
<i>59-weight_assignment_tree-1595-0</i>	0.21	108.60	96.55	205.15
<i>61-weight_assignment_tree-1542-0</i>	0.22	110.09	96.84	206.93
<i>62-weight_assignment_tree-2102-0</i>	0.32	105.37	95.85	201.22
<i>Total</i>	<i>3.49</i>	<i>1018.14</i>	<i>1140.30</i>	<i>2158.44</i>
<i>Average</i>	<i>0.23</i>	<i>67.88</i>	<i>76.02</i>	<i>143.90</i>
Timeouts	0	0	0	0
Avg w/o Timeouts	0.23	67.88	76.02	143.90

HydraulicPlanning

$\Pi'(HP)$: encoding proposed in the ASPOCP11 paper

$\Pi_b(HP)$: pure ASP encoding

	$\Pi'(HP)$	$\Pi_b(HP)$		
		Grounding	Solving	Total
<i>1000-hydraulic_planning-684-0</i>	0.23	3.45	0.63	4.08
<i>100-hydraulic_planning-728-0</i>	0.16	3.45	0.62	4.07
<i>101-hydraulic_planning-612-0</i>	0.08	2.58	0.47	3.05
<i>106-hydraulic_planning-619-0</i>	0.07	2.68	0.49	3.17
<i>109-hydraulic_planning-619-0</i>	0.12	2.67	0.49	3.16
<i>123-hydraulic_planning-675-0</i>	0.21	3.20	0.56	3.76
<i>12-hydraulic_planning-684-0</i>	0.19	3.31	0.56	3.87
<i>138-hydraulic_planning-626-0</i>	0.07	3.04	0.51	3.55
<i>155-hydraulic_planning-670-0</i>	0.15	3.15	0.56	3.71
<i>169-hydraulic_planning-714-0</i>	0.19	3.23	0.59	3.82
<i>170-hydraulic_planning-670-0</i>	0.19	3.09	0.54	3.63
<i>375-hydraulic_planning-663-0</i>	0.15	2.95	0.52	3.47
<i>99-hydraulic_planning-684-0</i>	0.26	3.31	0.6	3.91
<i>Total</i>	<i>2.07</i>	<i>40.11</i>	<i>7.14</i>	<i>47.25</i>
<i>Average</i>	<i>0.16</i>	<i>3.09</i>	<i>0.55</i>	<i>3.63</i>
Timeouts	0	0	0	0
Avg w/o Timeouts	0.16	3.09	0.55	3.63